

Appendix A

***Study Plans, Field Results and Data Summaries, and
Associated Data Files***

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APPENDIX A

STUDY PLANS, FIELD RESULTS AND DATA SUMMARIES, AND ASSOCIATED DATA FILES

Appendix A includes the California Department of Water Resources' (DWR) study plans, field results and data summaries, and associated data files, for a total of 1,446 files representing 894 MB of data. Appendix A will be filed separately with the Federal Energy Regulatory Commission (FERC) on a disc.

Note that some of the files within the zip folders included on the disc are not in acceptable FERC e-filing formats, such as CPG and SHP.XML files. DWR can be contacted for a copy of this Appendix A.

Table A-1, below, lists the contents of Appendix A, including total file sizes for the data contained on the disc.

Table A-1. Contents of Appendix A

Contents
Study Plans, Field Results and Data Summaries, and Associated Data Files
Study 4.1.1 Aquatic Invasive Species
Study 4.1.2 Botanical Resources
Study 4.1.3 Non-Native Invasive Plants
Study 4.1.4 ESA-Listed Plants
Study 4.1.5 Special-Status Terrestrial Wildlife Species – California Wildlife Habitat Relationships
Study 4.1.6 ESA-Listed Terrestrial Wildlife Species – California Wildlife Habitat Relationships
Study 4.1.7 ESA-Listed Bird Species Riparian Habitat Evaluation
Study 4.1.8 Water Quality and Temperature
Study 4.1.9 Recreation Facilities Condition and Demand Assessment
Study 4.1.10 Cultural Resources
Study 4.1.11 Tribal Resources
Total Size: 1.36 GB on Disc

Appendix B

Replies to FERC's Written Comments

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In April 2019, the California Department of Water Resources (DWR) filed with the Federal Energy Regulatory Commission (FERC) a Draft Application for a New License Major Project – Existing Dam (Application for New License) for the Devil Canyon Project Relicensing, FERC Project Number 14797 (Project). DWR filed the Draft License Application (DLA) on April 10, 2019. During the 90-day review period that followed, DWR received a July 3, 2019 letter from FERC commenting on DWR’s Proposal.¹ Refer to Attachment 1 for a full copy of the letter.

Each of FERC’s comments has been assigned an alphanumeric designation and has been presented verbatim below, along with the page on which the comment appeared in the letter. DWR has provided responses immediately following each of FERC’s comments.

1.0 PROJECT OPERATIONS

FERC-1 Comment (pg. 2): *“In Exhibit B of the draft license application, you include hydrology information with a 12-year period of record (POR). In the final license application, please explain why you chose this POR.”*

DWR’s Reply: The Devil Canyon hydrology POR (Water Year [WY] 2006 through WY 2017) was selected for two reasons. First, it includes both the driest year (WY 2015) and the wettest year (WY 2017) on record, so a longer period of record would not contribute to a wider range of hydrology. Second, gage data for WY 2005 is not available.

2.0 CULTURAL RESOURCES

DWR included in its April 10, 2019 DLA a confidential draft Historic Properties Management Plan (HPMP). DWR received written comments on the draft HPMP from the San Manuel Band of Mission Indians and FERC. DWR is still engaging tribes and agencies on the preparation of the HPMP. The draft HPMP, as included in DWR’s DLA, is being filed with this FLA. DWR plans to file a final HPMP with FERC upon the conclusion of consultation with the tribes, agencies, and the State Historic Preservation Officer (SHPO), which DWR anticipates to be by May 2020. DWR will address all comments received in the final HPMP.

FERC-2 Comment (pg. 2): *“In section 5.2 of the draft historic properties management plan (HPMP) associated with your draft license application, it is not clear if all 8 of the unevaluated archaeological sites are accounted for in the narrative. Please clarify and be more precise on what particular project-related adverse effects could be occurring on these particular sites, and what the proposed specific management measures would be for each site.”*

¹ DWR’s Proposal includes: continued operation of the Project, modification of the Project boundary, addition of 1 existing reservoir gage (USGS gage no. 10260790), addition of 10 existing roads as Project facilities under the new license, and 12 proposed environmental measures.

DWR’s Reply: Based on comments received from the San Manuel Band of Mission Indians on the cultural and tribal resource studies, two additional archaeological sites previously evaluated as not eligible to the National Register of Historic Places (NRHP) with SHPO concurrence (sites P-19-000501 and P-36-008913) are considered unevaluated under the studies. DWR will modify Section 5.2 of the final HPMP, which will be filed with FERC by May 2020, in accordance with the comment and include a clear narrative of all 10 unevaluated sites with emphasis on Project-related adverse effects and proposed management measures.

FERC-3 Comment (pg. 2): *“Please remove the narrative in section 6.7 of the HPMP, and simply state that any potential dispute would be addressed in the dispute resolution clause of the associated programmatic agreement that would implement the HPMP, upon license issuance.”*

DWR’s Reply: As requested, DWR will modify Section 6.7 of the final HPMP, which will be filed with FERC by May 2020, in accordance with the comment.

FERC-4 Comment (pg. 2): *“Please seek concurrence from the California State Historic Preservation Office (SHPO) on all National Register of Historic Places determinations made in the draft HPMP and associated cultural resources studies.”*

DWR’s Reply: DWR will seek SHPO’s concurrence of all NRHP determinations made in the HPMP and associated cultural resources studies. At this time, the SHPO provided its concurrence on the NRHP eligibilities discussed in Lloyd et al. 2019 and anticipates SHPO’s review of a supplemental report (Lloyd and Leonard 2019) to be completed by November 2019 for the cultural resource studies. Additionally, DWR anticipates that SHPO’s review of the Tribal Resources Study Report will occur in or about January 2020. DWR anticipates that SHPO’s review will occur from February 2019 through April 2020 for the final HPMP. DWR will document its efforts to obtain SHPO concurrence on the final HPMP, which will be filed with FERC by May 2020.

FERC-5 Comment (pg. 2): *“Please ensure that all comments made on the draft HPMP have been addressed, and revise the HPMP, accordingly. If you did not adapt any particular recommendation on the draft HPMP, give your reasons why. Add a new section to the HPMP that accounts for all comments received on the draft HPMP, and where you made the appropriate revisions. Add all correspondences made on the draft HPMP in this section, or add an appendix to the revised HPMP with these correspondences.”*

DWR’s Reply: As requested, DWR will modify the appropriate sections of the final HPMP, which will be filed with FERC by May 2020, in accordance with the comment.

Attachment 1

FERC DLA Comment Letter July 3, 2019

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FEDERAL ENERGY REGULATORY COMMISSION

Washington, D.C. 20426

July 3, 2019

OFFICE OF ENERGY PROJECTS

Project No. 14797-000 – California
Devil Canyon Project
California Department of Water Resources

Gwen Knittweis, Chief
Hydropower License Planning and Compliance Office
California Department of Water Resources
Executive Division
P.O. Box 942836
Sacramento, CA 94236-0001

**Reference: Review of Draft License Application for the Devil Canyon Project;
Identification of Potential Deficiencies and Additional Information
Needs**

Dear Ms. Knittweis:

On April 10, 2019, California Department of Water Resources (California DWR) provided Commission staff with a draft license application (DLA) for the Devil Canyon Project. The project is located along the East Branch of the California Aqueduct near the cities of San Bernardino and Hesperia, in San Bernardino County, California.

Upon review of the application we have identified some potential deficiencies and some additional information needs. License application deficiencies may result in the rejection of the application. When preparing the final license application, adequately addressing the potential deficiencies and the additional information requested in our comments on the draft license application will facilitate the licensing process for the proposed project. The comments enclosed in the attached Schedule A represent Commission staff review of only the following resource areas: engineering, geology and soils, cultural resources, recreation resources, land use, and aesthetic resources.

Project No. 14797-000

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Any questions on our comments should be directed to me at (202) 502-8963, or via email at: kyle.olcott@ferc.gov.

Sincerely,

Kyle Olcott, Project Coordinator
West Branch
Division of Hydropower Licensing

Attachment: Schedule A – Comments on Draft License Application

cc: Mailing List
Public File

Schedule A
Comments on Draft License Application
for the
Devil Canyon Project

Devil Canyon Project
Project No. 14797-000
Schedule A

- 2 -

Project Operations

In Exhibit B of the draft license application, you include hydrology information with a 12-year period of record (POR). In the final license application, please explain why you chose this POR.

Cultural Resources

In section 5.2 of the draft historic properties management plan (HPMP) associated with your draft license application, it is not clear if all 8 of the unevaluated archaeological sites are accounted for in the narrative. Please clarify and be more precise on what particular project-related adverse effects could be occurring on these particular sites, and what the proposed specific management measures would be for each site.

Please remove the narrative in section 6.7 of the HPMP, and simply state that any potential dispute would be addressed in the dispute resolution clause of the associated programmatic agreement that would implement the HPMP, upon license issuance.

Please seek concurrence from the California State Historic Preservation Office (SHPO) on all National Register of Historic Places determinations made in the draft HPMP and associated cultural resources studies.

Please ensure that all comments made on the draft HPMP have been addressed, and revise the HPMP, accordingly. If you did not adapt any particular recommendation on the draft HPMP, give your reasons why. Add a new section to the HPMP that accounts for all comments received on the draft HPMP, and where you made the appropriate revisions. Add all correspondences made on the draft HPMP in this section, or add an appendix to the revised HPMP with these correspondences.

Document Content(s)

P-14797-000 DLA Comment Letter.PDF.....1-4

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Appendix C

Replies to Relicensing Participant Comments

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In April 2019, the California Department of Water Resources (DWR) filed with the Federal Energy Regulatory Commission (FERC) a Draft Application for a New License Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797 (Project). Subsequent to filing the Draft License Application (DLA) and the 90-day review period that followed, DWR received seven letters commenting on DWR's Proposal¹: one letter from FERC, five letters from resource agencies, and one letter from a non-governmental organization. No written comment letters were received from Native American tribes.

In addition to FERC's letter dated July 3, 2019 identifying potential deficiencies and additional information needs (refer to Appendix B), the comment letters and date of receipt are listed below (refer to Attachment 1 for full copies of each letter):

- National Park Service (NPS) letter dated July 5, 2019
- Pacific Crest Trail Association (PCTA) letter dated July 8, 2019
- State Water Resources Control Board (SWRCB) letter dated July 8, 2019
- U.S. Department of Agriculture, Forest Service (USFS) letter dated July 8, 2019
- California Department of Fish and Wildlife (CDFW) letter dated July 8, 2019
- Federal Emergency Management Agency (FEMA) letter dated April 15, 2019

Each of the comments has been assigned an alphanumeric designation and has been presented verbatim in italics below, along with the page on which the comment appeared in the letter.² DWR has provided responses following each of the comments. Refer to Appendix D for DWR responses to comments from Relicensing Participants that relate specifically to Protection, Mitigation, and Enhancement (PM&E) measures and proposed studies.

¹ DWR's Proposal includes: continued operation of the Project, modification of the Project boundary, addition of 1 existing reservoir gage (USGS gage no. 10260790), addition of 10 existing roads as Project facilities under the new license, and 12 proposed environmental measures.

² In its letter, FEMA did not comment specifically on DWR's Proposal; therefore, no replies from DWR were warranted.

COMMONLY USED TERMS, ACRONYMS & ABBREVIATIONS

ADA	Americans with Disabilities Act
AIS	Aquatic Invasive Species
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
DLA	Draft License Application
DPR	California Department of Parks and Recreation
DRMP	Draft Recreation Management Plan
DWR	California Department of Water Resources
ESA	Endangered Species Act
EVC	existing visual condition
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
FSS	Forest Service Sensitive
gpm	gallons per minute
LFR	Las Flores Ranch
LMP	Land Management Plan
Mead Decision	FERC's Order Issuing a New License to the Mead Corporation
mL	milliliter
MWA	Mojave Water Agency
NMWSE	normal maximum water surface elevation
NNIP	non-native invasive plant
NPS	National Park Service
NRIS	Natural Resource Information System
O&M	operation and maintenance
OHV	off-highway vehicle
PAD	Pre-Application Document

PCT	Pacific Crest National Scenic Trail
PCTA	Pacific Crest Trail Association
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
RMP	Recreation Management Plan
RWQCB	Regional Water Quality Control Board
SBNF	San Bernardino National Forest
SIO	Scenic Integrity Objectives
SRA	State Recreation Area
SSC	Species of Special Concern
SWP	State Water Project
SWRCB	State Water Resources Control Board
TESP	Threatened, Endangered, and Sensitive Plants
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
WFMR	West Fork Mojave River
WQO	Water Quality Objective

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1.0 NPS COMMENTS

NPS-1 Comment (pg. 2): *The NPS is concerned about the Department of Water Resources reduction of the Project Boundary. It is mentioned as a "slight" reduction, but it is actually much more significant than that; it is approximately a 45% reduction in acreage. The NPS requests that the current boundary remain the same and would like more information on what recreation facilities including the PCT [Pacific Crest National Scenic Trail] would be partially or fully removed from the boundary.*

DWR's Reply: There are no Project recreation facilities being removed from the boundary. The PCT traverses through both the existing and proposed Project boundary. There are dispersed use areas along shorelines of Silverwood Lake and a parking area at the end of Cedar Springs Dam Road that is and has been traditionally used by a mix of Project and non-Project recreationists. These areas and a portion of USFS Road 2N33 (used by recreationists) are within the existing and proposed Project boundary as well.

NPS-2 Comment (pg. 2): *Recreation facilities and opportunities have to be maintained, as they currently exist despite the boundary reduction. Also, there are no numbers for recreational use of the Pacific Crest Trail. This issue was brought up by the NPS and PCTA and we would like to see it addressed. We understand that it is not considered a project facility, but it is inside the current boundary and definitely has use related to the project.*

DWR's Reply: DWR's Proposal will accommodate all recreation facilities and opportunities as they currently exist with buffers around the facilities and shorelines. The areas being removed from the boundary do not change recreation opportunities or facilities. The PCTA provided information about recreation use levels and trends on the PCT, including permits issued for through-hikers in the March to June 2017 timeframe, when long distance trail users going north pass through the Silverwood Lake area. There are no other user numbers available and there is no basis for how such information, if available or collected, would be useful in informing license conditions. It is generally known there is some level of regular use of the trail and that knowledge in itself is helpful in informing the Recreation Management Plan (RMP) for the Project. An exact number of users or sample would not lead to a better management prescription by DWR, which does not manage the trail, nor would it help with any more understanding to inform license conditions and the RMP.

NPS-3 Comment (pg. 2): *The DRMP [Draft Recreation Management Plan] introduction section mentions recreation displacement on USFS lands but specifically says that the DRMP will only be looking at project facilities. This very limited view of project related impacts is a common theme in the DRMP. The Silverwood website even mentions USFS and the PCT as areas people can utilize.*

DWR's Reply: A draft of the RMP was not included in the DLA, but the RMP in the Final License Application (FLA) that was developed in collaboration with Relicensing Participants addresses recreation management considerations around Silverwood Lake, not just the developed facilities and trails.

NPS-4 Comment (pg. 3): *The DRMP seems to imply that recreation spillover is an indirect effect which is certainly not the case. The USFS is the first responder to all incidents involving recreationists who are there for project related recreation and people are accessing Silverwood directly from USFS lands. At the 5-29-19 meeting in Arcadia, CA the licensee and their consultants Stantec committed to revisit the introduction to make it more open to dispersed use impacts on the PCT and USFS lands and rewrite the description of coverage to include other recreation outside the project boundary.*

DWR's Reply: As part of the recreation study, an interview with USFS was conducted on July 11, 2017 that included the staff at the Cottonwood Fire Station. At that meeting, it was noted that USFS is not a first responder to accidents or emergency incidents at Silverwood Lake State Recreation Area (SRA); however, USFS helps with incidents on State Highway 138, just outside Silverwood Lake SRA. It is DWR's understanding that California Department of Parks and Recreation (DPR) Park Rangers and staff are typically first responders for other emergency services dispatched as a result of 911 calls. Exhibit E of the FLA and the RMP address dispersed uses on lands at the Project in the adjoining areas.

NPS-5 Comment (pg. 3): *Other issues are public safety, enforcement, highway parking and people using USFS lands adjacent to the highway as staging areas for access to the SRA even though these lands are not designed or managed for this type of use. The SRA experiences high visitor use pressure and regularly reaches capacity by 9 a.m. on busy weekends, which leads to closure. The result is that visitors end up parking on the highway waiting to enter when other visitors leave.*

DWR's Reply: The RMP developed for the FLA includes measures to address management considerations around busy weekends that can often lead to temporary closures of Silverwood Lake SRA. As noted in the DLA, there is a 0.4-mile-long staging area set up to allow vehicles to queue inside Silverwood Lake SRA, rather than on State Highway 138. However, at times, as noted in Section 5.5.2, vehicles can back up onto the highway, but are parking on the paved shoulder outside of the highway's painted fog line. It should also be noted that the majority of State Highway 138 near the Project is on State lands with short segments on NFS lands.

NPS-6 Comment (pg. 3): *The USFS and the licensee need to address compensation and the development/management of formal staging areas. The consultant for the Department of Water Resources, Stantec, has committed to make project related impacts on USFS land more clear in the final RMP.*

DWR's Reply: As noted in response to NPS-5, there currently is a 0.4-mile designated staging area inside Silverwood Lake SRA that extends from State Highway 138 to the entrance station. DWR does not see a need for additional Project recreation access staging areas; rather, the RMP in the FLA includes measures to address additional capacity controls to help reduce the number of potential recreationists planning a trip or arriving when Silverwood Lake SRA is closed, or when closures are likely based on past experience. The RMP also includes measures to address litter, user-made trails, and other dispersed use management considerations.

NPS-8 Comment (pg. 3): *The DRMP specifically indicated that it is only looking at day use facilities within the project. However, project recreationists frequently utilize USFS and PCT facilities. Also, the DRMP only seems to recognize “brick and mortar” facilities such as bathrooms, picnic table, boat ramps, etc. We have a broader understanding of facilities; trails and undeveloped recreation areas need to be addressed as well. StanTec has committed to updating the DRMP to include USFS and PCT facilities as more broadly defined.*

DWR's Reply: The RMP addresses recreation management considerations around Silverwood Lake, not just the developed facilities and trails.

NPS-9 Comment (pg. 3): *The DRMP also talks about “project roads entirely on state land.” This seems to be excluding roads used for recreation access and solely focusing on roads to non-recreation project facilities. The Licensee needs to revise the DRMP to include roads to recreation project facilities, StanTec agreed to revise the language to reflect this.*

DWR's Reply: The RMP addresses recreation roads at Silverwood Lake.

2.0 PCTA COMMENTS

PCTA-1 Comment (pg. 3): *Table 5.4-1 List of Primary Project Roads DWR Proposes to Add to the Project*

The following roads are designated to be added to the project:

Dam and Spillway Access Road

Dam Downstream Face Access Road

Spillway Access Road

Intake Access Road

DWR's Reply: Exhibit A describes all the Project facilities. Maps for the roads listed in Section 5.4-1 in Exhibit A of the FLA are presented in Attachment A of the Devil Canyon Project Relicensing Transportation System Management Plan.

PCTA-2 Comment (pg. 3): *Given a lack of map to understand where these are specifically proposed and given the PCT has been left off of multiple maps in the accompanying documents and studies, it's impossible to assess if these road will have an impact on the PCT, the extent of that impact and how to mitigate those impacts.*

DWR's Reply: See response to PCTA-1.

PCTA-3 Comment (pg. 3): *“The net effect of modifying the existing Project boundary is the reduction of area within the boundary from 3,744.0 acres to 2,079.4 acres. This change would reduce the 221.0 acres of federal land (approximately 6 percent of the total area within the existing Project boundary) to 126.0 acres of federal land (approximately 6 percent of the total area within the proposed Project boundary). Table 6.0-1 shows DWR's proposed changes to the existing Project boundary.”*

It should be noted that this is a 44.4% reduction in the size of the project and that neither that number nor that calculation is reflected in the text or table. It is still unclear as to why such a significant reduction is appropriate. Although this reduction reflects the minimum footprint of the project, it's evident that the project impacts the viewshed and recreation experience as reflected in the current project boundary and beyond.

DWR's Reply: See response to USFS-1 regarding the rationale for the proposed Project boundary. Most of the lands being removed have no development; and as noted by USFS in comment USFS-37, a large part of Silverwood Lake SRA lands are steep, brush-covered slopes. The SRA lands on these side slopes are those being proposed for removal from the Project boundary. FERC requirements specify to only include those lands necessary for operation and maintenance (O&M) of the Project.

PCTA-4 Comment (pg. 3): *4.1.5.4 MWA [Mojave Water Agency] and DWR 1982 Water Agreement -- “MWA's 1982 agreement with DWR States: Current operation of Cedar Springs Dam provides for the release of water, which originates in the watershed tributary thereto, from the dam at the same rate as the inflow to Silverwood Lake.”*

The Cedar Springs Dam and associated spillway and the project facilities force the PCT location to go through the laydown, maintenance and storage yards for DWR and push the trail out on to Highway 173. This creates a PCT experience that is incompatible with the nature and purposes for which the trail was congressionally designated. As stated earlier in this document, Congress provided clear direction for the experience the PCT should provide as cited in above from Sec. 3 and 7 in the National Trails System Act. Specifically, the project activities and facilities do, “substantially interfere with the nature and purposes” of the PCT. Additionally, routing PCT hikers, and especially equestrians, along Highway 173, does not provide a safe walking or riding route. Forcing equestrians to travel along a highway with fast moving vehicle traffic is dangerous.

DWR's Reply: DWR has no responsibility for routing the PCT. The PCT was aligned and constructed by USFS after Silverwood Lake and Cedar Springs Dam were

constructed and is subject to an easement agreement between USFS and DWR on State lands near Cedar Springs Dam (including the road/laydown yard). That agreement specifies that USFS is responsible, at its sole cost, for constructing and maintaining the PCT in this area. However, DWR has agreed to review and enter cooperative discussions on a rerouting proposal, if one is put forward by USFS as the administering agency for the trail.

PCTA-5 Comment (pg. 4): 4.3.5.2 Road Maintenance – *“Regular inspection of the Project access roads occurs during the course of day-to-day Project activities. Road maintenance on Project and shared roads occurs as needed. Maintenance generally includes, but is not limited to, the following types of activities: debris removal; filling potholes; grading, sealing, and surfacing; maintenance or replacement of erosion control features (e.g., culverts, drains, ditches, and water bars); repair, replacement, or installation of access control structures such as posts, cables, rails, gates, and barrier rock; and repair and replacement of signage. Vegetation management may be conducted concurrently with road maintenance.”*

Given a lack of map to understand where these Project access roads are and given the PCT has been left off of multiple maps in the accompanying documents and studies, it's impossible to assess if the maintenance of these roads will have an impact on the PCT, the extent of that impact and how to mitigate those impacts. As this aspect of the analysis is insufficient, it should be reanalyzed and documented to provide a clear understanding of the potential impacts to the PCT. Further, this lack of documented analysis does not allow the general public to fully understand and respond on behalf of the PCT.

DWR's Reply: See responses to PCTA-1 and PCTA-2. Exhibit B is a statement of Project operation and resource utilization. Other required exhibits provide further details on the roads and maintenance locations, affected environment, and environmental effects, and provide maps of the PCT.

PCTA-6 Comment (pg. 4): 4.3.5.3 Facility Painting – *“DWR paints the exterior of Project facilities, including the powerhouse and ancillary facilities as needed.”*

Given that there is or will be a Visual Resources Plan, the following text should be added to the above statement “in accordance with the Visual Resources Plan.” In addition, the SBNF [San Bernardino National Forest] LMP [Land Management Plan] Forest Specific Design Criteria Standard 7 “Pacific Crest National Scenic Trail - Protect scenic values in accordance with adopted scenic integrity objectives. Protect foreground views from the footpath, as well as designated viewpoints. Where practicable avoid establishing unbecoming land uses within the viewshed of the trail” must be followed. Compliance Forest Service LMP Standard 9 “Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map” is necessary. The SBNF SIO for the lands adjacent to the Project, as they wouldn't have SIO's for state lands, is classified as “high”. The “High” SIO is defined as, “provides for

conditions where human activities are not visually evident. This refers to landscapes where the valued (desired) landscape character “appears” intact. Deviations may be present but must repeat the form, line, color, texture, pattern and scale common to the landscape character. The landscape appears unaltered. This is synonymous with the Retention Visual Quality Objective under the original Visual Management System.”

We understand that the current alignment of the trail passes through a developed facility however, smoothing the transition between the developed and undeveloped areas by making all necessary efforts to mitigate the visual impacts is justified.

DWR’s Reply: Section 4.3.5.3 in Exhibit B of the FLA describes current Project operations. The Visual Resources Plan in the FLA includes considerations for maintaining scenic values that are within the viewshed of the trail.

In addition, although the PCT is administered by the USFS, the portion of the PCT within the Project boundary is not on SBNF lands and thus it is unclear how the SBNF SIOs are relevant. Moreover, Section 7(a) of the National Trails System Act, which PCTA omits to discuss, states that in locating a national trail full consideration should be given to minimizing adverse effects upon the adjacent landowner or user and his operation. Further, PCTA’s comment in PCTA-4 that the Project would substantially interfere with the nature and purposes of the trail in violation of Section 7(c) of the Act represents a misunderstanding of the intent of that section. Section 7(c) does not apply to pre-existing uses of the land, but rather to new uses of the trail under the Secretary of Agriculture’s jurisdiction. The Project is not located on the trail and the area within the Project boundary that contains the PCT is not within the jurisdiction of the USFS.

PCTA-9 Comment (pg. 6): *11.1 Recreation – “In addition to being popular with boaters and anglers, Silverwood Lake and its surrounding shoreline, which make up the Silverwood Lake State Recreation Area (SRA), are popular with swimmers, campers, hikers, bikers, and picnickers, particularly during the summer months. Silverwood Lake SRA recreation facilities include: campgrounds, a nature center, picnic areas, boat launches, a marina, and swim beaches.”*

Note that this section calls out that the SRA is popular with hikers but doesn’t list any hiking trails in their recreation facilities. The SRA website does encourage hikers to use the PCT in the park. Given the PCT is the main hiking trail in the SRA, that the recreation study was not conducted on the PCT and not conducted during peak PCT use time, it should be noted that the PCT provides a significant recreation benefit to the Project.

DWR’s Reply: There are three hiking trails that are part of the Project recreation facilities in Silverwood Lake SRA. These are the Silverwood Bike Path, the East Fork Trail, and the Miller Canyon Trail. All are used for hiking and other activities. Refer to Section 5.5.1.1 in Exhibit E for a description of the PCT and its benefits and importance.

PCTA-10 Comment (pg. 6): *4.2 Geographic Scope for Analysis of Cumulative Affected Resources – “For recreation resources, the geographic scope extends from the lands of the SBNF to Hesperia Recreation and Parks District jurisdiction to the north. Recreation uses at Silverwood Lake can affect uses and conditions on the PCT leading through this area. Additionally, recreation uses at the Project can affect user patterns in the SBNF, in Hesperia regional and local parks, as well as the Mojave Forks recreation area.”*

This section acknowledges that the project can affect uses and conditions on the PCT within the project area and in the adjoining SBNF lands that contain the PCT. In no project document, study or plan is the project impact calculated, quantified or extrapolated for the future. Further there is no mention on how that impact will be managed or mitigated.

As this is a Federal License Application that has a Congressionally designated and Federally managed trail running through the project, adherence to the Federal Land Management Plan is necessary. In the “Cumulative Effect” Section, the SBNF Land Management Plan states “Landscape cumulative effects are more pronounced in foreground situations and less so in the background. The most sensitive landscapes are those that are visible from urban settings, along popular travel routes, or that provide high-elevation recreation settings.” Given that impacts are more pronounced in the foreground, somewhere in this license package should be studies and measures to address these impacts such as a viewshed analysis.

DWR’s Reply: Section 5.5.1.1 in Exhibit E of the FLA has been revised to include more details on the PCT and the environment it passes through. However, the PCT segments that are within the proposed Project boundary are not located on National Forest System lands.

PCTA-12 Comment (pg. 7): *5.5.1.1 Recreation Opportunities in the Project Region – “Other nationally recognized recreation resources in the region include the PCT, which traversed the Project area adjacent to Silverwood Lake.”*

It’s misleading and underrepresents the PCT to say it’s “in the region”. The PCT is a significant recreation facility within the current and proposed project boundary. Additionally, the PCT is not just a “nationally recognized” resource, but as detailed above, it is a nationally designated resource; and, under Forest Service direction, is to be managed as a “designated area.”

Pacific Crest National Scenic Trail

“The PCT is a designated National Scenic Trail” should be corrected to read “The PCT is a Congressionally designated National Scenic Trail.”

Table 5.5-1 Devil Canyon Project Recreation Facilities and Capacities

There is no mention or designation of the equestrian camping facility. It should be included.

Rio Group Camp

In the text about the camp where it lists amenities at the site, it should mention the equestrian amenities available as it mentions every other amenity at the campground.

Chamise Day Use Area

“Overall, this facility is in good condition. There are user-made trails in poor condition connecting the site to pullouts on State Highway 138 and connecting the facility to the PCT.”

It’s concerning that the evaluation of the facility is that it’s in “good condition” yet, there are user-made trails that are identified as in poor condition that are connecting the Project facility to a non-project facility. This has a negative impact on the PCT creating more erosion and increasing the need for maintenance in these areas.

DWR’s Reply: Section 5.5.1.1 in Exhibit E of the FLA indicates the PCT is a nationally designated trail managed by USFS. It also is noted that it is a nationally recognized recreation resource, which is intended to mean it is of national significance as a recreation resource as compared to regional recreation areas, including Silverwood Lake SRA. To further underscore its significance, DWR has revised Section 5.5 in Exhibit E of the FLA to include the term “Congressionally” when describing the PCT as requested. Section 5.5.1.1 of Exhibit E has been revised to include the equestrian stable facility at the Rio Group Camp. Regarding Chamise Day Use area, the facility was found to be in good condition. Access routes that recreationists use to get to Silverwood Lake, including Chamise Day Use, are not part of the Chamise Day Use area facility and are discussed elsewhere in Section 5.5 of Exhibit E.

PCTA-14 Comment (pg. 8): *5.6.1.2 Wild and Scenic River, and Other Land Use Designations – “As described in Section 5.5, Recreation, the PCT is located along the north and west shores of Silverwood Lake. USFS manages the PCT, the only nationally designated trail in the Project area, in partnership with the NPS, BLM, DPR, and the PCTA.”*

It should again read “the only Congressionally designated trail.”

DWR’s Reply: As requested, DWR has revised Section 5.5 in Exhibit E of the FLA to include the term “Congressionally” when describing the PCT.

PCTA-15 Comment (pg. 8): *5.7.1.2 Pertinent Management Plans – “State Water Project Architectural Motif: 8. Landscaping is appropriate for: Screening of unsightly areas”*

This plan component is in direct conflict with the San Bernardino National Forest Land Management Plan (SBNF LMP), which is referenced in 5.7.1.2 in that in Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations specifically states “Cell and communication sites, as well as other

utilities should conform to Scenic Integrity Objectives by siting color and shape of structures without complete dependence on vegetation; site installations should also be sufficiently hardened to survive wildland fire burn-over and continue operations without removal of surrounding vegetation or structural protection.

DWR's Reply: The State Water Project Architectural Motif applies to State Water Project (SWP) facilities under DWR's jurisdiction and the LMPs apply to NFS lands. For Project facilities that are on NFS lands, DWR is cooperating with USFS and intends to consider National Forest policies and directives when facilities are built or upgraded. Further, regarding the use of landscaping for screening, this action is one of a number of possible architectural actions that would be considered at SWP facilities under DWR's jurisdiction.

PCTA-16 Comment (pg. 9): 5.7.1.3 Scenic Resources at Project Facilities – Cedar Springs Dam, Spillway and Associated Facilities

“These Project facilities all present visual contrast to the natural setting that results in EVCs [existing visual conditions] that are rated from low to very low (refer to Figures 5.7-3 and 5.7-4) (DWR 2018). This is due to the strong white color of the rock-covered dam and very smooth texture of the light-colored concrete spillway in contrast to the tans and grey greens of the soil and vegetation of the high desert. In addition, both of these features have defined geometric shapes that contrast with the natural irregular shapes of the landscape. While not part of the Project, the Mojave Siphon Powerplant west of the spillway and the laydown, maintenance and storage yards east of the spillway are in the same viewshed and add similar visual contrast issues. There are Project roads associated with the dam and spillway that present visual contrast, depending on the viewpoint, but overall the contrast is light to moderate.”

In the “Effects on Landscape Management” Section, the SBNF Land Management Plan states “Under 36 CFR [Code of Federal Regulations] 219(f), the scenic resource is to be evaluated for each alternative, addressing the landscape's attractiveness and the public's visual expectation. Scenic integrity objectives (SIOs) are assigned to land areas. Alternatives will be compared using changes in the assigned scenic integrity objectives, the projected changes in scenic attractiveness and the projected visibility of landscape alterations.” The visual resources in this section of the trail can be improved either by mitigation to existing impacts or possibly by relocation or re-alignment of the trail in a similar fashion to how they eliminated the impacts to the recreation trail at Lake Perris State Recreation Area as noted above.

Recreation Facilities

“... facilities being screened by vegetation and having little visual contrast with the natural landscape.”

As noted previously, this is not consistent with the direction in the SBNF LMP, Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations, vegetation cannot be relied upon to mitigate visual impacts by screening.

DWR's Reply: For areas outside of NFS lands, the use of vegetative screening should also be considered as the LMP does not prescribe standards and guidelines for use of State, municipal, or private lands.

Additionally, per the Dam Safety Review Board of independent consultants performing the FERC required 5-year analysis of project dams, for safety reasons it is not recommended to conceal the face of Cedar Springs Dam or its spillway. Please refer to Exhibit E Section 5.1.1.5 for further discussion on this topic.

Regarding the PCT relocation, see response to PCTA-4.

PCTA-17 Comment (pg. 10): *Figure 5.7-7 – Saw Pit Canyon Boat Ramp, Marina, Swim Beach, Parking, and Water Intake Facility Viewed from KOP 19 on the PCT Looking Southeast.*

“The Sawpit Boat Launch and Sawpit Canyon Marina are the most visible facilities from the PCT and State Highway 138 due to the light color of the docks, buildings, and boats, as well as the many lines and geometric shapes that strongly contrast with the blue water and the green vegetation nearby. While the marina presents strong visual contrast, recreation users know what the facility is and expect to see these shapes and colors.”

The tunnel intake structure is obtrusive to the viewshed and is not consistent with an SIO of High. To mitigate the impact to the viewshed, the tunnel intake and associated structures should be painted or stained in a more visually conducive color. This would improve the recreation experience and protect visual resources for the SRA and PCT. Additionally, it would be consistent with the effort to attain the High SIO classification as “deviations may be present but must repeat the form, line, color, [emphasis added].”

Group Campground Facilities “are generally well screened by vegetation as viewed in foreground from the PCT.” As noted previously, this is not consistent with the direction in the SBNF LMP, Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations, vegetation cannot be relied upon to mitigate visual impacts by screening.

“From NFS lands on the PCT, metal corral fencing is visible in foreground and presents moderate visual contrast due to the light gray color, lines, and geometric shapes that contrast with the surrounding vegetation.”

With proper Natina treatment, the metal corral fencing could have virtually no impact to the visual resources while still completely providing for the recreation facility.

DWR's Reply: Both the tunnel intake structure and group campground facilities are located on State lands. Therefore, the SBNF LMP does not apply to these facilities/areas. Nonetheless, in the FLA, DWR included a measure for treatment of the metal corral fencing at Rio Group Campground to minimize the impact to the visual resources as viewed from the PCT. However, DWR did not include a measure to stain the expansive tunnel intake structure as the treatment would be expensive, not part of typical maintenance for this facility, and would have a marginal improvement on the visual contrast because the size, design, and materials necessary for the function of this structure would still present visual contrast. Furthermore, a color treatment would be further ineffective due to the varying viewpoints of the tunnel intake structure and the subsequent varying background colors from blue or darker color of the reservoir water surface to green of the surrounding vegetation to lighter colors of the native soil or other recreational/marina facilities.

PCTA-18 Comment (pg. 10): *5.7.2 Effect of DWR's Proposal – “This measure does not lessen the existing visual contrast of these Project facilities; however, it is impractical to significantly mitigate the visual contrast due to the combination of the shape, design and coloration of these critical hydroelectric facilities.”*

In keeping with the National Trails System Act, specifically in Sec. 3 (a) (2) and because the Project facilities necessitated the trail being located on Hwy 173, it's both practical and prudent for DWR to work with the SBNF and PCTA to find ways to make the trail more enjoyable and safer for hiker and equestrian users.

DWR's Reply: DWR agrees and is committed to cooperating with agencies outside of relicensing on recreation management needs for multiple use lands (and roads) in the Project area.

PCTA-23 Comment (pg. 12): *Transportation System Management Plan 1.1.1 – Brief Description of the Project*

“Under the new license, DWR proposes no modifications to existing Project facilities, and a slight modification to the existing Project boundary.”

It is inappropriate and misleading to quantify a 44% reduction of Project lands as a “slight modification.” See our comments under Exhibit A: 6.0 Proposed Changes to the Project Boundary for further elaboration.

DWR's Reply: As requested, DWR has revised Section 1.1.1 of the Transportation System Management Plan in the FLA to remove the term “slight” from the description of the Project boundary proposal.

3.0 SWRCB COMMENTS

SWRCB-1 Comment (pg. 1): *The DLA states on page 5-48 that "As part of the Mojave River Basin Plan Amendment and as identified in the 2018 triennial review of the basin plan, the Lahontan RWQCB [Regional Water Quality Control Board], is proposing to amend the basin plan by adding two beneficial uses for specific reaches of the Mojave River: (1) preservation of biological habitats of special significance (BIOL) and (2) preservation of rare and endangered species (RARE)." On June 12, 2019, the amendments were adopted (Resolution No. R6T-2019-0246).*

DWR's Reply: DWR has made this correction in Section 5.4 in Exhibit E of the FLA, and notes that the SWRCB adoption of the basin plan amendments is still pending.

SWRCB-2 Comment (pg. 1): *State Water Board staff appreciate DWR's efforts to test for E. coli downstream of Silverwood lake, detailed on page 5-84, and concur that the results found (2/100 mL [milliliter]) meet Lahontan Water Quality Objectives (20/100 mL).*

DWR's Reply: DWR appreciates SWRCB's concurrence.

SWRCB-4 Comment (pg. 2): *State Water Board staff have reviewed Table 5.2-5 "Numerical Objectives for Silverwood Lake and West Fork Mojave". State Water Board staff recommends including numerical objectives for the West Fork Mojave (above Silverwood Lake) and East Fork of the West Fork of the Mojave River in order to provide a more comprehensive summary of Lahontan RWQCB Basin Plan Water Quality Objectives.*

DWR's Reply: DWR has provided this information in Section 5.2 in Exhibit E of the FLA.

SWRCB-5 Comment (pg. 2): *The DLA states on page 5-76 "limited water quality data exists for the West Fork Mojave River Downstream of Cedar Springs Dam". State Water Board staff requests that water quality results determined as part of the West Fork Mojave River Reach Reconnaissance Survey be referenced in this section.*

DWR's Reply: As requested, DWR has included in Section 5.2 in Exhibit E of the FLA a reference to the water quality data collected during DWR's reconnaissance survey of the West Fork Mojave River.

SWRCB-6 Comment (pg. 2): *In Section 5.2.2.2. Water Quality on page 5-83, the DLA states "DWR proposed no changes to existing Project operations or new work (e.g. dredging that would disturb bottom sediments) that would incrementally affect existing water quality in Silverwood Lake or lead to a degradation in existing water quality. DWR's Proposal is generally consistent with the Lahontan RWQCB Basin Plan standards, though the SWCRB will make that final determination". It should be noted that CEQA [California Environmental Quality Act] findings will have bearing on the State Water Board's final determination."*

DWR's Reply: Comment noted.

SWRCB-7 Comment (pg. 2): *The DLA states on page 5-84 that "DWR manages these instances [occasional blooms of algae and cyanobacteria] through an SWRCB-approved and permitted program and will continue to do so in the future". State Water Board staff request that DWR include relevant program timelines, and future monitoring deadlines.*

DWR's Reply: As requested, DWR discusses relevant program timelines and future monitoring deadlines in Section 5.2.3 in Exhibit E of the FLA. These are identified in the SWRCB-approved NPDES Permit.

SWRCB-8 Comment (pg. 2): *In 5.2.3 Unavoidable Adverse Effects, the DLA states that "Some Lahontan RWQCB Basin Plan WQOs [Water Quality Objectives] are not met in Silverwood Lake now and cannot be met in the future, for reasons previously given. However as discussed, these inconsistencies with the Lahontan RWQCB Basin Plan WQOs do not affect designated beneficial uses. For this reason, the inconsistencies with the Lahontan RWQCB are considered minor". State Water Board requests that DWR provide more detail regarding the rationale mentioned and specify reasons in this section of the document including references to more detailed earlier passages. Describing which Basin Plan WQOs were compared to corresponding beneficial uses would be helpful in understanding why the inconsistencies are considered minor.*

DWR's Reply: As requested, DWR has included in Section 5.2.3 in Exhibit E of the FLA a reference to where these effects are discussed.

SWRCB-9 Comment (pg. 3): *On page 5-134 of the DLA, the section entitled "Downstream of Silverwood Lake" states that there is limited information describing the fish community in the West Fork Mojave. State Water Board staff request that the West Fork Mojave Reach Reconnaissance results be included in this discussion.*

DWR's Reply: As requested, DWR has included in Section 5.2.1 in Exhibit E of the FLA a reference to the fish information collected during DWR's reconnaissance survey of the West Fork Mojave River.

4.0 USFS COMMENTS

USFS-1 Comment (Attachment 1 pg. 1): *Fig 2.0-2 page 2-3 – Project Location Map – The proposed project boundary removes areas where direct, indirect, and cumulative [sic] effects of the project on Forest Service lands and resources has been documented.*

- *Forest Service does not concur with statements under 6.0 changes to boundaries, page 6-1 just to include only project O&M facilities.*
- *The proposed future boundary conflicts with the list of Project Recreational Facilities, Table 3.8-1 on pages 3-9 and 3-10; proposed boundary would exclude*

some facilities, such as some of the hiking trails, camp sites, and overlook areas which are connected to Silverwood Lake.

- *Also proposed boundary conflicts with list of access roads to facilities – Table 5.4-1 page 5-2; still need to include original boundary to include access roads from SR138 or from SR173 or from USFS roads 2N49, 2N33 and road to penstocks on Devil Canyon side.*
- *Also, page 3-11, 4.0 – Existing Project Boundary shows 3501.3 acres of State of California Lands – thus the future boundary should include this same amount of State lands since this is a federal license renewal for a State Project. There are only 221 acres of USFS/federal land involved (same table).*

DWR's Reply: DWR's Proposal, with regard to the proposed Project boundary, is consistent with FERC regulations. All Project recreation facilities, including trails listed in Table 3.9-1 in Exhibit A, are fully within the proposed Project boundary. DWR is unclear what conflict between the boundary and facilities USFS refers to. All primary Project roads have been included in the licensing proposal. The additional roads USFS notes are multiple use roads, not exclusively or almost exclusively used to access the Project. The Project boundary is an administrative marker to clearly delineate those lands necessary for O&M of the Project and for other Project purposes. FERC regulations require including within the Project boundary only those lands necessary for Project O&M and for other Project purposes, such as recreation, or for the protection or mitigation of environmental resources (18 CFR 4.41 [h][2]). DWR's proposed Project boundary changes are as follows: (1) include land necessary for current and future O&M and recreation development; (2) remove lands not required for O&M or any other Project purpose; and (3) reduce the shoreline buffer around Silverwood Lake where Project infrastructure and recreation facilities are not located along the shoreline.

USFS-2 Comment (Attachment 1 pg. 2): *Page 3-8, Section 3.8 Recreation Facilities*

- *Table 3.8-1 does not include all of the facilities the public uses for recreational purposes associated with the project. The DLA should include these facilities in its description.*
- *Highway 138 (under Caltrans [California Department of Transportation] easement on Forest Service lands) is used by the public and the State Parks as a de facto staging area when the State Park closes its entry area.*
- *Forest Service Road 2N33 is used by the public for access to the bays on the NE side of the reservoir.*
- *Forest Service Road 2N37 (Miller Canyon Road) is used by the public for recreational purposes when staging at the State Park*
- *The Pacific Crest Trail (PCT) runs through the State Park, and the State Park actively encourages its use. The PCT is maintained through agreements between the Forest Service and the PCTA.*

- *Forest Land Management Plan Standard 7: Pacific Crest National Scenic Trail - Protect scenic values in accordance with adopted scenic integrity objectives. Protect foreground views from the footpath, as well as designated viewpoints. Where practicable avoid establishing unconforming land uses within the viewshed of the trail (Arrowhead, Big Bear, Big Bear Back Country, Cajon, Garner Valley, Idyllwild, Lytle Creek, Mojave Front Country, San Gorgonio, Santa Rosa and San Jacinto Mountains National Monument, and Silverwood Places).*
- *The Project allows the public to park along the entry road to the dam to access the OHV [off-highway vehicle] area to the east.*
- *The Project recently (2017) removed a public bathroom (pit toilet of 250 gallon capacity, pumped once a week by State Parks) from the location near the dam, reducing this service and encumbering surrounding resources to fill the void. DWR chose to not study the effect of this decision on recreational opportunities to its Project or the surrounding land (email attachment).*

DWR's Reply: All Project recreation facilities are included in DWR's Proposal and listed in Table 3.9-1 in Exhibit A. There are public recreational uses on the surrounding lands and on the PCT which passes through the Project. These multiple use public areas are administered by others but are not part of the Project (e.g., the PCT). There are also several public roads used to access the Project recreation facilities and shorelines; however, these are not solely used for Project purposes and are public rights-of-way used by a variety of users. Additionally, State Highway 138 near the Project is mostly on State lands, with small segments occurring on USFS lands. Forest Service Road 2N33 is on State lands near the northeast side of the reservoir (refer to Exhibit G). DWR has proposed cooperative management PM&E measures to assist agencies in multiple use resource management needs. The restroom facility was closed for multiple reasons, including: (1) security reasons as it is adjacent to the dam where it is unsafe for recreationists; (2) past fishing use has led to damage on the dam face; and (3) the need to keep the public out of secure areas is required at this time.

USFS-5A Comment (Attachment 1 pg. 3): *Page 6-1, Section 6.0 Project boundary changes – “to more accurately define lands necessary for the safe operation and maintenance (O&M) of the Project and other purposes, **such as recreation**, shoreline control, and protection of environmental resources.”*

- *The proposal to shrink the boundary is contradictory to the statement above, which are not necessarily confined to the delineated project boundary.*
- *The DLA has not adequately addressed how the proposed boundary change will influence or address the vegetation damage, habitat loss and human waste issues caused by current Project recreation use, or the expected continuation and increase of such unauthorized uses across FS lands as recreation use increases over life of the Project license.*

- *The Project boundary should be adjusted to include areas with Project induced public recreational use and facilities or management actions necessary to address environmental resource damage and areas of concern. We suggest that the proposed project boundary include the following areas, which have been identified in DWR funded studies and USFS documentation as affected by Project recreation.*
 - *Areas between State Highway 138 and the reservoir where the public has been documented to park and travel on user created unauthorized trails crossing Forest Service and State Park lands*
 - *Areas between Forest Service Road 2N33 and the reservoir where the public has been documented to park and travel on unauthorized trails crossing Forest Service and State Park lands*
 - *The PCT within the State Park lands*

DWR's Reply: See responses to USFS-1 and USFS-2. DWR does not believe it is appropriate to expand the Project boundary to include areas of informal, dispersed recreation not directly associated with the Project.

USFS-5B Comment (Attachment 1 pg. 3):

- *Page 6-2: The 100-foot buffer from the Silverwood Lake NMWSE [normal maximum water surface elevation] does not encompass the documented recreational of the public traveling from parking locations on State Highway 138 and Forest Service Road 2N33 across lands managed by the Forest Service and State Parks on established unauthorized trails.*
- *Page 6-2: The proposed boundary will not change the existing or expected increase of physical impacts made to adjacent NFS lands that are brought about by the presence and public draw of the project.*

DWR's Reply: DWR agrees that the proposed boundary is not intended to encompass all areas of Project impacts. See responses to USFS-1, USFS-2, and USFS-6A.

USFS-6A Comment (Attachment 1 pg. 4): *Page 2.1 - Under the new license, DWR proposes no modifications to existing Project facilities or operations but does propose adjusting the existing Project boundary. DWR proposes to continue to operate the Project as it has operated historically, with the addition of a number of operation and management activities to: (1) protect or mitigate impacts from continued operation and maintenance (O&M) of the Project; and (2) enhance resources affected by continued Project O&M. These activities are collectively referred to as protection, mitigation and enhancement (PM&E) measures in this exhibit.*

- *The FS has indicated there are impacts to NFS resources on federal lands from the O&M activities associated with this project. For instance, changes in water levels in Silverwood Lake would affect water levels and aquatic resources in West Fork Mojave River; arroyo toad (federal ESA [Endangered Species Act] listed species) critical habitat is designated in the WFMR [West Fork Mojave River], thus direct impacts of flooding of habitat would occur, as well as impacts from non-native fish species (bass, trout) into this reach that may predate toads. Similar impacts to the East Fork of the WFMR. By removing these areas from the project boundary, direct impacts from SWP would not be addressed.*

DWR's Reply: Removing lands from the administrative Project boundary does not reduce DWR's or FERC's responsibility from assessing all Project effects and, in fact, the FLA addresses all direct and indirect effects, as well as cumulative effects, associated with the Project whether these effects occur within or outside of the Project boundary. For clarity, as stated in response to USFS-1, the Project boundary is an administrative marker to clearly delineate those lands on which Project facilities and features are located as well as lands necessary for the Licensee to operate and maintain those facilities and features. All areas affected by the Project are rarely within the Project boundary since direct, indirect, and cumulative effects can occur well outside the boundary. Refer to Section 5.4 in Exhibit E of the FLA for discussion on Project impacts to ESA listed species including cumulative impacts from SWP operations that are not part of the Project.

USFS-6B Comment (Attachment 1 pg. 4):

- *Also, the DLA does not address changes to the USFS and DWR 1968 Agreement as discussed on page 4-7 under 4.1.5.5; this agreement covered changes in water levels that affect USFS land areas, by changing the boundaries to remove some federal/USFS lands, there would need to be an amendment to this agreement. Under 5.0 Proposed Operations pages 5-1 for Water Resources WR-2, it references this agreement as far as minimum pool and water surface elevation restrictions only, but doesn't refer to what those restrictions are; which it should state them here instead of referencing the agreement.*

DWR's Reply: The DWR/USFS Agreement is not part of the existing license, as discussed by DWR in Exhibit B, and any changes USFS believes may be necessary to the Agreement resulting from Project boundary changes are not pertinent to this FLA.

USFS-6C Comment (Attachment 1 pg. 4):

- *Changing the boundary would also conflict with Vegetation Maintenance Activities described under 4.3.4, page 4-22 since access roads and trails require vegetation maintenance would need to occur on all existing roads under the current boundary. This is also true for road maintenance under section 4.3.5.2 and for recreation facilities under 4.3.5.4, both on page 4-23.*

DWR's Reply: DWR's proposed Project boundary includes all Primary Project Roads and Project recreation roads necessary to access Project facilities and features, excluding multiple use roads that are not DWR's sole responsibility under the license for O&M. DWR's proposed Integrated Vegetation Management Plan (IVMP) and Transportation System Management Plan would be applied to these Primary Project Roads and Project recreation roads.

USFS-8A Comment (Attachment 1 pg. 5): Section 4.2.4 (also 4.3.1) – San Bernardino Tunnel

Article 56 of the Opinion and Order Issuing License (March 22, 1978), states: "The Licensee shall make available to the Forest Service upon request, water in an amount equal in volume to the subterranean water captured by the San Bernardino Tunnel groundwater system. The quantity of water to be delivered shall be determined by the Licensees and the Forest Service. In the event an agreement cannot be reached between the parties, the Commission reserves the right to determine such quantities, after notice and opportunity for hearing."

- *The Forest Service offered comment to DWR on the depletion of local groundwater by the San Bernardino tunnel at the November 3, 2016 public meeting, as contained within the official transcript (pages 28-32).*
- *The Forest Service asked for a groundwater study during comments to the PAD [Pre-Application Document] to be conducted to determine the amount of local*

groundwater that was being depleted. This study was not performed, despite Article 56.

- *The Forest Service located the “Final Geologic Report San Bernardino Tunnel” (DWR, Project Geology Report C-81, February 1974 - attached), in which DWR documented the amounts of groundwater lost from the system during construction.*
- *The Forest Service provided this document to DWR and had email correspondence (attached) documenting the losses suffered by the Forest Service and potential continuing losses suffered by the Forest Service given the unlined tunnel.*
 - *According to the 1974 report, even after the contact grouting, consolidation grouting, and grouting of the steel liner, there were still recorded water flows being lost after the tunnel lining.*
 - *Overall, in August 1971, the outflow remained relatively constant at 273 gpm [gallons per minute] (page 77).*
 - *The report is thorough in its description of all that was done to try and stop these flows prior to completion.*
 - *The report notes on September 2, 1971, that “all work completed”.* (Appendix II, page 2)
 - *The implication is that groundwater continued to be drained out of the fractured system and into the tunnel.*
- *The Forest Service continues to be concerned with the loss of local groundwater into the Licensees tunnel. The Forest Service LMP Standard 45 states, “All construction, reconstruction, operation and maintenance of tunnels on National Forest System lands shall use practices that minimize adverse effects on groundwater aquifers and their surface expressions.”*
 - *The Forest Service would like to see this topic better addressed in the FLA.*
 - *The Forest Service would like to see the documentation supporting that Article 56 has been addressed under the current license.*

Section 4.3.4, Vegetation Maintenance, Page 4-22:

- *The Forest Service suggests that the FLA contain mention of vegetation restoration efforts in areas affected by unauthorized visitor use (user created trails and roads) such as those created on adjacent NFS lands.*

DWR's Reply: As requested and to provide a complete record, Section 5.2.4.1 in Exhibit E of the FLA includes a discussion of potential Project adverse effects on groundwater aquifers and their surface expressions. However, DWR is compelled to point out that USFS has provided no evidence or plausible mechanism to support a theory that the existing Project has an adverse effect on groundwater aquifers. USFS supports its argument with two pieces of evidence pertaining to the initial construction of the San

Bernardino Tunnel, a condition that does not exist now, and is not part of the Environmental Baseline for the relicensing. First, USFS infers that because leakage was documented during initial construction of the tunnel, it must be occurring now. Drainage of water into a tunnel during initial construction is a well-documented condition, but this does not mean that drainage continues after the tunnel is pressurized. Once pressurization occurs, the water pressure in the tunnel exceeds the pressure of the groundwater, and if any exchange occurs, it is more likely that water in the tunnel passes into the local aquifer. The second piece of evidence relied on by USFS is FERC's inclusion of Article 56 in the initial license. USFS implies that FERC must have considered leakage a significant issue. That is true, but only during construction. Article 56 required DWR to monitor leakage into the tunnel and possible surface effects during construction, and to take appropriate action. Monitoring was not required during operations. Additionally, due to pressurization of the San Bernardino Tunnel, and the presence of Silverwood Lake, water imported into the area from the SWP, is more likely to have resulted in a net benefit to local groundwater aquifers.

USFS-8B Comment (Attachment 1 pg. 5): *Section 4.3.5.4, Recreation Facilities Maintenance, Page 4-23:*

- *The DLA did not adequately address roads directly and indirectly related to SRA recreation use, or take into account their maintenance. This would include sections of Forest Road 2N33 and potential impacts from "berm busting", road bed erosion at high use parking areas and unauthorized pedestrian access points.*

DWR's Reply: See response to USFS-2. DWR has included cooperative management efforts in its proposed RMP for multiple use areas.

USFS-8C Comment (Attachment 1 pg. 5): *Appendix A figures*

- *Why is the natural outflow exceeding the natural inflow when inflow is <200 cfs [cubic feet per second], but is less at higher flows?*
- *Please provide an explanation for the inflow and outflow differentials.*

DWR's Reply: The difference between natural inflow and natural outflow in most of these instances is due to operational issues that require storage and subsequent release of the water. For example, in 2010, the Las Flores Ranch (LFR) diversion valve was removed from service for two years for repairs, and during that time DWR stored water for LFR. The stored water was released once repairs were complete and typically, at LFR's request, occurred at a rate higher than natural inflow. DWR can also store water for MWA, the Mojave River Decree Watermaster, in Silverwood Lake for subsequent release when it is not possible or practical to release the inflows as they come into Silverwood Lake. The later water delivery releases are often requested verbally by MWA working closely with DWR.

USFS-10A Comment (Attachment 1 pg. 6): *Section 6.1.2, Page 6-1: As we understand it, DWR provides funds to the State DPR, from where it is then dispersed to the various parks and facilities based upon DPR's priorities.*

- *While the SRA has had several improvements completed over the last several years, the DLA did not address backlog or deferred maintenance of facilities at the Silverwood Lake SRA, or schedule time line to bring facilities to full operational standards. Delays or deferred maintenance are one of many factors that are contributing to Project recreation spill over on to Forest Service lands.*

DWR's Reply: In contrast to the DLA, Table 6.1-1 in Exhibit D of the FLA, includes DWR's estimated cost, to implement DWR's proposed RMP, which is included in Appendix E of Exhibit E of the FLA. As discussed in Section 5.5 in Exhibit E of the FLA, DWR's proposed RMP considers all needed improvements to Project recreation facilities, regardless of whether these had been the result of deferred maintenance in the past or would be needed to better withstand heavy use levels or would be needed to accommodate changing recreation needs in the future. The RMP includes a schedule for implementation of improvements.

USFS-10B Comment (Attachment 1 pg. 7):

- *Table 6.1-1, DWR's estimated costs related to implementation of DWR's proposed measures only calculated out to 30-years; however, the analysis should extend out to 40- or 50-years (i.e., period of project license).*
- *The DLA does not adequately address the anticipated population growth, as referenced in the County population forecasts out to year 2050, and those effects on Project recreation facilities and the surrounding lands in response to increase in visitor use; the DLA does not properly consider the future maintenance or replacement of Project facilities, campgrounds, day use areas, trails, fishing access, etc., as a result of the increase in recreational use and resulting pressures and stressors on state and federal lands over the life of the proposed license.*
- *The Forest Service has documentation showing areas of Forest Service lands where SRA visitors have trampled vegetation, improperly disposed of trash, and created trails resulting in resource damage. This backlog and resource damage impacts both the visitors experience and well as their safety.*

DWR's Reply: USFS accurately states that Table 6.1-1 in Exhibit D in the DLA provides DWR's estimate of costs related to implementing DWR's proposed PM&E measures, but DWR did not propose an RMP in its DLA (footnote 2 in Table 6.1-1 states "DWR intends to include a Recreation Management Plan in its FLA."). As stated in Section 2 of Exhibit D in the DLA, while DWR requests a new license with a term of 50 years, DWR prepared the exhibit in conformance with FERC's current approach to evaluating the economics of hydropower projects as articulated in FERC's Order Issuing a New

License to the Mead Corporation (i.e., Mead Decision), which uses a “current cost approach” over a 30-year, not 40- or 50-year, time period. DWR has included in the FLA a proposed RMP, and Exhibit D includes DWR's estimate to implement that plan.

USFS-11 Comment (Attachment 1 pg. 7): *Section 11.1, Page 11-1:*

- *Many of the activities mentioned occur on or are accessed through adjacent National Forest System lands resulting in a variety of impacts to the National Forest Lands located between non-project roads (Highway 138 & FS Road 2N33) and the shoreline.*
 - *While the DLA admits that these activities occur and are related to the project, the DLA lacks any information or analysis about their impacts.*
- *This section doesn't address the costs of managing recreational activities and impacts on USFS recreational trails and access roads from overflow of recreationist onto NFS lands caused by overcrowding at Lake Silverwood facilities*
- *This section doesn't address population growth in the area and future needs of recreational facilities/future development of campgrounds, day use, trails, etc. The County population forecasts from 2050 (within the timeframe of the license)*
- *The whole exhibit concentrates only on costs associated with generating power, not on other actual costs associated with Recreation, impacts to Forest Resources, etc.*

DWR's Reply: Exhibit D in the FLA provides DWR's estimated cost to implement its proposed PM&E measures, including the RMP. See DWR's response to USFS-34 and NPS-3 regarding USFS' comments on impacts to NFS lands. Also see DWR's responses to USFS-4, USFS-12, and USFS-58.

USFS-12 Comment (Attachment 1 pg. 7):

- *The Forest Service affirms that under the existing project boundary, the project has generated recreational use on the adjacent National Forest System lands and will continue to do so regardless of any proposed project boundary. The DLA proposed boundary shift will not change the existing or expected increase of physical impacts to adjacent NFS lands brought about by the presence and public draw to the project. The DLA needs to address Project recreation impacts to adjacent Public lands and how these adverse effects to Forest Service lands will be addressed over the life of the license.*
- *The DLA should not restrict the environmental analysis to just the proposed project boundary but instead extend to include affected environments within the Project's area of influence that clearly extend beyond project boundaries, and for all practical purposes are expected to continue into the foreseeable future.*

DWR's Reply: The DLA and FLA address Project recreational effects inside and outside both the existing and proposed Project boundaries. The assessment was not limited to

lands within the Project boundary. As noted in response to NPS-3 and USFS-34, the RMP in the FLA addresses recreation management around Silverwood Lake, not just the developed facilities and trails.

USFS-13 Comment (Attachment 1 pg. 8): *Page 2-1 Comments per Exhibit A, Section 5*

Page 2-2: If (Exhibit A, 6.0 page 6-1) the Project boundary is supposed to "more accurately define land necessary for the safe operation and maintenance (O&M) of the Project and other purposes, such as recreation, shoreline control, and protection of environmental resources" (From Exhibit A, page 6-1),

- *The Forest Service concludes that reducing the project boundary to exclude the NFS lands that are adjacent to the project but are noticeably impacted by the project (user created trails to the water's edge, parking along forest road 2N33, increased trash) is contradictory.*
- *The proposed boundary will not change the existing or expected increase of physical impacts made to adjacent NFS lands that are brought about by the presence and public draw of the project. Nor should the proposed boundary alleviate DWR/DPR from consultation with the SBNF, and if necessary, provide for the restoration of those NFS lands impacted by visitors to the Project.*

DWR's Reply: See responses to USFS-1, USFS-2, USFS 6-A, and USFS-12.

USFS-14 Comment (Attachment 1 pg. 8): *Page 2-4 (Geology and Soils):*

- *The DLA lacks a full description or analysis of affected environment because it limits its analysis to the proposed project boundary.*

DWR's Reply: DWR cannot modify the Geology and Soils section as requested by USFS because USFS has not described what geology- and soils-related analysis is lacking or why USFS believes an additional analysis is needed. DWR believes the Geology and Soils section in the FLA is adequate to assess all Project effects, whether they occur inside or outside of the Project boundary, and to inform license requirements.

USFS-16 Comment (Attachment 1 pg. 8): *Page 2-11 Vegetation Maintenance:*

- *The DLA did not adequately look at the full spectrum of interrelated recreational /public use impacts to vegetation, influenced by project recreation that is occurring beyond proposed project boundaries. The DLA did not address measures to mitigate Project influenced effects to Forest Service lands.*

DWR's Reply: A draft of the RMP was not included in the DLA, but the RMP included in Appendix E of Exhibit E of the FLA, which was developed in collaboration with Relicensing Participants, addresses recreation management considerations around Silverwood Lake, not just the developed facilities and trails. The FLA includes

discussions of effects from recreation inside and outside the proposed Project boundary.

USFS-18 Comment (Attachment 1 pg. 9): *Page 4-2: “For recreation resources, the geographic scope extends from the lands of the SBNF to Hesperia Recreation and Parks District jurisdiction to the north.”*

- *The cumulative effects described in the DLA should clarify what area of the Forest Service lands are included in the analysis. Forest Service’s National Policy is to reduce and prevent the spread of non-native and invasive species onto NFS lands. The Forest Service looks forward to working with the licensee to develop plans to prevent further spread of AIS [Aquatic Invasive Species], and working towards solutions to address treatment and eradication of areas of infestations.*

DWR’s Reply: Section 4.2 in Exhibit E of the DLA, and in the FLA, describes the geographic scope, not land ownership within the geographic scope, of cumulative effects for various potentially affected resources. Therefore, DWR has not modified Section 4.2 per USFS’ suggestion. Refer to Sections 4.4.1 and 4.4.2 of Exhibit E in the FLA regarding non-Project actions, including a discussion of USFS’ management of the SBNF within the geographic scope that affect resources potentially affected by the Project.

USFS-19 Comment (Attachment 1 pg. 9): *Page 4-2: “The headwaters are a reasonable upstream terminus because fish in Silverwood Lake could, under some conditions, enter the tributaries.”*

- *The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.*

DWR’s Reply: USFS has not provided this information to DWR during the relicensing, so the FLA has not been updated.

USFS-20 Comment (Attachment 1 pg. 9): *Page 4-2: “For arroyo toad, DWR defines the geographic scope as extending from north of the Highway 173 bridge downstream to the NMWSE of the Mojave River Dam. The bridge is the upstream terminus because that coincides with the upstream extent of arroyo toad critical habitat in the West Fork Mojave River. Silverwood Lake is not suitable habitat for arroyo toad, and the West Fork Mojave River upstream of the lake lacks essential habitat elements to support an arroyo toad population. USFWS (2009) described Cedar Springs Dam and Silverwood Lake as an “insurmountable barrier to further movement upstream.” As described above, the Project could affect water and aquatic resources below Cedar Springs Dam. The*

NMWSE of the Mojave River Dam is the downstream terminus for the reasons stated above.

- *The underlined statement is not correct. The West Fork of the Mohave River upstream and to the west of Highway 138 is designated critical habitat.*
- *DWR should clarify what essential habitat elements are missing.*

DWR's Reply: Based on the 2011 Final Rule, as well as maps available on the U.S. Fish and Wildlife Service (USFWS) critical habitat mapper and USFWS' GIS data, DWR believes its description in the DLA, and in the FLA, is correct, and there is no arroyo toad critical habitat upstream of Cedar Springs Dam in the West Fork Mojave River (i.e., south of Silverwood Lake). DWR does not disagree that a portion of the critical habitat associated with Horsethief Creek is west of State Highway 138. However, this area is further downstream of the Project (i.e., north of Cedar Springs Dam) and is unaffected by Project O&M. For reference, the description of arroyo toad critical habitat unit 22 is:

“Approximately 9.3 mi (18 km) of Deep Creek from near Holcomb Creek downstream to the confluence with the West Fork; (2) approximately 4 mi (6 km) of Little Horsethief Creek upstream from its confluence with Horsethief Creek; (3) approximately 4 mi (6 km) of Horsethief Creek from approximately 1 mi (1.6 km) above the Little Horsethief Creek confluence downstream to the West Fork confluence; (4) approximately 6 mi (10 km) of the West Fork of the Mojave River from Highway 173 downstream to Mojave River Forks Dam; (5) approximately 1 mi (1.6 km) of the Mojave River below Mojave River Forks Dam; (6) approximately 1.4 mi (2.2 km) of Grass Valley Creek upstream from the confluence with the West Fork; and (7) approximately 2.8 mi (4.5 km) of Kinley Creek upstream from the Deep Creek confluence.”

The statement about the upstream area lacking essential elements is taken directly from USFWS that stated, without any clarification:

“...we [USFWS] removed Subunit 22c (approximately 234 ac (915 ha)) within Unit 22 from our revised critical habitat designation. Subunit 22c is within the geographical area occupied at the time of listing; however, this subunit was erroneously included in the proposed revised rule (74 FR 52612; October 13, 2009). Although we were not aware of this issue when we published the proposed rule, the existence of Cedar Springs Dam upstream of this subunit has altered the hydrology of the 1-mi (1.6-km) reach of the upper West Fork of the Mojave River above Silverwood Lake that extends to the upper end of the lake to such an extent that it does not contain the features essential to the conservation of the species and therefore does not meet the definition of critical habitat for the arroyo toad.”

USFS-21 Comment (Attachment 1 pg. 10): *Page 4-3: “Since the vast majority of water in Silverwood Lake (i.e., natural inflow is rarely noticeable compared to the volume of SWP inflow, Figure 4-23 in Exhibit B) is SWP water from the SWP’s Mojave Siphon Powerplant and the Mojave Siphon bypass, the SWP affects water resources (i.e., both water quantity and water quality) in Silverwood Lake. In addition, biota in SWP water, including fish and Aquatic Invasive Species (AIS), freely enter Silverwood Lake from the SWP, and these biota could affect aquatic resources in the lake.”*

The Licensee concluded that stocked “fish in Silverwood Lake could, under some conditions, enter the tributaries” and that recreation activities have “the potential to spread AIS.”

- *The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.*

DWR’s Reply: See response to USFS-19.

USFS-22 Comment (Attachment 1 pg. 10): *Page 4-4: “DWR anticipates that recreation on the SBNF and on non-Project portions of the Silverwood Lake SRA will continue to increase.”*

- *Forest Service agrees. Recreation affects will increase on adjacent SBNF lands in the future and some of that increase will be from spill-over from the SRA.*

DWR’s Reply: Comment noted. As noted in Exhibit E of the FLA, recreation is a growing and changing use in the region, with shifting needs based on types and patterns of uses. The Project provides substantial access opportunities for recreation uses related to the Project centered on Silverwood Lake. USFS lands surrounding the Project are used by a variety of recreationists, particularly OHV users. DWR agrees to continue to work with resource agencies collaboratively on recreation issues affecting multiple use lands surrounding the Project.

USFS-23A Comment (Attachment 1 pg. 10):

- *For the FLA, please address the following concerns/questions: Include Crestline Sanitation District return flows via pipeline discharging below Cedar Springs Dam onto LFR’s land (pg. 5-36). Clarify the volume and quality of water that could affect the Project water.*
- *The DLA does not clearly define what measures are currently in place to avoid or protect against raw, untreated sewage from being released into Silverwood Lake, or how the water-balanced is maintained when the treatment facility is off line for repair and maintenance. It is unclear what environmental affects or consequence*

these events would have on Silverwood Lake recreation, water quality and quantity, and Forest Service’s aquatic resources.

DWR’s Reply: Section 5.2.1 in Exhibit E of the FLA describes all aspects of the Crestline Sanitation District's operations that are relevant to the Project. Because the Crestline Sanitation District's operations have no Project nexus and are outside of FERC's jurisdiction (i.e., outside of relicensing), the description is limited. For instance, DWR does not have, nor does it need, details regarding: (1) the volume and quality of water Crestline Sanitation District discharges onto LFR's lands; (2) the measures Crestline Sanitation District has in place to protect against a release from Crestline Sanitation District's treatment plant of raw, untreated sewage; and (3) how Crestline Sanitation District maintains water balance when its treatment plant is off-line. The treatment plant is separate from and has no bearing on any Silverwood Lake operations.

USFS-23B Comment (Attachment 1 pg. 11):

- *Continued operation and maintenance (O&M) and recreation activities may have effects on water quality on Forest Service managed lands. Relevant water quality plans and regulations should include the East Fork of the West Fork Mojave River*

DWR’s Reply: Refer to Section 5.2.2.1 in Exhibit E of the FLA for a discussion of Project effects on water quality, including on NFS lands. Relevant water quality plans, including for the East Fork of the West Fork Mojave River, are described in Section 5.2.1.2 of Exhibit E.

USFS-24A Comment (Attachment 1 pg. 11): 5.3.1.1 Special-Status Aquatic Species page 5-85 to 5-102

- *In the FLA, please revise the definition of a special-status aquatic species, which is considered an aquatic species that is: (1) found on NFS land and listed by USFS as Sensitive (FSS); (2) listed by CDFW as a Species of Special Concern (SSC); or (3) considered fully protected under California law. Aquatic species that are listed as threatened or endangered, or proposed, or a candidate for listing under the ESA are addressed in Section 5.4.*

DWR’s Reply: As requested by USFS, DWR has modified the definition of special-status aquatic species in Section 5.3.1.1 of Exhibit E in the FLA.

USFS-24B Comment (Attachment 1 pg. 11):

- *Table 5.3-1 on page 5-88 shows only 4 aquatic special status species potentially affected by the project – it only lists CDFW SSC species; it fails to list any FSS, or USFWS-ESA listed species, such as arroyo toad, which is known to occur in the current project boundary. Please correct the table.*

DWR's Reply: Table 5.3-1 in Exhibit E of the FLA has been corrected to include the FSS listings for western pond turtle and two-striped garter snake. ESA-listed species, including arroyo toad, are addressed in Section 5.4 of Exhibit E.

USFS-26 Comment (Attachment 1 pg. 11): *Table 5.3.2 Known Aquatic Invasive species (pages 5-93 and 5-94);*

- *Comment per Section 4.4.1*

Page 5-102: There were 21 occurrences of two of the four targeted AIS invertebrate species located during surveys: 9 occurrences of Asian clam and 12 occurrences of channeled applesnail. No New Zealand mudsnails or European ear snails were observed. There were 193 occurrences of AIS plant species: 25 occurrences of curly leaf pondweed, 45 occurrences of Eurasian watermilfoil, 79 occurrences of coontail, and 44 occurrences of sago pondweed.

- *The report does not state whether any eradication of known AIS was conducted.*

DWR's Reply: Section 5.3.1.2 of Exhibit E in the FLA discusses efforts to eradicate known AIS on Silverwood Lake.

USFS-27 Comment (Attachment 1 pg. 11): *5.3.1.4 Fish, Upstream of Silverwood Lake*

Mohave tui chub is the only fish species native to the Mojave River drainage (see Section 5.4.3); all other fish occurrences are the result of deliberate or unintentional introductions. There is limited information on fish using the West Fork Mojave River or the East Fork of the West Fork Mojave River upstream of Silverwood Lake. Due to the seasonal nature of these streams, the ability of fish species to inhabit these stream systems year-round is speculative.

- *The Forest Service disagrees with the terms “seasonal nature” and “speculative”. Since the November 2016 meeting (transcript page 33), the Forest Service has asserted that some of these tributaries, which support riparian vegetation, are at least intermittent, while others are classified as perennial.*

DWR's Reply: Section 5.3.1.4 in Exhibit E of the FLA has replaced the sentence in the DLA that reads "Due to the seasonal nature of these streams, the ability of fish species to inhabit these stream systems year-round is speculative." with the following sentence in the FLA: "Because each year these streams often run dry or flow at very low levels, the ability of fish species to inhabit these stream systems year-round is challenging."

USFS-28 Comment (Attachment 1 pg. 12): *Page 5-122: Currently, the Silverwood Lake fishery is composed entirely of 18 non-native fishes, and primarily managed as a warmwater fishery consisting of largemouth bass, bluegill, black crappie, striped bass, channel catfish and white catfish. A put-and-take coldwater fishery is maintained by stocking hatchery-raised rainbow trout*

- *However, all these non-native fish the can access NFS lands through tributaries to Silverwood Lake during certain flow years.*

DWR's Reply: USFS has provided no evidence, nor is DWR aware of any evidence, that non-native species in Silverwood Lake actually have an adverse effect on native species in the upstream tributaries. Also, USFS has provided no specific measures, including scope and expected benefits and costs, other than the general suggestion of installing barriers to block upstream fish migration. Given this lack of evidence of any Project adverse effect, DWR cannot meaningfully evaluate USFS' recommendation, and does not believe that further evaluation is warranted.

USFS-29 Comment (Attachment 1 pg. 12): *Section 5.3.1.5 Amphibians and Semi-Aquatic Reptiles fails to list any FSS or ESA listed species (page 5-134, except for two-striped garter snake (FSS) and western pond turtle (FSS). Missing arroyo chub (FSS).*

- *For the FLA: Table 5.3-8 (page 5-136) should show FSS species identification on any species*

DWR's Reply: See response to USFS-24B. An accompanying footnote was added that the species is considered FSS where it occurs on NFS lands (i.e., the FSS designation does not apply off NFS lands).

USFS-31 Comment (Attachment 1 pg. 12): *5.4.1.3 Unavoidable Adverse Effects – pages 5-212*

- *The IVMP needs to include both the State Park and NFS lands for minimizing impacts of the project on all resources.*

DWR's Reply: The IVMP addresses management measures DWR will undertake to minimize Project impacts on vegetation resources in the Project boundary. DWR's action would, in turn, likely benefit adjoining lands and, thus, such actions would potentially contribute to reducing the spread of invasive species on those lands by better controlling them on Project lands.

USFS-32 Comment (Attachment 1 pg. 12): *Figures 5.4.2-4 pages 5-221 to 5-224 show only wetland and riparian assessments within the proposed project boundary –*

- *These surveys should had the total area identified as either wetland or riparian since impacts potentially would occur on the whole habitat type and not just within the proposed boundary. The FLA needs to show the entire habitat area*

and assessment. Habitats do not recognize boundaries and the impact occurs to the total area, not a partial area, as per the proposed project boundary.

- *Thus Table 5.4.2-2 page 5-228 and Table 5.4.2-3 page 5-229 to 5-232 should show all ownerships, not just DWR within the proposed boundary to reflect actual areas of habitat. The effects analysis of Section 5.4.2.2 should be modified to cover the entire habitat type area.*

DWR's Reply: DWR has included in Section 5.4 in the FLA a description of DWR-surveyed wetland and riparian areas, most of which are entirely within the proposed Project boundary. For clarification, the proposed Project boundary includes areas where Project effects may occur (e.g., where DWR conducts Project-related O&M, such as vegetation management and reservoir fluctuation) and excludes the land overlying the San Bernardino Tunnel. During Project-related field surveys of areas within the proposed Project boundary, DWR found minor Project effects where O&M occurs. However, since no Project O&M activities would occur outside of the proposed Project boundary, it is highly unlikely that the Project would directly affect any areas outside of the boundary where no Project O&M occurs. Table 5.4.2-2 and Table 5.4.2-3 present the results of the field surveys that were conducted within the proposed Project boundary, per the Botanical Resources Study Plan for the Project; as such, the land ownership presented in those tables reflects these surveyed areas. However, to address concerns regarding the land ownership just outside the proposed Project boundary, Section 5.4.2 has been revised to point the reader to Exhibit E Section 5.6 (Land Use and Management) and Exhibit A Section 4.0 (Project Description), which discuss land ownership relative to the proposed and existing Project boundaries, respectively. In addition, Exhibit E Section 5.4.2.2 and 5.4.2.3 (Project Effects and Unavoidable Adverse Effects) in the FLA explicitly states that Project effects are solely attributed to areas that undergo Project O&M within the proposed Project boundary.

USFS-33 Comment (Attachment 1 pg. 13): *5.4.3 Federal ESA species pages 5-233*

- *Figure 5.4.3-1a page 5-253 of least bell's vireo and sw willow flycatcher surveys did not include habitat in the Miller Canyon area of the WF WFMR – no conclusions should be drawn about Forest Service lands if no data was collected*

DWR's Reply: DWR believes the conclusion in the DLA that DWR's surveys did not detect any least Bell's vireos and detected two male willow flycatchers is justified and reliable, and the conclusions are included in the FLA. The conclusion specifically applies to the areas surveyed, and DWR has not generalized the conclusion to apply to all NFS lands.

USFS-34 Comment (Attachment 1 pg. 13): *Page 5-267: "While the SBNF makes up for only a small portion of the proposed project boundary",*

- *Some visitors consider NFS lands to be their destination point (parking on the Highway of 2N33) to access a less crowded section of the lake (and avoid paying entrance fee). The Project causes the Highway and Forest Service road to be de facto staging areas.*

DWR's Reply: The recreation study verified that some recreation users in the summer recreation season are parking vehicles or OHVs along USFS Road 2N33 and then walking down hillsides to shorelines on user-created trails to access Silverwood Lake and boat-in day use areas. These locations are the destination points for Project recreation, not the roads. Parking on public roads is a management consideration of the administrating agency and, as noted in Section 5.5 of Exhibit E, DWR is committed to cooperating with agencies on recreation management needs for multiple use lands (and roads) in the Project area.

USFS-35 Comment (Attachment 1 pg. 13): *Page 5-269: "the National Forests are the largest recreation provider in the region and recreation trends on those forest lands are considered to be indicative of trends in the Project area"*

- *The FLA should clarify this statement since the user experience on Forest Service lands is different than for a Lake environment.*

DWR's Reply: As requested, DWR has updated Section 5.5.1 in Exhibit E of the FLA to clarify the trends of users on NFS lands represent trends across the broader landscape within the Project vicinity, not necessarily water-based recreation opportunities at the Project.

USFS-36 Comment (Attachment 1 pg. 13): *Page 5-270: parkland per population results– math incorrect (2,155,590 / 1000 * 2.5 = 5389 acres).*

- *County population in 2007 was just under 2 million; population given is closer to 2017 number (need reference)*
- *San Bernardino County Economic Forecast (http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic_files/2017/SanBernardino.pdf) estimates population to be 2.7 million by 2050*

DWR's Reply: Section 5.5.1.1 has been updated to correct the reported 2007 figure that can be found in the county plan. The corrected figure conforms to the acreage calculations provided in the county plan and reported in Exhibit E.

USFS-37 Comment (Attachment 1 pg. 13): *Page 5-270: Regarding the number of acres of “park” land available in the county –*

- *A large part of the SRA’s lands cannot currently be used by the typical visitor in the traditional sense as much of it is steep, brush covered slopes.*
- *The FLA should not draw conclusions broadly given that much of the “park”land is not available for use.*

DWR’s Reply: The San Bernardino County General Plan park land standards do not specify types of recreation use, density, or buffer acreage types of analyses, and are presented here to help document and frame the region's recreation needs, not alter or make recommendations to the county plan measures. Section 5.5 of Exhibit E has been updated to better describe the county plan reference and context.

USFS-39 Comment (Attachment 1 pg. 14): *Page 5-271: Figure 5.5-1 San Bernardino County Parks and Pacific Crest Trail*

- *Switzer Park Picnic Area and Crest Park Picnic Area locations are incorrect; their positions should be reversed. These two parks are not County Parks but USFS Picnic Areas. USFS Baylis Park Picnic Area should be added on the highway where the “t” in “Switzer” is located.*

DWR’s Reply: As requested, DWR has updated Figure 5.5-1 in Exhibit E of the FLA to correctly depict San Bernardino County Parks and USFS facilities and locations.

USFS-41 Comment (Attachment 1 pg. 15): *Page 5-275: Please clarify and correctly characterize the ROS [recreation opportunity spectrum] system.*

- *Several features or attributes of a landscape help determine what kind of recreational opportunities might be available on the landscape. The ROS spectrum is a tool to help manage those resources/experiences.*
- *Recognize that the ROS system is only part of the overall process that helps to determine recreational opportunities on a landscape.*
- *There are six classes within the ROS spectrum; The document is missing the **URBAN** class.*

DWR’s Reply: There are no Urban ROS classes near the Project, but a reference that the USFS ROS system also includes an Urban class has been noted in Section 5.5.1.1 of Exhibit E.

USFS-42 Comment (Attachment 1 pg. 15): *Page 5-278: 2N33 is also used by lake visitors to park along and hike down to the lake on a system of user created trails.*

- *Additionally, Forest Road 2N17X, which connects with 2N33 near the dam is part of the SBNF OHV system.*

- *The FLA should better address the following questions. Did observers see visitors walking down from, or up to the road? Or, was it just assumed that passengers from cars parked on the road had walked down to the lake? How is it known that these users are OHV'ers? What other rec uses do these visitors do? Swimming and picnicking are mentioned, anything else? Were these presumed OHV users, who walked down to the lake observed swimming and picnicking? The FS agrees that users do walk down from 2N33 to the lakes edge.*
- *The "Field Results and Data Summary" says that there were 17 days of field surveys. The table "DC_observation_table" that shows each day and the observations made, only show 8 days' worth of observations. Do we know where the other 9 days' worth of observational notes are?*
- *Furthermore, the sites on the NE end of the lake (Sycamore/Live Oak) were only visited on 4 of the 8 days, and only twice per day on 2 of the 4 days. Please clarify. Is there sufficient information to make statistical extrapolations?*

Page 5-278: There looks to be some user created unauthorized access across FS lands to the upper end of the penstocks on the Devils Canyon side. Here again, the Project may be attracting unauthorized use by its presence and affiliated infrastructure.

DWR's Reply: The recreation study crews did observe users walking along the user made trails leading from Road 2N33, and the characterization of these user patterns were verified and identified in the interviews with recreation providers, including USFS and DPR park rangers. It should be noted that this use is extremely low as compared to the several hundred thousand users visiting Silverwood Lake SRA via the main park and Miller Canyon entrances. While swimming and picnicking were identified uses of these dispersed users, angling and sightseeing are other predominant uses. The observation days typically included two observations per day as noted in the study results. These are not statistical-based surveys.

USFS-43 Comment (Attachment 1 pg. 16): *Page 5-280: "Based on the recreation survey work, it appears users are parking vehicles along State Highway 138 and USFS Road 2N33 and walking down to the boat-in day use sites on user made trails."*

- *These user created trails need management; for trash and human waste on the Forest Service lands – as there is a direct nexus to the project shoreline*

DWR's Reply: As noted in response to NPS-5, there currently is a 0.4-mile designated staging area inside Silverwood Lake SRA that extends from State Highway 138 to the entrance station. DWR does not see a need for additional Project recreation access staging areas; rather, the RMP in the FLA includes measures to address additional capacity controls to help reduce the number of potential recreationists planning a trip or arriving when Silverwood Lake SRA is closed, or when closures are likely based on past

experience. The RMP also includes measures to address litter and user-made trails, and other dispersed use management considerations. It should be noted that the user-made trails are on State lands.

USFS-44 Comment (Attachment 1 pg. 16): *Page 5-280: Should the Sycamore Landing Day Use Area also be added here?*

- *Again, the survey that was conducted failed to determine how many users frequent these areas by walking in, or if there are more rec uses than those that just fish (like swimming and picnicking as mentioned above). Because there were no interviews of visitors, there is no way to determine if these visitors were turned away at the gate because the Project facilities were closed or because it's just where they like to frequent. That lack of data makes it very hard to draw any conclusions about what draws visitors to these areas.*

DWR's Reply: The recreation study was designed to characterize and document use and relative use levels. The study identified the main dispersed use areas of Project shorelines being the areas around Live Oak Land and Chamise Day Use areas, and was able to adequately characterize the extent and types of users there. DWR found evidence of use of these areas, but it is not clear how interviewing users would better inform license conditions. The issue that has been raised is that these users can damage vegetation and cause erosion and often leave litter behind – factors that can be observed over time in the field. DWR has developed a PM&E measure in its RMP in coordination with USFS to help reduce these impacts.

USFS-45 Comment (Attachment 1 pg. 16): *ADA [Americans with Disabilities Act]*

- *The Forest Service offers the following comments so the FLA will have more clarity. The Forest Service acknowledges that most of the current recreational facilities are on State lands, and we do not have jurisdictional control.*
- *A number of the campsites use the phrase, "Most of which." Please quantify numbers of compliant amenities.*
- *The DLA uses phrases including "good ADA accessibility" and "ADA compliant". Please clarify the meaning of these terms.*

DWR's Reply: Section 5.5.1.2 in Exhibit E of the FLA quantifies the number of ADA-compliant features at each recreation facility. As requested, DWR provided further explanation and qualification when using the ADA term and has updated the text in Section 5.5.1.2 in Exhibit E.

USFS-46 Comment (Attachment 1 pg. 16): *Page 5-291: Recreation Area Management and Public Safety: Do Rangers patrol areas along the PCT or in those areas where visitors are using the user created trail system? Is this portable restroom near the entrance along the roadside shoulder ADA compliant?*

DWR's Reply: Silverwood Lake SRA Park Rangers do not focus patrol on the PCT. However, all areas of the State park are within the areas patrolled and rangers mostly patrol within the developed areas of the SRA. The portable restroom along the 0.4-mile-long park entrance access road is ADA-accessible.

USFS-47 Comment (Attachment 1 pg. 16): *Page 5-291: The FLA should clarify what facilities are provided for anglers that access the reservoir outside the time when the SRA is open. Are anglers who fish, when the park is closed to vehicles, forced to park on Highway 138 or Forest Road 2N33 or other non-park related roads and hike in? Does Caltrans allow parking in the turnouts for fisherman? This type of recreation may add to the impacts on FS lands around the park, such as increase created user trails, damage to vegetation from parking and hiking, plus distribution of trash. Do to the fact that there were no quantitative observations made outside of normal park hours there is no way to determine how many users visit/use the lake after hours, or how they access the lake, etc.*

DWR's Reply: When accessing the SRA outside of normal park hours, the only facilities available to anglers are the Project campgrounds. Like on most other water bodies throughout California, there is evidence from Park Rangers that some anglers walk in from public roads to access the shorelines and fish. There is no evidence that this use is high or has led to any specific problems. However, the RMP has measures to improve monitoring of dispersed use areas and litter control.

USFS-48 Comment (Attachment 1 pg. 17): *Page 5-291: The DLA lacks information for how often the park reaches capacity and is forced to close/turn away visitors?*

DWR's Reply: Section 5.5.2 of Exhibit E of the FLA provides an analysis indicating the frequency the park reaches capacity and closes.

USFS-49 Comment (Attachment 1 pg. 17): *Page 5-291: Regarding Full Capacity - Either before the park opens or when the park issues a "closure," traffic backs up along Highway 138. This "management" of visitors leads to several issues, some of which result in impacts on the surrounding National Forest Lands. As some people wait to get into the park they exit their vehicles presenting safety concerns with through highway traffic. Some cook with open flame camp stoves, BBQ's, and other devices causing a fire risk to adjacent forest lands. Trash is improperly disposed of along the roadside,*

often ending up on NF lands. Due to long wait times, some visitors will inappropriately use the roadside or adjacent NFS lands as a restroom.

A statement from a park official stated that park visitor use was up 20% in 2018. The FLA should include the newest information available.

The DLA needs to adequately evaluate all recreation and project related actions to determine overall affects to the area of influence. The Observation Surveys Conducted at Silverwood Lake SRA offer limited value in assessing the effects of project recreation, leaving basic questions regarding the daily use and carrying capacity of the park and its facilities unanswered.

DWR's Reply: The RMP in the FLA, prepared in consultation with USFS and other Relicensing Participants, provides a set of measures to help reduce the potential problems associated with visitors backing up onto State Highway 138. Section 5.5 of Exhibit E discusses a range of issues associated with the closure periods. Records indicate visitation is slightly less now than in last decade. DWR has included the 2018 visitation information in Section 5.5 of Exhibit E and there is no notable increase over previous years. The trends and visitation levels are similar to those of the past 8 years and continue to slowly trend downward.

USFS-50 Comment (Attachment 1 pg. 17): *Page 5-292: que should be queue.*

If 200 cars are the most that will be in the queue, is that number set by CalTrans, CHP, the park? Where does car 201+ go? Does someone count the cars and turn away any that exceed car number 200?

“Some users walk-in”

- Where do these users park? Do they use system roads/trails to get into the park or are they using user created trails to get to their destination? It looks like none of the observations made of users were made outside of the park, and there were no interviews of park visitors, so here again it's hard to know for certain how many users who can't get into the park by car, walk in.*

“Trash is picked up daily at the developed sites”

- Ergo, it is not picked up elsewhere. The FLA should clarify the location and quantity picked up at all locations. Is there any trash pickup by park personnel along FS Road 2N33, HWY 138, the parking area at the dam? If so, how often and by whom?*

DWR's Reply: It was estimated that "at most" 200 vehicles queue. That information was identified to estimate the magnitude of vehicular back-ups using the 0.4-mile-long queue

area set aside to manage the crowds. The State Highway 138 shoulder is quite wide for a long distance on either side of the ramps that lead to the park entrance and vehicles could continue to hold on the shoulder areas until the park opens or the queue line is reduced.

As requested, DWR has updated Section 5.5.1.2 in Exhibit E of the FLA to better describe the trash pick-up cycles.

USFS-51 Comment (Attachment 1 pg. 17): *Page 5-294:* **California Department of Parks and Recreation:**

- *The DLA is unclear or inconsistent in explaining when and how often the park reaches capacity and closes. The interviewee states that there are several non-holiday weekends where the park fills up and visitors are turned away.*

DWR's Reply: DPR provided the information it had on park closures and this information is presented in the interview summaries; this is the same information that was verified in other discussions with recreation providers in Section 5.5.2 of Exhibit E.

USFS-52 Comment (Attachment 1 pg. 18):

Page 5-294: The interview states that the group campgrounds "are consistently full each weekend", not just "utilized".

DWR's Reply: The group camps are not always at capacity as many groups are smaller than full capacity allowance. The capacity noted in the interview was related to the three West Fork and Miller Canyon group camps being fully reserved on weekends, meaning the campsite as a whole is not available to others from the standpoint of opening to new groups. However, the groups do not always fill each group camp to capacity for each camping unit. A clarification in the interview notes has been made.

USFS-53 Comment (Attachment 1 pg. 18): *Page 5-296: "When the park fills to capacity, those destination users often park outside of the SRA and walk in"*

- *Outside the SRA is on Forest Service lands.*

DWR's Reply: It is noted in Exhibit E that some recreation users in periods of closure or queuing park on State Highway 138, which is a Caltrans highway contained mostly on State lands with short segments on NFS lands.

As requested, DWR has updated Section 5.5.1.3 in Exhibit E of the FLA to clarify the lands and facilities on which the parking takes place.

USFS-54 Comment (Attachment 1 pg. 18): *Page 5-296: "occasional pedestrian traffic"*

- *has resulted in a substantial user created trail network departing the road and causing damage to vegetation as well as leaving piles of trash on Forest Service lands.*

DWR's Reply: It is agreed there are user made trails and damage to the vegetation and soils in the area.

USFS-56 Comment (Attachment 1 pg. 18): *Page 5-299: **Caltrans**: "periodic backups" - The interview with the park indicated that the backup problem occurred on all holiday weekends, many regular weekends and often before the park opens when anglers line up to get in*

- *Forest Service agrees. The FLA should acknowledge that these backups put use on Forest Service lands.*

DWR's Reply: Section 5.5 of Exhibit E of the FLA discusses the periods when the backup problem has typically occurred. As requested, DWR has updated Section 5.5.1.3 in Exhibit E of the FLA to note that State Highway 138 is partially on NFS lands. The majority of State Highway 138 is on State lands (refer to Exhibit G).

USFS-57 Comment (Attachment 1 pg. 18): *Page 5-300: "Federal Land Access Program"*

- *Please provide information regarding agreements with Caltrans over use of pullouts for long term parking. Parking and using the highway for staging is a direct effect and impact on NFS lands. How are safety and sanitation issues dealt with?*

DWR's Reply: Public pull-outs and parking on the highway are within Caltrans' jurisdiction in terms of administering all types of vehicular traffic controls and needs. Caltrans did not provide any details regarding the daily parking. However, it was noted by Caltrans that within the 14 paved pullouts for motorists, those locations are not intended for long-term parking. Caltrans did not note there was a problem or issue with regard to parking on State Highway 138. The highway has a wide paved shoulder in many places, outside the fog lines, where recreationist have been known to park.

USFS-58 Comment (Attachment 1 pg. 18): *Page 5-301: "new demand for additional parking....."*

- *The proposed Recreation Study, in section "1.1.2 Study Goals and Objectives" mentions "determine potential future improvements to or expansion of recreation facilities" - however no comments about the potential expansion of recreation facilities (possible or not possible) were included in the study results or in the GIS data.*

DWR's Reply: The study did evaluate the potential for expansion and DWR, in consultation with DPR, made a determination that expansion is not warranted (Silverwood Lake SRA is built out). The attraction for users is Silverwood Lake, which can only accommodate a certain level of use regardless of regional population growth and demand. Adding more people to Project shorelines and waters would likely degrade the quality of the recreation experience that users desire. Rather, DWR's approach to satisfying future recreation demand centers more on repurposing and improving existing facilities, along with additional visitor services programs to better serve the recreating public, that combine with capacity controls to help reduce crowding and impacts from littering and other use considerations.

USFS-59 Comment (Attachment 1 pg. 18): *Page 5-304: "Visitation trends indicate that park use is declining slightly over the last 20 years, and this trend is noticeable in the annual visits (Table 5.5-2) and by examining monthly use figures (Figure 5.5-4). Similarly, overnight camping use is also declining at a slightly greater rate than total use (combined day and overnight use) (Figure 5.5-5). Records for boating indicated by number of boat launches show a fairly steady pattern of use for the period of 2011-2017 (Figure 5.5-6).*

- *The trends conclusion does not take into account any of the extenuating factors including the Great Recession and fires/algal blooms that have closed the area of the reservoir during the summer. Prior to the fires years of 2016-17, visitation was back to the ballpark of pre-Recession.*
- *A statement from a park official stated that park visitor use was up 20% in 2018. The FLA should include the newest information available.*

DWR's Reply: There are a variety of factors influencing attendance and participation in recreation activities at any one location. As noted, there are probably a variety of reasons for which visitation has trended over the years, but DWR is managing for current and future use based on best available visitor use information, including published demand analysis applicable to California.

USFS-60 Comment (Attachment 1 pg. 19): *Page 5-309: As per 5-278*

DWR's Reply: Not clear what this comment is in reference to; page 5-278 of the DLA includes information on regional recreation use and Project recreation facilities, whereas page 5-309 of the DLA summarizes the results of the observation survey.

USFS-61 Comment (Attachment 1 pg. 19): *Page 5-310: The number of observations made for this study seems too low to be used in considering the daily use of each site.*

DWR's Reply: The number of observations was not based on the daily use of a particular site; rather, it was a sampling technique widely used in recreation studies to evaluate use patterns on a more random basis.

USFS-64 Comment (Attachment 1 pg. 19): Page 5-317: Table 5.5-5:

- *The meaning of a “non-peak weekend” should be clarified. This table shows that the park is not near capacity on Average, Daily Non-Peak Weekends”, where in Table 5.5-4 it seems the park is at or near capacity on all summer weekends. This is confusing.*
- *This table is misleading because it averages all time periods. The table should be broken into seasons or times of the week to show the changing capacity. The narrative seems to acknowledge that the park fills up and gets closed. This table could make it appear that the Park never reaches capacity. This should be changed in the FLA.*

DWR’s Reply: As requested, DWR has updated Table 5.5-5 in Exhibit E of the FLA to add more information on what is meant by non-peak weekend (which are those weekends outside the primary recreation season from Memorial Day to Labor Day). The table is not intended to be misleading. The management and design of recreation facilities are not typically made for the peak use periods, but rather the whole year (similar to capacity approaches in the hotel/motel business).

USFS-65 Comment (Attachment 1 pg. 20):

“Recreation use records indicate that, in the last nine years, both overnight and day use visitation is slightly lower than it was in the prior decade.”

- *According to the park official, use is up 20% in 2018. Why are the 2018 numbers not included in the DLA?*

“The analysis also confirmed that there are fairly predictable times on summer weekends, and on Saturdays and Sundays of holiday weekends, when demand exceeds the capacity of facilities and the park reaches capacity and limits the number of vehicles and watercraft. This condition is carefully managed by DPR staff with enforcement officers helping recreationists with information on other nearby recreation facilities and information on park vehicle re-opening procedures.”

- *Which enforcement officers?*
- *What does carefully managed mean?*
- *Information gained from Dispatch incidents over the last 5 years in the Silverwood area (designated Area 14) shows that Law Enforcement, Fire personnel, and Patrol units are called into the area for various incidents throughout the year. Most of these incidents involve one person, though vegetation incidents, fires, traffic collisions, and hazardous spills require a larger response or a 4- or 5-person engine.*

YEAR	VEG	SF	VF	SC	MA	ES	PSA	LE	FA	MISC	TC	HAZ	SAR	TOTAL
2018	2	0	2	0	0	0	3	41	5	10	3	0	0	66
2017	8	1	1	5	3	0	6	67	0	21	3	0	0	115
2016	2	0	0	0	0	2	1	58	0	25	4	1	0	93
2015	2	0	1	0	0	0	2	72	0	19	5	0	0	101
2014	2	0	0	0	3	1	3	54	0	21	2	0	0	86

- *DLA did not address the direct effect on NFS lands from the parking on the highway and the safety concerns associated with it. This direct effect to NFS lands contributes to cumulative “spill-over” effects.*
- *This information can also be used in Section 5.6.1.7*

DWR’s Reply: Records indicate visitation is slightly less now than in last decade. DWR has included the 2018 visitation information in Section 5.5 of Exhibit E and there is no notable increase over previous years. The trends and visitation levels are similar to those of the past 8 years and continue to slowly trend downward. The enforcement officers are primarily State Park Rangers and sometimes Highway Patrol. When backups occur rangers directly interact with motorists to manage the situation depending on the extent of back up. The information provided on event incidents in the area is helpful, however for Silverwood Lake SRA, the USFS noted in 2017 they no longer are first responders to incidents in the park unit. See response to USFS-56 regarding lands State Highway 138 traverses.

USFS-66 Comment (Attachment 1 pg. 21): *Page 5-329: “There is evidence of increased litter and some trampling of vegetation in these areas; however, developed sites nearby provide sanitary facilities these recreationists can use.”*

- *What other facilities? It isn’t specified. And DWR removed the pit toilet facility near the dam.*
- *It’s about 8 miles over a Level 2 dirt road from the Dam to Miller Canyon OHV Staging Area. It’s about 6 miles from the Dam to the park entrance, which might be closed if it’s full.*
- *The FLA needs to clarify what nearby means, especially if the SRA is closed and the developed sites cannot be accessed.*

DWR’s Reply: Live Oak and Chamise Day Use Areas provide restroom facilities for recreationists and are possible to use even if the main park entrance is closed. As described in the reply to comment USFS-2, DWR discourages angling at the dam for protection of dam safety, therefore the restroom was removed.

USFS-67 Comment (Attachment 1 pg. 21): *Page 5-330 and 5-331: Cumulative effects – addresses “spillover” onto NFS lands*

- *Page 4-2: “Additionally, recreation uses at the Project can affect user patterns in the SBNF”*
 - *The Forest Service agrees that the Project is affected Forest Service lands and resources.*
 - *Since DWR did not study recreation on the SBNF, focusing the majority of interviews on uses at Silverwood, they have no basis to conclude that recreation effects on NFS lands would be “less than significant”*
- *“Similarly, if Silverwood Lake SRA campgrounds fill to capacity, there could be some spillover to neighboring NFS lands but most users seeking camping opportunities at Silverwood Lake SRA are probably in desire of developed campground experiences rather than primitive camping opportunities.”*
 - *The Forest Service agrees that the spillover likely causes effects.*
 - *The Forest Service disagrees with the assertion that users ‘probably’ desire developed experiences. No information was collected through direct user questionnaires.*
 - *Is there any information available that says people would not be interested in primitive camping at the SRA? How about PCT hikers?*
 - *‘Probably’ – the Study Plan did not interview recreators or those on the highway during a busy weekend to assess their desires*
- *Page 5-330: To reiterate, on pages 5-325 and 5-326 and in other sections previously commented on, the document states how the facilities generally meet the needs of visitors, and here on page 5-330, and in numerous places previously commented, the document states that the park is again at capacity on several weekends, including holiday weekends during the summer and requests for more recreational opportunity will grow in the future. Again, the document seems to try and go both ways in different places, it seems inconsistent.*

“It is anticipated by Hesperia Recreation and Park District staff that new residents will follow similar patterns of the existing high desert communities’ residents in learning to avoid holidays and peak-use weekends and rather choosing to go to Silverwood Lake SRA during off-peak season periods or weekdays.”

- *Most people still work M-F, leaving them the weekends to recreate. While some of these new residents may visit the new local parks, some of them will try to go to the SRA. Some of these “new” SRA visitors will not be able to get into the park and will spill over onto SBNF lands.*

“it is likely that adverse cumulative effects from additional “spill-over” recreation use on the NFS lands would be less than significant.”

- *The Forest Service disagrees with this conclusion. How can this conclusion be made when again, the document states that in the future recreational use will rise on SBNF lands and the SRA, when last year alone the recreational use of the park was up 20%, according to park officials? It can be shown that there are already significant adverse effects from spill-over recreation, including trash, graffiti, improperly disposed human waste, erosion, and damaged vegetation.*

“Providing enhanced recreation use information under DWR’s Proposal and rehabilitating and upgrading existing recreation facilities should help reduce potential cumulative adverse effects resulting from increased use on the National Forest lands as a result of continued operation of the Project combined with residential development projects discussed above.”

- *With more development occurring everywhere in the region, there will be an increase in visitors wanting to get into the park. Rehabilitating and upgrading (without expansion) facilities will not alleviate the capacity issue or the spill-over onto SBNF lands that now occurs. With more potential visitors on the horizon, providing recreation use information might help, but there will still be a portion of the population that will be unaware of the information or disregard it resulting in an increase of spill-over visitors on SBNF lands when the park is at capacity. Working with others (i.e. SBNF) to expand recreational opportunities on or adjacent to the SRA is a needed solution.*
- *Providing more staff to interact and educate visitors would also greatly reduce adverse effects to the surrounding lands and facilities.*

DWR’s Reply: The relicensing efforts to date have documented what is known about recreation uses on the SBNF. The recreation study first and foremost focused on Project recreation, centered on Silverwood Lake. The USFS does not explain how additional detailed information from users on surrounding USFS lands would further inform license conditions beyond the level of detail and type of information on use patterns that was collected and documented in the relicensing studies and analyses to date. There is additionally no basis to assume that most users coming to the Project developed campgrounds, with expectations of developed campground amenities and facilities, would seek out primitive camping experiences if the developed sites were at capacity or no developed camping sites were available within an hour or two drive (particularly for families). Silverwood Lake SRA offers some walk-in camping sites, but no other information in the recreation demand studies reviewed showed much demand for primitive opportunities. Rather, the literature and park ranger interviews indicate that recreationists seeking camping opportunities prefer more developed amenities associated with their camping experience (better availability of trash bins, showers, yurts, cell service, electric service, etc.). Therefore, there is no evidence to believe that

any spillover effects on USFS lands from recreationists not having access to the Project campgrounds are significant now or would be in the future.

USFS-68 Comment (Attachment 1 pg. 23): *Section 5.6 – Land Use and Management*

No information given of the Direct Effect of the project – Highway safety from overflow parked vehicles.

DWR's Reply: See Section 5.5.2 for a discussion on effects of periodic highway backups and highway safety around Silverwood Lake SRA.

USFS-69 Comment (Attachment 1 pg. 23): *Page 5-345: Regarding the Devils Canyon Facilities:*

- *There looks to be some user created unauthorized access across FS lands to the upper end of the penstocks on the Devils Canyon side. Here again, the Project may be attracting unauthorized use by its presence and affiliated infrastructure.*

DWR's Reply: The NFS lands around the Devil Canyon penstocks and surge chamber facilities are public lands and are likely occasionally traversed by recreationists; however, vehicular public access is not allowed. DWR has security and safety plans in place, and monitors facilities regularly to prevent potential problems should they arise.

USFS-70 Comment (Attachment 1 pg. 23): *Page 5-346: "Flooding and erosion that occurs when the vegetative cover has burned off usually follow wildland fires."*

- *Some damage and erosion issues are due to visitors of the SRA creating user created trails and trampling vegetation.*

DWR's Reply: DWR agrees there are documented user created trails leading to Silverwood Lake shorelines from these public roads and has developed a PM&E measure to help manage the dispersed use impacts in these areas.

USFS-72 Comment (Attachment 1 pg. 23): *Section 5.7 – Aesthetic Resources*

Page 5-369: The penstocks and associated concrete are in strong visual contrast with the surrounding greens and browns of the landscape as they descend through Devil Canyon. This is an indication that the EVC is moderately altered to heavily altered (DWR 2018). As such, the facility is not meeting the High SIO set in the SBNF Land Management Plan.

- *This contrast was specifically pointed out in Visual Resources PM&E meetings*

However, these types of structures are common and the public is accustomed to viewing these types of facilities. Further, the visual effect of the Project facilities on the Devil Canyon Powerplant side is mitigated, such that most of the views are bracketed by residential areas that have geometric shapes and light color contrast similar to the

Project facilities. Overall, the geometric shapes of the Project facilities are not as obtrusive when views are framed by residential housing and developments.

- *This point was brought up in the Visual Resources PME meeting and the Forest Service made the comment in the meeting that residences built with the backdrop of the National Forest do not look at the Forest from the standpoint or comparison of other housing developments.*
- *The Forest Service disagrees with this conclusion.*

As part of DWR's proposed Visual Resource Management Plan, DWR, at the time of major rehabilitation of these facilities requiring full re-coating of the penstocks or repainting of the exterior of the powerplant building, will consider using colors and materials that will help these industrial facilities blend into the surrounding landscapes, except for those facilities and/or site components that by Occupational and Safety Health Administration standards are required to stand out. Further, in general, DWR will not use colors that are too dark for Project facilities or components where heating and expansion are of concern.

- *The underlined words indicate that the Licensee could avoid dealing with these visual resource issues if they classified work as either not major, or if they weren't doing a full recoating. Also, by only considering there is not a strong message that this will be done.*
- *Forest Service LMP Standard 9 must be followed: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.*

DWR's Reply: DWR is committed to improving how the facilities blend into the landscape, but recoating the penstocks before the useful life of the current treatment for a small gain in scenery as viewed in the backdrop from distant residential areas is excessive; whereas DWR is committed to treating the penstocks with materials that will better blend into the landscape, as long as the performance, safety, and integrity of the penstock and surge chamber facility can be maintained at the time of rehabilitation. DWR agrees to strike the word "major," with the concept that it would be when the penstocks are in need of re-coating, not prior. The powerhouse, not on NFS lands, would be handled in the same way, when new paint and exterior treatment are needed (for one side or the other). DWR will paint the building with a color that blends into the surrounding landscape to the extent practical. DWR's Visual Resources Management Plan states

Prior to performing scheduled maintenance of Project facilities (e.g., penstocks, powerplant, surge chamber) that affect the color of the facilities (e.g., painting, re-coating), to the extent consistent with the function and safe operation of the facility, DWR will select colors that blend with the natural landscape. If the facility is located on NFS lands, DWR will consult with SBNF regarding the selection of

the color. Further, when Project facilities are replaced or updated, DWR will consult with the SBNF regarding potential visual improvements for the replacement or updated Project facilities.

USFS-73 Comment (Attachment 1 pg. 24): 5.7.3 Unavoidable Adverse Effects

DWR's Proposal, including Measure VR1 (Visual Resources Management Plan), would partially mitigate the existing Project's minor adverse effects. The unavoidable Project effects of continuing views of existing Project structures are considered minor due to the localized nature of the effects and the nature of the visual inconsistencies. In addition, the inconsistencies are considered minor because the public using the areas are generally accustomed to these features and understand the function and purpose of such facilities. Also, the facilities pre-date the Land Management Plan and, in many cases, the steep terrain and industrial design and function of Project facilities precludes other functional options where facilities might fit in the landscape with less visual effect.

- *The statement of predating the Forest LMP is not relevant. The Forest Service manages all uses based on the current LMP.*
- *Forest Service LMP Standard 9 must be followed: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.*

DWR's Reply: DWR believes historical information, which is provided throughout the DLA, is important for context. Notwithstanding historical context, the DLA acknowledges that, on NFS lands, the Project should be consistent to the extent practicable with existing USFS plans and policies. The FLA, as did the DLA, provides relevant historical information and references existing regulations and plans.

USFS-74 Comment (Attachment 1 pg. 24): Section 5.8 –Cultural and Tribal Resources

Page 5-377: Forest Service disagrees with the proposed project boundary. Recreational support and facilities should be within the project boundary. Recreational studies have shown that the public accesses the recreational facilities from State Highway 138 and Forest Service Road 2N33. Where these use access trails lead from these parking areas to the State park lands, these areas should be included within the project boundary.

DWR's Reply: The Project boundary does not need to account for all access routes, although the Project has primary responsibility for maintenance and management of the Project Primary recreation or other roads and trails. The proposed Project boundary includes a buffer surrounding the Silverwood Lake shoreline for oversight and management of recreation uses at the Project. The RMP addresses cooperative efforts to manage recreation in the surrounding lands outside the proposed Project boundary

where DPR and USFS administer and manage use on public lands. Per FERC regulations:

"...the boundary must be located no more than 200 feet (horizontal measurement) from the exterior margin of the reservoir, defined by the normal maximum surface elevation, except where deviations may be necessary in describing the boundary according to the above methods or where additional lands are necessary for project purposes, such as public recreation, shoreline control, or protection of environmental resources" (18 CFR 4.41 [h][2][B][ii]).

DWR is proposing a boundary in many areas that exceeds the 200-foot limit to encompass all Project recreation facilities as well as the most popular dispersed use areas.

USFS-80 Comment (Attachment 1 pg. 26): *Attachment 4: INTEGRATED VEGETATION MANAGEMENT PLAN*

This measure needs to be applied to both the current project boundary and those areas showing direct, indirect, and cumulative effects from the project.

The current plan (Page 4-2) should not be limited to the proposed project boundary but include areas influenced by Project recreation affects. Areas treated and any resulting weed record will need to be collected in a manner that is consistent with the Forest Service NRIS [Natural Resource Information System] TESP [Threatened, Endangered, and Sensitive Plants] database to allow for tracking of control efforts on Forest Service lands.

DWR's Reply: The IVMP in the FLA addresses all direct and indirect Project effects, and cumulative effects consistent with the Project's incremental effect on vegetation, including areas influenced by Project recreation. USFS has not provided to DWR any suggestions regarding which areas USFS believes should be added to the IVMP, or evidence why these areas should be added. As requested, the IVMP in the FLA states that for non-native invasive plant (NNIP) treatment on NFS lands, DWR will provide to USFS information adequate for USFS to include in its NRIS TESP database if USFS provides a list of the needed information to DWR.

USFS-82 Comment (Attachment 1 pg. 26): *Table C.1-1: The 3 special status plants reported are watch list plants. These data need to be collected and provided to the Forest in a manner consistent with adding them into our NRIS TESP database.*

Weed records will need to be collected in a manner conducive to the Forest Service inputting the records into NRIS and being able to track control efforts on Forest Service lands.

DWR's Reply: The IVMP in the FLA states that for plant surveys and NNIP treatment on NFS lands, DWR will provide to USFS information adequate for USFS to include the information in USFS' NRIS TESP database if USFS provides a list of the needed information to DWR.

USFS-84 Comment (Attachment 2 pg. 1): *Wildlife Species*

The Licensee incorrectly determined the upstream extent of endangered arroyo toad critical habitat in the West Fork Mojave River and did not survey appropriately for the species. Likewise, the Licensee did not survey outside their proposed project boundary for AIS biota and botanical species, as asked for by Forest Service study requests to the PAD. No conclusions can be drawn about the impacts of the Project in these tributaries to the Silverwood Lake because the licensee did not collect information, as asked for by Forest Service study requests to the PAD.

DWR's Reply: See response to USFS-20 (Attachment 1). DWR conducted a reconnaissance survey of the West Fork Mojave River, between the Highway 173 bridge immediately downstream of Cedar Springs Dam and the Mojave Forks Dam, in November 2018. Aquatic invasive species observed during the survey were recorded and are provided in Section 3.2.4 in Appendix G of Exhibit E to the FLA. Additional botanical / NNIP data outside the Project boundary in the adjacent areas were collected during surveys, but were not included in the FLA.

USFS-85 Comment (Attachment 2 pg. 1): *The Licensee concluded that stocked "fish in Silverwood Lake could, under some conditions, enter the tributaries" (Exhibit E, Section 4.2) and that recreation activities have "the potential to spread AIS." (Section 5.3.2.3) The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.*

DWR's Reply: See response to USFS-19.

USFS-86 Comment (Attachment 2 pg. 1): *On page 5-145, the Licensee concludes that non-native fishes and AIS are unlikely to have a significant effect. The Forest Service disagrees with this conclusion.*

DWR's Reply: USFS has not provided any evidence to support its conclusion.

5.0 CDFW COMMENTS

CDFW-1B Comment (pg. 4): *Measure AR-2 states that DWR will implement the Aquatic Invasive Species Management Plan (Appendix A Attachment 3 - Aquatic Invasive Species Management Plan) to prevent the introduction and spread of aquatic invasive species. The list of aquatic invasive species of concern within the Management Plan includes species known, or with the potential, to occur in the Project, including: cyanobacteria; aquatic plants (curly leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), coontail (*Ceratophyllum demersum*), and sago pondweed (*Potamogeton pectinatus*)); reptiles (red-eared slider (*Trachemys scripta elegans*)); and fish (Shimofuri goby (*Tridentiger bifasciatus*) and Inland silverside (*Menidia beryllina*)).*

*In addition, other AIS that have a known risk of being introduced to Project impoundments and may be added if they are suspected or reported to occur in Project impoundments include: aquatic plants (hydrilla (*Hydrilla verticillata*), water hyacinth (*Eichhornia crassipes*), and parrot's feather milfoil (*Myriophyllum aquaticum*)); amphibians (American bullfrog (*Lithobates catesbeianus*) and African clawed frog (*Xenopus laevis*)); and crustaceans (red swamp crayfish (*Procambarus clarkii*)). Contrary to these findings, the Plan only identifies measures for 2.2.1.1 Quagga and Zebra Mussels (Section 2.2.1.1), Cyanobacteria Blooms (Section 2.2.1.2), and Taste and Odor Algal Blooms (Section 2.2.1.3).*

DWR's Reply: DWR has added language about the additional AIS identified by the CDFW. Under the introductory section of the AIS plan (Section 1.4.2), DWR calls out species and their known management techniques and strategies. At this time, there is no effective management for bullfrogs, African clawed frogs, Asian clams, red eared sliders and channeled apple snails. Techniques for plant management will vary, depending on the species, but none are known for the invasive plant species currently known on the Project. However, DWR put a provision in the AIS plan to update it, should any new AIS be located on the Project or if effective management techniques are developed for any of the known species.

CDFW-3 Comment (pg. 5): *Within the Integrated Vegetation Management Plan (Section 2.2 Non-Native Invasive Plants Within Project Boundary), it states: "Surveys for target NNIP were completed in 2017, along with a comprehensive and systematic botanical inventory, within the Project boundary (where accessible) in support of the Project relicensing. A total of 177 occurrences of 13 target Non-Native Invasive Plan (NNIP) species were observed during field surveys. **For occurrences that extended beyond the Project boundary, attributes of the entire occurrence, including estimated numbers of individuals and acreage, were recorded [emphasis added]."***

*Furthermore, "Where contiguous NNIP occurrences extend **beyond the Project boundary by up to 50 feet [emphasis added]**, DWR, DPR, and USFS (when also on*

NFS lands) will coordinate at the annual agency consultation meeting to develop a schedule and identify the appropriate level of control measures for existing populations of target NNIP populations that are in areas where there is a high potential for disturbance and/or dispersal to areas beyond the existing occurrence. This may include plans to cooperatively manage existing known target NNIPs."

CDFW agrees that the NNIP should extend beyond the project boundary, particularly given nonnatives invasive nature and the project encompasses headwaters within the watershed. However, CDFW would like to better understand why a 50-foot threshold was chosen before any coordination and nonnative remediation measures are taken.

DWR's Reply: As requested, DWR has updated the IVMP in the FLA to better identify that the 50-foot threshold used during the 2017 botanical surveys was based on a visual threshold.

CDFW-7 Comment (pg. 7): *The proposed changes to the project boundary are based on "DWR's current and historic use of land for the Project, DWR's comprehensive review of facilities, operations, and land information to date, and additional new information and data available for facilitating a more refined boundary delineation. The most significant change in the delineation is the use of a 100-foot buffer from Silverwood Lake's NMWSE to define the proposed Project boundary around portions of the lake, which reduces the land area considerably on the eastern, western, and southern side of Silverwood Lake" (Draft License Application Exhibit A - Project Description 6.0 Proposed Changes to the Project Boundary).*

CDFW requests copies of the additional new information and data used to select a 100-foot buffer from Silverwood Lake's NMWSE to define the proposed Project boundary.

DWR's Reply: DWR's rationale for its proposed Project boundary, including the 100-foot buffer from Silverwood Lake's NMWSE, is provided in Exhibit G in the FLA.

CDFW-14 Comment (pg. 11): *The bald eagle is a fully protected species that may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock (Fish & G. Code §§ 3511, 4700, 5050 and 5515). Also, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto (Fish & G. Code § 3503), as well as, in orders Falconiformes or Strigiformes (birds of prey) (Fish & G. Code § 3503.5). Finally, Appendix B - Project Operations and Resource Utilization (Section 4.3.5.1 Vertebrate Pest Management) states that "DWR implements rodent control as needed in facility interiors using non-restricted rodenticides, which are applied in accordance with the label instructions. Rodent control occurs within the Devil Canyon Powerhouse". Predatory and scavenging birds, like the bald eagle, can eat dead or dying rodent and thus, become poisoned. This can also include using strychnine and other poisons to control mice, rats or ground squirrels within recreational areas (e.g. camping). Therefore, CDFW strongly encourages non-chemical pest control methods and if pesticides are used, follow all label directions.*

DWR's Reply: DWR has updated the IVMP in the FLA to include the use of non-chemical herbicides and pesticides where practicable (please see section 5.1).

Attachment 1

FERC DLA Comment Letters

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United States Department of the Interior

NATIONAL PARK SERVICE

Pacific West Region

333 Bush Street

San Francisco, CA 94104



July 5, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC. 20426

Electronic Filing

RE: National Park Service's (NPS') comments on the Draft License Application (DLA) for the Devil Canyon Hydropower Project (P-14797)

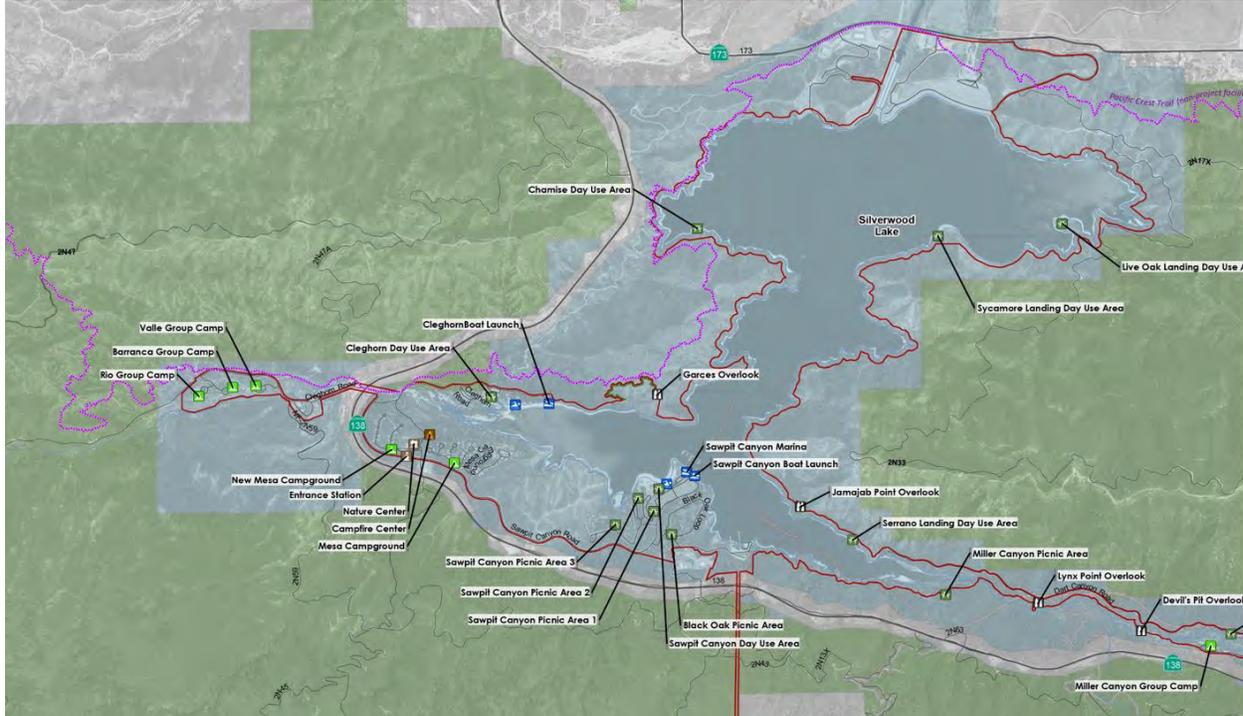
Dear Ms. Bose:

The NPS's Hydropower Assistance Program, Pacific West Region offers the following comments on the Devil Canyon Hydropower Project DLA (P-14797). The DLA did not include the draft Recreation Management Plan (DRMP). However, the licensee shared the DRMP with NPS and other stakeholders. Our comments address both the DLA and DRMP.

The NPS has authority to consult with FERC and applicants concerning a project's effects on outdoor recreation resources under the Federal Power Act (18 CFR 4.38(a), 5.41(f)(4)-(6), and 16.8(a)); the Outdoor Recreation Act (Public Law [PL] 88-29), the NPS Organic Act (39 Stat. 535), and the Wild and Scenic Rivers Act (PL 90-542). It is the policy of the NPS to represent the national interest regarding recreation, and to assure that hydroelectric projects subject to re-licensing recognize the full potential for meeting present and future public outdoor recreation demands, while maintaining and enhancing a quality environmental setting for those projects. Investigating opportunities to improve the recreation experience is consistent with the NPS policy and FERC guidelines to identify future potential recreation needs.

Silverwood Lake State Recreation Area (SRA) is a popular outdoor recreation area within southern California, not far from some of the largest population centers in the country, and is thus exposed to high visitor use pressure. It reaches well above capacity by 9:30 am on busy weekends and holidays, which leads to having to close the SRA to users. The 9,365.5-acre Tapestry master-planned development project, which will consist of 15,540 residential units' means that eventually approximately 50,000 people will be living directly adjacent to Silverwood Lake SRA.

Six miles of the Pacific Crest National Scenic Trail (PCT) are located within the Project boundary and NPS is concerned about potential project-related impacts. While the PCT is not managed by the State, activities stemming from Project-related facilities have a direct impact on the trail.



Project area map showing the PCT

The NPS is concerned about the Department of Water Resources reduction of the Project Boundary. It is mentioned as a "slight" reduction, but it is actually much more significant than that; it is approximately a 45% reduction in acreage. The NPS requests that the current boundary remain the same and would like more information on what recreation facilities including the PCT would be partially or fully removed from the boundary.

Recreation facilities and opportunities have to be maintained, as they currently exist despite the boundary reduction. Also, there are no numbers for recreational use of the Pacific Crest Trail. This issue was brought up by the NPS and PCTA and we would like to see it addressed. We understand that it is not considered a project facility, but it is inside the current boundary and definitely has use related to the project.

The DRMP introduction section mentions recreation displacement on USFS lands but specifically says that the DRMP will only be looking at project facilities. This very limited view of project related impacts is a common theme in the DRMP. The Silverwood website even mentions USFS and the PCT as areas people can utilize.

The DRMP seems to imply that recreation spillover is an indirect effect which is certainly not the case. The USFS is the first responder to all incidents involving recreationists who are there for project related recreation and people are accessing Silverwood directly from USFS lands. At the 5-29-19 meeting in Arcadia, CA the licensee and their consultants Stantec committed to revisit the introduction to make it more open to dispersed use impacts on the PCT and USFS lands and rewrite the description of coverage to include other recreation outside the project boundary.

Other issues are public safety, enforcement, highway parking and people using USFS lands adjacent to the highway as staging areas for access to the SRA even though these lands are not designed or managed for this type of use. The SRA experiences high visitor use pressure and regularly reaches capacity by 9 a.m. on busy weekends, which leads to closure. The result is that visitors end up parking on the highway waiting to enter when other visitors leave. The USFS and the licensee need to address compensation and the development/management of formal staging areas. The consultant for the Department of Water Resources, Stantec, has committed to make project related impacts on USFS land more clear in the final RMP.

The PCT crosses highway 138 within the project boundary and the amount of traffic there is solely because of project related recreation and is a danger to hikers. StanTec and the licensee have committed to addressing this in the final RMP. Some ideas have been discussed such as a crosswalk with triggered lighting or even a pedestrian overpass.

The DRMP specifically indicated that it is only looking at day use facilities within the project. However, project recreationists frequently utilize USFS and PCT facilities. Also, the DRMP only seems to recognize “brick and mortar” facilities such as bathrooms, picnic table, boat ramps, etc. We have a broader understanding of facilities; trails and undeveloped recreation areas need to be addressed as well. StanTec has committed to updating the DRMP to include USFS and PCT facilities as more broadly defined.

The DRMP also talks about “project roads entirely on state land.” This seems to be excluding roads used for recreation access and solely focusing on roads to non-recreation project facilities. The Licensee needs to revise the DRMP to include roads to recreation project facilities, StanTec agreed to revise the language to reflect this.

The litter control plan needs to include the PCT. StanTec has made assurances that the DRMP, as outlined, would include the PCT. However, the DRMP needs to be updated to clarify the litter plan includes the PCT.

The DRMP also does not address user created trails on USFS and State land where people are accessing project recreation facilities from highway 138 and the PCT. The final draft of the RMP needs to include this and long term monitoring.

Also, visitor services, safety and signage need to be expanded beyond state lands because of the nature of this recreation area and its significant overflow onto USFS lands. The final RMP needs to look at ways to partner with the City of Hesperia, Cal Trans and the USFS on this.

Thank you for the opportunity to comment on the Devil Canyon DLA and DRMP. If you have any questions, please contact Steve Bowes at 415-623-2321 or Barbara Rice at 415-623-2320.

Sincerely,

A handwritten signature in cursive script that reads "Barbara Rice".

Barbara Rice
Program Manager
Rivers, Trails and Conservation and Hydropower Assistance Programs



July 8, 2019

Ms. Kimberly Bose
Secretary, Federal Energy Regulatory Commission
888 First St., NE
Washington, D.C. 20426

RE: Pacific Crest Trail Association Comments in Response to Draft License Application (DLA), for the Devil Canyon portion of the State Water Project, proposed Federal Energy Regulatory Commission (FERC) Project P-14797, San Bernardino County, California

Dear Ms. Bose,

I am writing on behalf of the 13,300 member Pacific Crest Trail Association (PCTA). PCTA is the Forest Service's primary private partner in the management and maintenance of the Pacific Crest National Scenic Trail (PCT). The foundation for this private-public partnership in the operation of National Scenic Trails dates back to the 1968 National Trails System Act. Section 11 of the Act, titled "Volunteer Trails Assistance" states in Sec. 11(a), "... the head of any Federal agency administering Federal lands, are authorized to encourage volunteers and volunteer organizations to plan, develop, maintain, and manage, where appropriate, trails throughout the Nation." Sec. 11(b) continues, "Each Secretary or the head of any Federal land managing agency, may assist volunteers and volunteer organizations in planning, developing, maintaining, and managing trails." As such, it is PCTA's role to work with the Forest Service to ensure the best possible management of the PCT and the experience it affords trail users, year-round. As you may be aware, PCTA, California State Parks and the San Bernardino National Forest have a strong partnership with the management and maintenance of the PCT.

In addition to the National Trails System Act which designated the PCT as one of the nation's first National Scenic Trails in 1968, the PCT Comprehensive Management Plan and the aforementioned strong partnership, the US Forest Service, National Parks Service, Bureau of Land Management, California State Parks and PCTA established a Memorandum of Understanding (MOU) in 1993. This agreement recognized the PCTA as the major partner of these agencies for the PCT. The MOU, which was updated and resigned in 2015, facilitates the management of the trail, coordinates the development and distribution of educational materials and encourages volunteer involvement. This collaborative partnership produces outstanding on-the-ground results and contributes to the long-term sustainability of the PCT. It is through this collaboration that we help the California State Parks and the Silverwood State Recreation Area in their mission "to provide for the health, inspiration and education of the people of California by helping to



preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation." Nowhere is this more true than on the Pacific Crest Trail.

I have reviewed the Draft License Application (DLA) and we understand the purpose and need for the project. However, we do believe that the project's analysis does not sufficiently address the PCT and the experience the trail is intended to provide. We feel that with a more sufficient analysis and due consideration given to the PCT, the project can better meet its purpose and needs while still protecting the PCT experience. It's in the spirit of partnership that we provide the following comments.

Although the PCT is not considered a project facility, it is currently impacted by and will potentially be even more significantly impacted the project. With the passage of the National Trails System Act, Congress provided clear direction for the experience the PCT should provide. Specifically in Sec. 3 (a) (2) "National scenic trails, established as provided in section 5 of this Act, which will be extended trails so located as *to provide for maximum outdoor recreation potential* [emphasis added] and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." And in Sec. 7 (c) "Other uses along the trail, which will *not substantially interfere with the nature and purposes of the trail*, [emphasis added] may be permitted by the Secretary charged with the administration of the trail. Reasonable efforts shall be made to provide sufficient access opportunities to such trails and, to the extent, practicable, efforts shall be made to avoid activities incompatible with the purposes for which such trails were established." As the DLA is currently written, the project does and will continue to substantially interfere with the nature and purposes for which the trail was designated.

As stated above, the analysis and documentation of the project's impacts on the PCT are incomplete and insufficient in that the PCT doesn't appear on all the appurtenant maps and figures. We also have concerns about the methodology used in the recreation study, the lack of data collected for the PCT which does not include user statistics for the PCT and the SRA. Our comments below will provide specifics.

I have provided comments on the DLA and associated reports, studies, figures and tables. I tried to provide context for our comments by providing headings and quotes from the document followed by our response.

Exhibit A – Project description

Table 5.4-1 List of Primary Project Roads DWR Proposes to Add to the Project

The following roads are designated to be added to the project:

- Dam and Spillway Access Road
- Dam Downstream Face Access Road
- Spillway Access Road
- Intake Access Road

Given a lack of map to understand where these are specifically proposed and given the PCT has been left off of multiple maps in the accompanying documents and studies, it's impossible to assess if these road will have an impact on the PCT, the extent of that impact and how to mitigate those impacts.

6.0 Proposed Changes to the Project Boundary

“The net effect of modifying the existing Project boundary is the reduction of area within the boundary from 3,744.0 acres to 2,079.4 acres. This change would reduce the 221.0 acres of federal land (approximately 6 percent of the total area within the existing Project boundary) to 126.0 acres of federal land (approximately 6 percent of the total area within the proposed Project boundary). Table 6.0-1 shows DWR’s proposed changes to the existing Project boundary.”

It should be noted that this is a 44.4% reduction in the size of the project and that neither that number nor that calculation is reflected in the text or table. It is still unclear as to why such a significant reduction is appropriate. Although this reduction reflects the minimum footprint of the project, it's evident that the project impacts the viewshed and recreation experience as reflected in the current project boundary and beyond.

Exhibit B – Project Operations and Resource Utilization

4.1.5.4 MWA and DWR 1982 Water Agreement

“MWA’s 1982 agreement with DWR States:

Current operation of Cedar Springs Dam provides for the release of water, which originates in the watershed tributary thereto, from the dam at the same rate as the inflow to Silverwood Lake.”

The Cedar Springs Dam and associated spillway and the project facilities force the PCT location to go through the laydown, maintenance and storage yards for DWR and push the trail out on to Highway 173. This creates a PCT experience that is incompatible with the nature and purposes for which the trail was congressionally designated. As stated earlier in this document, Congress provided clear direction for the experience the PCT should provide as cited in above from Sec. 3 and 7 in the National Trails System Act. Specifically, the project activities and facilities do, “substantially interfere with the nature and purposes” of the PCT. Additionally, routing PCT hikers, and especially equestrians, along Highway 173, does not provide a safe walking or riding route. Forcing equestrians to travel along a highway with fast moving vehicle traffic is dangerous.

4.3.5.2 Road Maintenance

“Regular inspection of the Project access roads occurs during the course of day-to-day Project activities. Road maintenance on Project and shared roads occurs as needed. Maintenance generally includes, but is not limited to, the following types of activities: debris removal; filling potholes; grading, sealing, and surfacing; maintenance or replacement of erosion control features (e.g., culverts, drains, ditches, and water bars); repair, replacement, or installation of access control structures such as posts, cables, rails, gates, and barrier rock; and repair and replacement of signage. Vegetation management may be conducted concurrently with road maintenance.”

Given a lack of map to understand where these Project access roads are and given the PCT has been left off of multiple maps in the accompanying documents and studies, it's impossible to assess if the maintenance of these roads will have an impact on the PCT, the extent of that impact and how to mitigate those impacts. As this aspect of the analysis is insufficient, it should be reanalyzed and documented to provide a clear understanding of the potential impacts to the PCT. Further, this lack of documented analysis does not allow the general public to fully understand and respond on behalf of the PCT.

4.3.5.3 Facility Painting

“DWR paints the exterior of Project facilities, including the powerhouse and ancillary facilities as needed.”

Given that there is or will be a Visual Resources Plan, the following text should be added to the above statement “in accordance with the Visual Resources Plan.” In addition, the SBNF LMP Forest Specific Design Criteria Standard 7 “Pacific Crest National Scenic Trail - Protect scenic values in accordance with adopted scenic integrity objectives. Protect foreground views from the footpath, as well as designated viewpoints. Where practicable avoid establishing unbecoming land uses within the viewshed of the trail” must be followed. Compliance Forest Service LMP Standard 9 “Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map” is necessary. The SBNF SIO for the lands adjacent to the Project, as they wouldn't have SIO's for state lands, is classified as “high”. The “High” SIO is defined as, “provides for conditions where human activities are not visually evident. This refers to landscapes where the valued (desired) landscape character “appears” intact. Deviations may be present but must repeat the form, line, color, texture, pattern and scale common to the landscape character. The landscape appears unaltered. This is synonymous with the Retention Visual Quality Objective under the original Visual Management System.”

We understand that the current alignment of the trail passes through a developed facility however, smoothing the transition between the developed and undeveloped areas by making all necessary efforts to mitigate the visual impacts is justified.

4.3.5.4 Recreation Facilities Maintenance

“Maintenance of recreation facilities is conducted by both DWR and the California Department of Parks and Recreation. Maintenance activities include activities to support recreation development and use and include maintaining parking areas, lawns, restrooms, lights, water, power, shelters, and picnic/campground equipment.”

Given that Maintenance activities are defined by above passage as “activities to support recreation development and use and include maintaining parking areas, lawns, restrooms, lights, water, power, shelters, and picnic/campground equipment.” It is evident that the facilities used to manage and make sure these maintenance activities can be accomplished, should be considered as part of the project. This includes the Park Administrative offices, which are not considered part of the project but should be. These offices are visible from the PCT. To meet SIO’s for the trail, SBNF Standard 7 and Forest Service LMP Standard 9 including these offices and providing mitigation so that they repeat in form, line, color, texture, pattern and scale common to the landscape character is necessary for compliance.

5.0 DWR’s Proposed Project Operations

Aesthetics

“Measure VR1 - Implement the Visual Resources Management Plan included in Appendix A of Exhibit E, that includes measures to reduce the visual contrast of some Project facilities.”

This project needs licensing from the Federal Energy Regulatory Commission. Executive Order 13195, “Trails for America in the 21st Century” states: “Section 1. Federal Agency Duties. Federal agencies will, to the extent permitted by law and where practicable—and in cooperation with Tribes, States, local governments, and interested citizen groups—protect, connect, promote, and assist trails of all types throughout the United States. This will be accomplished by: (b) Protecting the *trail corridors* [emphasis added] associated with national scenic trails and the high priority potential sites and segments of national historic trails to the degrees necessary to ensure that the values for which each trail was established remain intact;”

In order to provide for the values for which the PCT was established, measures to reduce the visual contrast for all Project facilities should be utilized.

Exhibit D – Statement of Costs and Financing

11.0 Other Project Benefits

11.1 Recreation

“In addition to being popular with boaters and anglers, Silverwood Lake and its surrounding shoreline, which make up the Silverwood Lake State Recreation Area (SRA), are popular with swimmers, campers, hikers, bikers, and picnickers, particularly during the summer months. Silverwood Lake SRA recreation facilities include: campgrounds, a nature center, picnic areas, boat launches, a marina, and swim beaches.”

Note that this section calls out that the SRA is popular with hikers but doesn't list any hiking trails in their recreation facilities. The SRA website does encourage hikers to use the PCT in the park. Given the PCT is the main hiking trail in the SRA, that the recreation study was not conducted on the PCT and not conducted during peak PCT use time, it should be noted that the PCT provides a significant recreation benefit to the Project.

Exhibit E – Environmental Report

4.2 Geographic Scope for Analysis of Cumulative Affected Resources.

“For recreation resources, the geographic scope extends from the lands of the SBNF to Hesperia Recreation and Parks District jurisdiction to the north. Recreation uses at Silverwood Lake can affect uses and conditions on the PCT leading through this area. Additionally, recreation uses at the Project can affect user patterns in the SBNF, in Hesperia regional and local parks, as well as the Mojave Forks recreation area.”

This section acknowledges that the project can affect uses and conditions on the PCT within the project area and in the adjoining SBNF lands that contain the PCT. In no project document, study or plan is the project impact calculated, quantified or extrapolated for the future. Further there is no mention on how that impact will be managed or mitigated.

As this is a Federal License Application that has a Congressionally designated and Federally managed trail running through the project, adherence to the Federal Land Management Plan is necessary. In the “Cumulative Effect” Section, the SBNF Land Management Plan states “Landscape cumulative effects are more pronounced in foreground situations and less so in the background. The most sensitive landscapes are those that are visible from urban settings, along popular travel routes, or that provide high-elevation recreation settings.” Given that impacts are more pronounced in the foreground, somewhere in this license package should be studies and measures to address these impacts such as a viewshed analysis.

4.4.2 Reasonably Foreseeable Future Actions

“DWR anticipates that recreation on the SBNF and on non-Project portions of the Silverwood Lake SRA will continue to increase.

Just north of the Project in Hesperia, the proposed Tapestry development is a phased project that has construction planned for the next 30 years. There are currently 15,663 dwelling units, or homes, proposed in the Tapestry Specific Plan, and over 350.0 acres in parks and recreation development. Not all the development is necessarily foreseeable, but some level of development under the Tapestry plan is reasonably foreseeable.”

An increase in recreation on adjacent and non-project portions of the SRA are anticipated but never addressed via management or mitigation in the draft recreation plan. As the draft plan is not yet ready to be considered and commented on, it’s critical that it be addressed. From the meetings which DWR has hosted, it seems as if it is not going to be addressed in the Recreation Management Plan. The same holds true for the Tapestry development.

5.5.1.1 Recreation Opportunities in the Project Region

“Other nationally recognized recreation resources in the region include the PCT, which traversed the Project area adjacent to Silverwood Lake.”

It’s misleading and underrepresents the PCT to say it’s “in the region”. The PCT is a significant recreation facility within the current and proposed project boundary. Additionally, the PCT is not just a “nationally recognized” resource, but as detailed above, it is a nationally designated resource; and, under Forest Service direction, is to be managed as a “designated area.”

Pacific Crest National Scenic Trail

“The PCT is a designated National Scenic Trail” should be corrected to read “The PCT is a Congressionally designated National Scenic Trail.”

Table 5.5-1 Devil Canyon Project Recreation Facilities and Capacities

There is no mention or designation of the equestrian camping facility. It should be included.

Rio Group Camp

In the text about the camp where it lists amenities at the site, it should mention the equestrian amenities available as it mentions every other amenity at the campground.

Chamise Day Use Area

“Overall, this facility is in good condition. There are user-made trails in poor condition connecting the site to pullouts on State Highway 138 and connecting the facility to the PCT.”

It’s concerning that the evaluation of the facility is that it’s in “good condition” yet, there are user-made trails that are identified as in poor condition that are connecting the Project facility to a non-project facility. This has a negative impact on the PCT creating more erosion and increasing the need for maintenance in these areas.

5.5.1.3 Recreation Demand and Use

San Bernardino National Forest

“There is not much equestrian use of the PCT, but equestrian users sometimes park on the side of State Highway 138 and head south into the national forest.”

It should be noted that no studies or interviews were conducted on the PCT during peak user season and there are no studies to indicated what level of equestrian use this section of the PCT supports. As I’ve noted in this letter, there are equestrian facilities at the SRA however, this is not widely known. Once the equestrian community is aware of these facilities, there might be more use than unknown current levels. Providing sufficient and safe access for equestrian users needs to be more thoroughly addressed in the Project planning.

As a case study, during the recent DWR Dam Reconstruction Project at Lake Perris State Recreation Area, DWR took the initiative and improved equestrian access (along with other recreation access like hiking), safety and recreation opportunities. This resulted in increased levels of equestrian use. Although the Lake Perris Dam Reconstruction project was not a FERC project, DWR rerouted an equestrian and multi-use trail onto DWR operations facilities (i.e. maintenance road, outlet tower and the top of the Dam). DWR, with the cooperation of California State Parks at Lake Perris State Recreation Area, improved recreation opportunities by making an existing out and back trail into a loop trail experience around the lake. This improvement facilitated the elimination of a dangerous, steep and unmanageable equestrian and hiking trail, thus increasing safety and the recreational experience. We want this same due consideration for the safety of recreationists for the PCT in the Devil Canyon project. If this consideration is not given, an explanation should be provided.

5.6.1.2 Wild and Scenic River, and Other Land Use Designations

“As described in Section 5.5, Recreation, the PCT is located along the north and west shores of Silverwood Lake. USFS manages the PCT, the only nationally designated trail in the Project area, in partnership with the NPS, BLM, DPR, and the PCTA.” It should again read “the only Congressionally designated trail”.

5.7.1.2 Pertinent Management Plans

State Water Project Architectural Motif

- “8. Landscaping is appropriate for:
- Screening of unsightly areas”

This plan component is in direct conflict with the San Bernardino National Forest Land Management Plan (SBNF LMP), which is referenced in 5.7.1.2 in that in Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations specifically states “Cell and communication sites, as well as other utilities should conform to Scenic Integrity Objectives by siting color and shape of structures without complete dependence on vegetation; site installations should also be sufficiently hardened to survive

wildland fire burn-over and continue operations without removal of surrounding vegetation or structural protection.”

5.7.1.3 Scenic Resources at Project Facilities

Cedar Springs Dam, Spillway and Associated Facilities

“These Project facilities all present visual contrast to the natural setting that results in EVCs that are rated from low to very low (refer to Figures 5.7-3 and 5.7-4) (DWR 2018). This is due to the strong white color of the rock-covered dam and very smooth texture of the light-colored concrete spillway in contrast to the tans and grey greens of the soil and vegetation of the high desert. In addition, both of these features have defined geometric shapes that contrast with the natural irregular shapes of the landscape. While not part of the Project, the Mojave Siphon Powerplant west of the spillway and the laydown, maintenance and storage yards east of the spillway are in the same viewshed and add similar visual contrast issues. There are Project roads associated with the dam and spillway that present visual contrast, depending on the viewpoint, but overall the contrast is light to moderate.”

In the “Effects on Landscape Management” Section, the SBNF Land Management Plan states “Under 36 CFR 219(f), the scenic resource is to be evaluated for each alternative, addressing the landscape's attractiveness and the public's visual expectation. Scenic integrity objectives (SIOs) are assigned to land areas. Alternatives will be compared using changes in the assigned scenic integrity objectives, the projected changes in scenic attractiveness and the projected visibility of landscape alterations.” The visual resources in this section of the trail can be improved either by mitigation to existing impacts or possibly by relocation or re-alignment of the trail in a similar fashion to how they eliminated the impacts to the recreation trail at Lake Perris State Recreation Area as noted above.

Recreation Facilities

“... facilities being screened by vegetation and having little visual contrast with the natural landscape.”

As noted previously, this is not consistent with the direction in the SBNF LMP, Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations, vegetation cannot be relied upon to mitigate visual impacts by screening.

Figure 5.7-7 Saw Pit Canyon Boat Ramp, Marina, Swim Beach, Parking, and Water Intake Facility Viewed from KOP 19 on the PCT Looking Southeast.

“The Sawpit Boat Launch and Sawpit Canyon Marina are the most visible facilities from the PCT and State Highway 138 due to the light color of the docks, buildings, and boats, as well as the many lines and geometric shapes that strongly contrast with the blue water and the green vegetation nearby. While the marina presents strong visual contrast, recreation users know what the facility is and expect to see these shapes and colors.”

The tunnel intake structure is obtrusive to the viewshed and is not consistent with an SIO of High. To mitigate the impact to the viewshed, the tunnel intake and associated structures should be painted or stained in a more visually conducive color. This would improve the recreation experience and protect visual resources for the SRA and PCT. Additionally, it would be consistent with the effort to attain the High SIO classification as “deviations may be present but must repeat the form, line, *color*, [emphasis added].”

Group Campground Facilities

“are generally well screened by vegetation as viewed in foreground from the PCT.” As noted previously, this is not consistent with the direction in the SBNF LMP, Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations, vegetation cannot be relied upon to mitigate visual impacts by screening.

“From NFS lands on the PCT, metal corral fencing is visible in foreground and presents moderate visual contrast due to the light gray color, lines, and geometric shapes that contrast with the surrounding vegetation.”

With proper Natina treatment, the metal corral fencing could have virtually no impact to the visual resources while still completely providing for the recreation facility.

5.7.2 Effect of DWR’s Proposal

“However, the Visual Resource Management Plan would implement measures to enhance the interpretation of these Project facilities (entirely situated on State lands) as viewed from the PCT by installing an interpretive sign along the PCT near the location (also situated on State lands) where the Cedar Springs Dam complex is first viewed by PCT users. The interpretive sign would explain the size and purpose of the Project, including where the water is coming from and going to. DWR would consult with USFS and the PCTA on the location and details related to the interpretive sign.” The PCTA would not be in favor of an interpretive sign as it will add to an already busy viewshed

“This measure does not lessen the existing visual contrast of these Project facilities; however, it is impractical to significantly mitigate the visual contrast due to the combination of the shape, design and coloration of these critical hydroelectric facilities.”

In keeping with the National Trails System Act, specifically in Sec. 3 (a) (2) and because the Project facilities necessitated the trail being located on Hwy 173, it’s both practical and prudent for DWR to work with the SBNF and PCTA to find ways to make the trail more enjoyable and safer for hiker and equestrian users.

Exhibit E – Visual Resources Management Plan

2.1.1 Cedar Springs Dam, Spillway and Associated Facilities

This section of the plan has many figures showing the viewshed from the PCT. It is evident from these figures that at many points, the PCT doesn't meet the SIOs determined for it by the SBNF LMP. It's also clear that there will be some visual impacts from the project. According to Executive Order 13195 "Trails for America in the 21st Century" what is necessary is protection of the trail corridors associated with national scenic trails "to the degrees necessary to ensure that the values for which each trail was established remain intact."

Since avoidance of the impact is not an option, mitigation is considered. For the viewpoint represented in 2.1-1, 2.1-2, and 2.1-3 it is clear that onsite mitigation has little to no positive impact and hence relocation of the trail to avoid these impacts and improve visual resources should be considered.

2.1.2 Project Recreation Facilities

Figure 2.1-6. Sawpit Canyon Boat Ramp and Marina as Viewed from the PCT

The tunnel intake structure is obtrusive to the viewshed and it would improve the recreation experience and visual resources for every SRA and PCT user if that were painted or stained in a more visually conducive color.

There is also mention that the group camps "are generally well screened by vegetation as viewed in the foreground from the PCT and Cleghorn Road." To reiterate, this is not consistent with the direction in the SBNF LMP, Appendix B – Program Strategies and Tactics of the SBNF LMP, Lands 2 – Non-Recreation Special Use Authorizations, vegetation cannot be relied upon to mitigate visual impacts by screening.

Figure 2.1-9 Rio Group Campground as Viewed from the PCT

Although only a photo and not text, the metal corral fencing is visible from the PCT. With proper Natina treatment, the metal corral fencing could have virtually no impact to the visual resources while still completely providing for the recreation facility. The fencing should be treated to avoid impacting the viewshed.

3.0 Proposed Protection, Mitigation, and Enhancement Measures

"Within a year of license issuance, DWR will install and maintain an interpretive sign that describes Cedar Springs Dam, its role in the Project, its history, and an overview of the SWP." The document goes on to indicate that PCTA would be consulted to determine the specifics of the sign however, we would not want interpretative signage for this project as it adds to an already busy viewshed. Further, as stated in section 5.7.2 of the document "this measure does not lessen the existing visual contrast of these Project facilities" and should not be considered as a protection, mitigation or enhancement measure.

Transportation System Management Plan

1.1.1 Brief Description of the Project

“Under the new license, DWR proposes no modifications to existing Project facilities, and a slight modification to the existing Project boundary.” It is inappropriate and misleading to quantify a 44% reduction of Project lands as a “slight modification.” See our comments under Exhibit A: 6.0 Proposed Changes to the Project Boundary for further elaboration.

2.1.1.4 Cedar Springs Dam and Cedar Springs Dam Spillway Down Stream Face of Cedar Springs Dam

“In addition, the fence limits the view of the dam face to Pacific Crest Trail hikers.”

This makes it sound like the fence is a benefit to PCT users, when in fact it just substitutes looking at the dam for looking at a fence. It’s a substitution of impacts, and not a net benefit to trail users.

“The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the ‘Dam Downstream Face Access Road’.”

This segment of the document and specifically this sentence, confirm that the PCT has to do a road walk because of the Project. As previously noted in this letter, walking a road does not “provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass” as stated in Sec. 3 (a)(2) of the National Trails System Act. For this reason, mitigation that creates a positive benefit for the trail must be provided. This might include realigning or relocating the trail to a better location as provided for in the USFS Planning Documents “Optimal Location Review Process Guidelines”

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5368489.pdf

Recreation Facilities Condition Assessment Approach Field Results and Data Summary

This document noted “Observation surveys were conducted during the peak recreation season. The surveys include data from weekdays (6/6/17- 6/8/17 & 7/13/17), weekends (8/19/17 – 8/20/17) and Labor Day holiday weekend (9/2/17 – 9/3/17).” The document goes on to say that “user counts reflect peak use, standard use and slower times at the park.”

While we value data being collected during these different time periods, no work was done during peak PCT user season which is typically springtime (April through May),

although the PCT does get used year-round at this location. Also, it appears that no study work was done on the PCT but only at some Project facilities. It is also concerning that certain sites were not observed because “they are difficult to access and have low use and are not likely locations that are used for recreation activities other than hiking/biking, exercising, or sightseeing/wildlife observation.” The survey work is not complete and additional surveys should be completed during the spring months and peak season for PCT use to more accurately capture and evaluate recreation use and project impacts on recreation and PCT users.

As always, the PCTA wishes to offer our assistance regarding a comprehensive analysis of the impacts to the PCT experience and possible mitigation measures. We look forward to working with you in the future to ensure the purpose of the project is met while protecting the PCT experience.

Thank you,



Anitra I. Kass
Pacific Crest Trail Association
Southern California Regional Representative

CC:

Marc Stamer, San Bernardino National Forest - Mountaintop Ranger District, District Ranger

Beth Boyst, U.S. Forest Service, Pacific Crest Trail Program Administrator

Stephen Bowes, National Park Service, Hydropower Assistance Program

Ryann Gill, California State Parks, Silverwood Sector Superintendent

Justin Kooyman, PCTA, Associate Director of Trail Operations

State Water Resources Control Board

JUL 08 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

Dear Secretary Bose:

COMMENTS ON THE DRAFT LICENSE APPLICATION DOCUMENT FOR DEVIL CANYON PROJECT, FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14797; SAN BERNARDINO COUNTY

State Water Resources Control Board (State Water Board) appreciates the opportunity to comment on the Draft License Application (DLA) for a new license for the Devil Canyon Project (Project), Federal Energy Regulatory Commission (Commission) Project No. 14797. The DLA was submitted by the Department of Water Resources (DWR) on April 10, 2018. State Water Board staff has participated in relicensing proceedings since DWR filed their Notice of Intent to file for a new Commission license for the Project, on August 1, 2016.

Exhibit E- Environmental Report of the DLA addresses 14 environmental resource areas and an analysis of existing Project conditions, potential effects of the Project, and unavoidable adverse effects that would result from the Project. The sections of most interest to State Water Board staff are Section 5.2 (Water Resources), and 5.3 (Fish and Aquatic Resources). Appendix H (West Fork Mojave River Reach Reconnaissance Survey) was also of interest.

General Comments

1. The DLA states on page 5-48 that "*As part of the Mojave River Basin Plan Amendment and as identified in the 2018 triennial review of the basin plan, the Lahontan RWQCB, is proposing to amend the basin plan by adding two beneficial uses for specific reaches of the Mojave River: (1) preservation of biological habitats of special significance (BIOL) and (2) preservation of rare and endangered species (RARE).*" On June 12, 2019, the amendments were adopted (Resolution No. R6T-2019-0246).
2. State Water Board staff appreciate DWR's efforts to test for *E. coli* downstream of Silverwood lake, detailed on page 5-84, and concur that the results found (2/100 mL) meet Lahontan Water Quality Objectives (20/100 mL).

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

Specific Comments

3. Two USGS gages above Cedar Springs Dam (10260550 and 10260700) measure inflows for 14.5 square miles (mi²) of the 33.8 mi² watershed that feeds Silverwood Lake [Section 3.1.1.3 (*Local Ungaged Drainage*)]. Section 3.1.1.3 and Section 4.2.1 (*Inflow into Silverwood Lake*) describe "agreement-derived un-gaged inflow" calculations (pg. 4-8). Drainage flows for the unmeasured portion of the watershed that feeds Silverwood Lake are calculated and included in the synthetic data representing total inflow presented in Table 4.1-1 (*Relationship between Gaged Inflow and Synthetic Inflow, as Described in Exhibit A of Agreements between DWR, LFR and MWA*). Table 4.1-1 presents combined measured inflow of the two USGS gages above Cedar Springs Dam, to calculated synthetic total inflow to Silverwood Lake. The values in Table 4.1-1 show that the synthetic inflow is roughly twice the actual inflow. State Water Board staff recommends that modeling be used to more accurately determine natural inflow into Silverwood lake.
4. State Water Board staff have reviewed Table 5.2-5 "*Numerical Objectives for Silverwood Lake and West Fork Mojave*". State Water Board staff recommends including numerical objectives for the West Fork Mojave (above Silverwood Lake) and East Fork of the West Fork of the Mojave River in order to provide a more comprehensive summary of Lahontan RWQCB Basin Plan Water Quality Objectives.
5. The DLA states on page 5-76 "*limited water quality data exists for the West Fork Mojave River Downstream of Cedar Springs Dam*". State Water Board staff requests that water quality results determined as part of the West Fork Mojave River Reach Reconnaissance Survey be referenced in this section.
6. In Section 5.2.2.2 *Water Quality* on page 5-83, the DLA states "*DWR proposed no changes to existing Project operations or new work (e.g., dredging that would disturb bottom sediments) that would incrementally affect existing water quality in Silverwood Lake or lead to a degradation in existing water quality. DWR's Proposal is generally consistent with the Lahontan RWQCB Basin Plan standards, though the SWRCB will make that final determination*". It should be noted that CEQA findings will have bearing on the State Water Board's final determination.
7. The DLA states on page 5-84 that "*DWR manages these instances [occasional blooms of algae and cyanobacteria] through an SWRCB- approved and permitted program and will continue to do so in the future*". State Water Board staff request that DWR include relevant program timelines, and future monitoring deadlines.
8. In 5.2.3 *Unavoidable Adverse Effects*, the DLA states that "*Some Lahontan RWQCB Basin Plan WQOs are not met in Silverwood Lake now and cannot be met in the future, for reasons previously given. However as discussed, these*

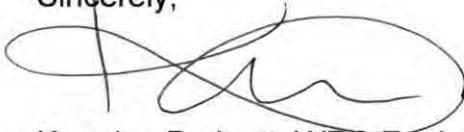
inconsistencies with the Lahontan RWQCB Basin Plan WQOs do not affect designated beneficial uses. For this reason, the inconsistencies with the Lahontan RWQCB are considered minor". State Water Board requests that DWR provide more detail regarding the rationale mentioned and specify reasons in this section of the document including references to more detailed earlier passages. Describing which Basin Plan WQOs were compared to corresponding beneficial uses would be helpful in understanding why the inconsistencies are considered minor.

9. On page 5-134 of the DLA, the section entitled "*Downstream of Silverwood Lake*" states that there is limited information describing the fish community in the West Fork Mojave. State Water Board staff request that the West Fork Mojave Reach Reconnaissance results be included in this discussion.

State Water Board staff appreciate the collaborative nature DWR has created and look forward to working towards resolving concerns. If you have questions regarding this letter, please contact Karmina Padgett, Project Manager, at (916) 323-4642 or by email at Karmina.Padgett@waterboards.ca.gov. Written correspondence should be directed to:

State Water Resources Control Board
Division of Water Rights
Water Quality Certification Unit
Attn: Karmina Padgett
P.O. Box 2000
Sacramento, CA 95812

Sincerely,



Karmina Padgett, WRC Engineer
Water Quality Certification Unit
Division of Water Rights

CC's continued on next page.

Cc:

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File Code: 2770
Date: July 8, 2019

Jeremiah McNeil
Relicensing Program Manager
Hydropower License Planning and Compliance Office
Executive Division
California Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

Re: USDA Forest Service, San Bernardino National Forest, Comments on the Draft License Application (DLA), for the Devil Canyon portion of the State Water Project, proposed Federal Energy Regulatory Commission (FERC) Project P-14797, San Bernardino County, California

Dear Mr. McNeil:

The USDA Forest Service, San Bernardino National Forest (Forest Service) appreciates the opportunity to review and comment on the California Department of Water Resources (Licensee) Draft License Application (DLA) (April 8, 2019) for the Devil's Canyon portion of the State Water Project, proposed FERC Project number P-14797, located on the east side of the existing footprint of Project #P-2426.

The attached comments are filed pursuant to 18 CFR §16.8(c)(5) and (6). The Forest Service comments are structured into two categories:

- 1) 18 CFR §16.8(c)(5): Section by Section comments on the DLA offering questions for clarification, statements, and expansion that the Forest Service expects to be addressed in the Final License Application (FLA) to meet Forest Land Management Plan requirements.
- 2) 18 CFR §16.8(c)(6): Substantive disagreements with conclusions regarding resource impacts offered in the DLA due to lack of supporting information from inadequate studies
 - a. The Forest Service understands that the Licensee is required to hold at least one joint meeting to address these disagreements. The Forest Service looks forward to this continuing collaboration on this relicensing.

This response is being filed with FERC by the San Bernardino National Forest, which administers National Forest System lands affected by this relicensing project. The Forest Service is involved in this relicensing to the extent necessary to provide for the adequate protection and utilization of National Forest resources, as provided for in the Federal Power Act, section 4(e). The Forest Service has been actively involved in all phases of this project,



including offering study plans, attending study-based meetings, contributing to PM&E measures, and discussing the process with the licensees and leadership.

If you have any questions regarding this filing you may contact Robert G. Taylor (Forest Service Interdisciplinary Team Leader) at 909-382-2660 or robert.taylor2@usda.gov.

Sincerely,

A handwritten signature in blue ink that reads "Jody Noiron". The signature is written in a cursive, slightly slanted style.

JODY NOIRON
Forest Supervisor

Attachments (6; DLA Summary comments; DLA substantive disagreements with conclusions; DWR 1974 San Bernardino Tunnel geologic report for groundwater comments; Email correspondence re: groundwater comments; Email correspondence re: recreational use; Email correspondence re: removal of pit toilet)

cc: Marc Stamer, Joe Rechsteiner, Robert G Taylor, Vicki Davis, Dawn Alvarez

Pursuant to 18 CFR §16.8(c)(5)

Comments are indented and italicized

As part of our comments on the Pre Application Document, the Forest Service identified several resource areas that lacked information about Project level effects – notably recreation around the Silverwood Reservoir on adjacent NFS lands. The Forest Service voiced concerns that the suite of studies proposed by the Licensee and approved by FERC were significantly limited in scope, especially when tied to investigating resources or effects only within the FERC defined project boundary. Many resource effects that occurred outside of or adjacent to this boundary went uninvestigated during the study period. Thus, the DLA lacks a complete analysis of the Project on the surrounding environment or complimentary evidence to suggest that these effects are not Project related. The Licensee’s dismissal of resource concerns or conclusions that the Project has no little to no effect are largely based upon an absence of evidence. For these cases, the absence of evidence does not prove nor disprove the Licensee’s contention that the Project has no impact, but highlights the deficiencies of the performed studies to answer resource questions. The Forest Service asserts that for specific resource areas identified below, insufficient information exists to analyze Project level effects and that new information will need to be gathered to inform the development of our PM&E’s and FERC’s NEPA analysis.

Exhibit A – Project Description

Section 2.0 – Project Location

Fig 2.0-2 page 2-3 – Project Location Map – The proposed project boundary removes areas where direct, indirect, and cuulative effects of the project on Forest Service lands and resources has been documented.

- *Forest Service does not concur with statements under 6.0 changes to boundaries, page 6-1 just to include only project O&M facilities.*
- *The proposed future boundary conflicts with the list of Project Recreational Facilities, Table 3.8-1 on pages 3-9 and 3-10; proposed boundary would exclude some facilities, such as some of the hiking trails, camp sites, and overlook areas which are connected to Silverwood Lake.*
- *Also proposed boundary conflicts with list of access roads to facilities – Table 5.4-1 page 5-2; still need to include original boundary to include access roads from SR138 or from SR173 or from USFS roads 2N49, 2N33 and road to penstocks on Devil Canyon side.*
- *Also, page 3-11, 4.0 – Existing Project Boundary shows 3501.3 acres of State of California Lands – thus the future boundary should include this same amount of State lands since this is a federal license renewal for a State Project. There are only 221 acres of USFS/federal land involved (same table).*

Section 3 –Existing Project Facilities and Features

Page 3-8, Section 3.8 Recreation Facilities

- *Table 3.8-1 does not include all of the facilities the public uses for recreational purposes associated with the project. The DLA should include these facilities in its description.*
- *Highway 138 (under Caltrans easement on Forest Service lands) is used by the public and the State Parks as a de facto staging area when the State Park closes its entry area.*
- *Forest Service Road 2N33 is used by the public for access to the bays on the NE side of the reservoir.*
- *Forest Service Road 2N37 (Miller Canyon Road) is used by the public for recreational purposes when staging at the State Park*
- *The Pacific Crest Trail (PCT) runs through the State Park, and the State Park actively encourages its use. The PCT is maintained through agreements between the Forest Service and the PCTA.*
 - *Forest Land Management Plan Standard 7: Pacific Crest National Scenic Trail - Protect scenic values in accordance with adopted scenic integrity objectives. Protect foreground views from the footpath, as well as designated viewpoints. Where practicable avoid establishing unconforming land uses within the viewshed of the trail (Arrowhead, Big Bear, Big Bear Back Country, Cajon, Garner Valley, Idyllwild, Lytle Creek, Mojave Front Country, San Gorgonio, Santa Rosa and San Jacinto Mountains National Monument, and Silverwood Places).*
- *The Project allows the public to park along the entry road to the dam to access the OHV area to the east.*
- *The Project recently (2017) removed a public bathroom (pit toilet of 250 gallon capacity, pumped once a week by State Parks) from the location near the dam, reducing this service and encumbering surrounding resources to fill the void. DWR chose to not study the effect of this decision on recreational opportunities to its Project or the surrounding land (email attachment).*

Page 3-10, Section 3.9

- *This section does not describe the full suite of roads used to access the project facilities. It should be amended to include all roads used by the public or DWR to access the project, including roads used for recreation. There is a road on Forest Service lands used to access the penstocks. This road is not a Forest Service road and has gates to prevent public access. This road should be identified. (it is shown in Table 5.4-1)*

Section 5 – Proposed Changes to Project Facilities and Features

- *Page 5-1: Up until 2017 a parking area and restroom facility located at the Cedar Springs Dam area served the public. These facilities provided public access to fishing sites, an OHV staging area and motorized trail access opportunities, as well as Pacific Crest Trail access. The restroom component was removed and the fishing sites off the dam were closed for safety and maintenance issues.*
 - *The Forest Service asserts that this action affected recreation on NFS lands.*

“DWR does not propose to add to the Project any additional Recreation Facilities, including recreation-related roads and trails.”

- *The Forest Service and DWR have documented user created trails to access the State Park lands and the reservoir from Highway 138 and Forest Service Road 2N33 (email attachment).*
- *Resource damage has been documented to Forest Service lands, but DWR did not adequately address these effects and the long term impacts associated with this type of activity projected over the life of the license. The Forest Service recommends that DWR consider the installation of a standardized, formal trail system to manage these types of project induced impacts and consider developing a recreation management plan to address the increase of recreational users expected over the life of the proposed license.*

Section 6 – Proposed Changes to the Project Boundary

Page 6-1, Section 6.0 Project boundary changes – “to more accurately define lands necessary for the safe operation and maintenance (O&M) of the Project and other purposes, **such as recreation**, shoreline control, and protection of environmental resources.”

- *The proposal to shrink the boundary is contradictory to the statement above, which are not necessarily confined to the delineated project boundary.*
- *The DLA has not adequately addressed how the proposed boundary change will influence or address the vegetation damage, habitat loss and human waste issues caused by current Project recreation use, or the expected continuation and increase of such unauthorized uses across FS lands as recreation use increases over life of the Project license.*
- *The Project boundary should be adjusted to include areas with Project induced public recreational use and facilities or management actions necessary to address environmental resource damage and areas of concern. We suggest that the proposed project boundary include the following areas, which have been identified in DWR funded studies and USFS documentation as affected by Project recreation.*
 - *Areas between State Highway 138 and the reservoir where the public has been documented to park and travel on user created unauthorized trails crossing Forest Service and State Park lands*
 - *Areas between Forest Service Road 2N33 and the reservoir where the public has been documented to park and travel on unauthorized trails crossing Forest Service and State Park lands*
 - *The PCT within the State Park lands*
- *Page 6-2: The 100-foot buffer from the Silverwood Lake NMWSE does not encompass the documented recreational of the public traveling from parking locations on State Highway 138 and Forest Service Road 2N33 across lands managed by the Forest Service and State Parks on established unauthorized trails.*
- *Page 6-2: The proposed boundary will not change the existing or expected increase of physical impacts made to adjacent NFS lands that are brought about by the presence and public draw of the project.*

Exhibit B – Project Operations and Resource Utilization

Section 2 – General Description of the Project

Page 2.1 - Under the new license, DWR proposes no modifications to existing Project facilities or operations but does propose adjusting the existing Project boundary. DWR proposes to continue to operate the Project as it has operated historically, with the addition of a number of operation and management activities to: (1) protect or mitigate impacts from continued operation and maintenance (O&M) of the Project; and (2) enhance resources affected by continued Project O&M. These activities are collectively referred to as protection, mitigation and enhancement (PM&E) measures in this exhibit.

- *The FS has indicated there are impacts to NFS resources on federal lands from the O&M activities associated with this project. For instance, changes in water levels in Silverwood Lake would affect water levels and aquatic resources in West Fork Mojave River; arroyo toad (federal ESA listed species) critical habitat is designated in the WFMR, thus direct impacts of flooding of habitat would occur, as well as impacts from non-native fish species (bass, trout) into this reach that may predate toads. Similar impacts to the East Fork of the WFMR. By removing these areas from the project boundary, direct impacts from SWP would not be addressed.*
- *Also, the DLA does not address changes to the USFS and DWR 1968 Agreement as discussed on page 4-7 under 4.1.5.5; this agreement covered changes in water levels that affect USFS land areas, by changing the boundaries to remove some federal/USFS lands, there would need to be an amendment to this agreement. Under 5.0 Proposed Operations pages 5-1 for Water Resources WR-2, it references this agreement as far as minimum pool and water surface elevation restrictions only, but doesn't refer to what those restrictions are; which it should state them here instead of referencing the agreement.*
- *Changing the boundary would also conflict with Vegetation Maintenance Activities described under 4.3.4, page 4-22 since access roads and trails require vegetation maintenance would need to occur on all existing roads under the current boundary. This is also true for road maintenance under section 4.3.5.2 and for recreation facilities under 4.3.5.4, both on page 4-23.*

Section 3 – Relicensing System Hydrology

Section 3.1.1.3 Local Ungaged Drainage and Section 4.2.1 Inflow into Silverwood Lake describes “agreement- derived ungaged inflow (pg. 4-8)”. Table 4.1-1. Relationship between Gaged Inflow and Synthetic Inflow, as Described in Exhibit A of Agreements between DWR, LFR and MWA relates measured inflow at two USGS gages above Cedar Springs Dam to total outflow to Silverwood Lake. Table 4.1-1. Indicates that the synthetic inflow is twice the flow at 25 cfs, and then increases to 2.1 times at 680 cfs gaged inflow.

- *The Forest Service suggests that DWR entertain the possibility of using modelling to more accurately match the natural hydrograph presented in the gaged flow data*

Section 4 – Existing Operations

Section 4.2.4 (also 4.3.1) – San Bernardino Tunnel

Article 56 of the Opinion and Order Issuing License (March 22, 1978), states: “The Licensee shall make available to the Forest Service upon request, water in an amount equal in volume to the subterranean water captured by the San Bernardino Tunnel groundwater system. The quantity of water to be delivered shall be determined by the Licensees and the Forest Service. In the event an agreement cannot be reached between the parties, the Commission reserves the right to determine such quantities, after notice and opportunity for hearing.”

- *The Forest Service offered comment to DWR on the depletion of local groundwater by the San Bernardino tunnel at the November 3, 2016 public meeting, as contained within the official transcript (pages 28-32).*
- *The Forest Service asked for a groundwater study during comments to the PAD to be conducted to determine the amount of local groundwater that was being depleted. This study was not performed, despite Article 56.*
- *The Forest Service located the “Final Geologic Report San Bernardino Tunnel” (DWR, Project Geology Report C-81, February 1974 - attached), in which DWR documented the amounts of groundwater lost from the system during construction.*
- *The Forest Service provided this document to DWR and had email correspondence (attached) documenting the losses suffered by the Forest Service and potential continuing losses suffered by the Forest Service given the unlined tunnel.*
 - *According to the 1974 report, even after the contact grouting, consolidation grouting, and grouting of the steel liner, there were still recorded water flows being lost after the tunnel lining.*
 - *Overall, in August 1971, the outflow remained relatively constant at 273 gpm (page 77).*
 - *The report is thorough in its description of all that was done to try and stop these flows prior to completion.*
 - *The report notes on September 2, 1971, that “all work completed”. (Appendix II, page 2)*
 - *The implication is that groundwater continued to be drained out of the fractured system and into the tunnel.*
- *The Forest Service continues to be concerned with the loss of local groundwater into the Licensees tunnel. The Forest Service LMP Standard 45 states, “All construction, reconstruction, operation and maintenance of tunnels on National Forest System lands shall use practices that minimize adverse effects on groundwater aquifers and their surface expressions.”*
 - *The Forest Service would like to see this topic better addressed in the FLA.*
 - *The Forest Service would like to see the documentation supporting that Article 56 has been addressed under the current license.*

Section 4.3.4, Vegetation Maintenance, Page 4-22:

- *The Forest Service suggests that the FLA contain mention of vegetation restoration efforts in areas affected by unauthorized visitor use (user created trails and roads) such as those created on adjacent NFS lands.*

Section 4.3.5.4, Recreation Facilities Maintenance, Page 4-23:

- *The DLA did not adequately address roads directly and indirectly related to SRA recreation use, or take into account their maintenance. This would include sections of Forest Road 2N33 and potential impacts from "berm busting", road bed erosion at high use parking areas and unauthorized pedestrian access points.*

Appendix A figures

- *Why is the natural outflow exceeding the natural inflow when inflow is <200 cfs, but is less at higher flows?*
- *Please provide an explanation for the inflow and outflow differentials.*

Exhibit C – Construction History and Proposed Construction Schedule for the Project

No new construction is proposed.

- *The Forest Service continues to desire that the losses of local groundwater be mitigated or stopped through improvements to the San Bernardino Tunnel.*
- *The Forest Service continues to be open to increased recreational opportunities and staging areas associated with the over utilization of the State Park and subsequent spill over onto the National Forest System lands.*

Exhibit D – Statement of Costs and Financing

Section 6 – Annual Cost of Operations and Gross Power Benefits

Section 6.1.2, Page 6-1: As we understand it, DWR provides funds to the State DPR, from where it is then dispersed to the various parks and facilities based upon DPR's priorities.

- *While the SRA has had several improvements completed over the last several years, the DLA did not address backlog or deferred maintenance of facilities at the Silverwood Lake SRA, or schedule time line to bring facilities to full operational standards. Delays or deferred maintenance are one of many factors that are contributing to Project recreation spill over on to Forest Service lands.*
- *Table 6.1-1, DWR's estimated costs related to implementation of DWR's*

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- *proposed measures only calculated out to 30-years; however, the analysis should extend out to 40- or 50-years (i.e., period of project license).*
- *The DLA does not adequately address the anticipated population growth, as referenced in the County population forecasts out to year 2050, and those effects on Project recreation facilities and the surrounding lands in response to increase in visitor use; the DLA does not properly consider the future maintenance or replacement of Project facilities, campgrounds, day use areas, trails, fishing access, etc., as a result of the increase in recreational use and resulting pressures and stressors on state and federal lands over the life of the proposed license.*
- *The Forest Service has documentation showing areas of Forest Service lands where SRA visitors have trampled vegetation, improperly disposed of trash, and created trails resulting in resource damage. This backlog and resource damage impacts both the visitors experience and well as their safety.*
- *The Forest Service suggest DLA include the cost to develop a Recreation and Trail Management & Maintenance Plan to address and account for all costs of managing recreational activities and impacts that are directly and indirectly affected by Project current and future recreation use and Project recreation spill-over on to Forest Service lands over the life of the proposed license.*

Section 11 – Other Project Benefits

Section 11.1, Page 11-1:

- *Many of the activities mentioned occur on or are accessed through adjacent National Forest System lands resulting in a variety of impacts to the National Forest Lands located between non-project roads (Highway 138 & FS Road 2N33) and the shoreline.*
 - *While the DLA admits that these activities occur and are related to the project, the DLA lacks any information or analysis about their impacts.*
- *This section doesn't address the costs of managing recreational activities and impacts on USFS recreational trails and access roads from overflow of recreationist onto NFS lands caused by overcrowding at Lake Silverwood facilities*
- *This section doesn't address population growth in the area and future needs of recreational facilities/future development of campgrounds, day use, trails, etc. The County population forecasts from 2050 (within the timeframe of the license)*
- *The whole exhibit concentrates only on costs associated with generating power, not on other actual costs associated with Recreation, impacts to Forest Resources, etc.*

Exhibit E – Environmental Report

- *The Forest Service affirms that under the existing project boundary, the project has generated recreational use on the adjacent National Forest System lands and will continue to do so regardless of any proposed project boundary. The DLA proposed boundary shift will not change the existing or expected increase of physical impacts to*

adjacent NFS lands brought about by the presence and public draw to the project. The DLA needs to address Project recreation impacts to adjacent Public lands and how these adverse effects to Forest Service lands will be addressed over the life of the license.

- *The DLA should not restrict the environmental analysis to just the proposed project boundary but instead extend to include affected environments within the Project's area of influence that clearly extend beyond project boundaries, and for all practical purposes are expected to continue into the foreseeable future.*

Section 2 – Proposed Action and Alternatives

- *Page 2-1 Comments per Exhibit A, Section 5*

Page 2-2: If (Exhibit A, 6.0 page 6-1) the Project boundary is supposed to "more accurately define land necessary for the safe operation and maintenance (O&M) of the Project and other purposes, such as recreation, shoreline control, and protection of environmental resources" (From Exhibit A, page 6-1),

- *The Forest Service concludes that reducing the project boundary to exclude the NFS lands that are adjacent to the project but are noticeably impacted by the project (user created trails to the water's edge, parking along forest road 2N33, increased trash) is contradictory.*
- *The proposed boundary will not change the existing or expected increase of physical impacts made to adjacent NFS lands that are brought about by the presence and public draw of the project. Nor should the proposed boundary alleviate DWR/DPR from consultation with the SBNF, and if necessary, provide for the restoration of those NFS lands impacted by visitors to the Project.*

Page 2-4 (Geology and Soils):

- *The DLA lacks a full description or analysis of affected environment because it limits its analysis to the proposed project boundary.*

Section 2.1.5 – Comments on Measures associated with proposed PM&E Plans are contained later in this document.

Page 2-5 Aesthetics Measure VR1:

- *See comments on PCT starting at page 5-273 (below).*
- *Visual Quality Objectives should be incorporated into any future work that may impact lines-of-sight from the PCT, or in constructing any new, properly built trails, such as those they might emanate from Forest Road 2N33.*
- *Follow the Forest LMP Standard 9: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.*

Page 2-11 Vegetation Maintenance:

- *The DLA did not adequately look at the full spectrum of interrelated recreational /public use impacts to vegetation, influenced by project recreation that is occurring beyond proposed project boundaries. The DLA did not address measures to mitigate Project influenced effects to Forest Service lands.*

Page 2-13: Facility Painting:

- *The penstocks above Devil Canyon show a large contrast with the surrounding environment, in violation of the Forest Land Management Plan. These facilities have been called out during the Visual Resources Plan PM&E meetings. This section should make mention of or tie itself to the Visual Resources PM&E plan.*

Section 4 – Scope of Cumulative Effects Analysis

Section 4.2

Page 4-2: “For recreation resources, the geographic scope extends from the lands of the SBNF to Hesperia Recreation and Parks District jurisdiction to the north.”

- *The cumulative effects described in the DLA should clarify what area of the Forest Service lands are included in the analysis. Forest Service’s National Policy is to reduce and prevent the spread of non-native and invasive species onto NFS lands. The Forest Service looks forward to working with the licensee to develop plans to prevent further spread of AIS, and working towards solutions to address treatment and eradication of areas of infestations.*

Page 4-2: “The headwaters are a reasonable upstream terminus because fish in Silverwood Lake could, under some conditions, enter the tributaries.”

- *The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.*

Page 4-2: “For arroyo toad, DWR defines the geographic scope as extending from north of the Highway 173 bridge downstream to the NMWSE of the Mojave River Dam. The bridge is the upstream terminus because that coincides with the upstream extent of arroyo toad critical habitat in the West Fork Mojave River. Silverwood Lake is not suitable habitat for arroyo toad, and the West Fork Mojave River upstream of the lake lacks essential habitat elements to support an arroyo toad population. USFWS (2009) described Cedar Springs Dam and Silverwood Lake as an “insurmountable barrier to further movement upstream.” As described above, the Project could affect water and aquatic resources below Cedar Springs Dam. The NMWSE of the Mojave River Dam is the downstream terminus for the reasons stated above.

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- *The underlined statement is not correct. The West Fork of the Mohave River upstream and to the west of Highway 138 is designated critical habitat.*
- *DWR should clarify what essential habitat elements are missing.*

Section 4.4.1

Page 4-3: “Since the vast majority of water in Silverwood Lake (i.e., natural inflow is rarely noticeable compared to the volume of SWP inflow, Figure 4-23 in Exhibit B) is SWP water from the SWP’s Mojave Siphon Powerplant and the Mojave Siphon bypass, the SWP affects water resources (i.e., both water quantity and water quality) in Silverwood Lake. In addition, biota in SWP water, including fish and Aquatic Invasive Species (AIS), freely enter Silverwood Lake from the SWP, and these biota could affect aquatic resources in the lake.”

The Licensee concluded that stocked “fish in Silverwood Lake could, under some conditions, enter the tributaries” and that recreation activities have “the potential to spread AIS.”

- *The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.*

Page 4-4: “DWR anticipates that recreation on the SBNF and on non-Project portions of the Silverwood Lake SRA will continue to increase.”

- *Forest Service agrees. Recreation affects will increase on adjacent SBNF lands in the future and some of that increase will be from spill-over from the SRA.*

Section 5 – Environmental Analysis Introduction

Section 5.2 – Water Resources

- *For the FLA, please address the following concerns/questions: Include Crestline Sanitation District return flows via pipeline discharging below Cedar Springs Dam onto LFR’s land (pg. 5-36). Clarify the volume and quality of water that could affect the Project water.*
- *The DLA does not clearly define what measures are currently in place to avoid or protect against raw, untreated sewage from being released into Silverwood Lake, or how the water-balanced is maintained when the treatment facility is off line for repair and maintenance. It is unclear what environmental affects or consequence these events would have on Silverwood Lake recreation, water quality and quantity, and Forest Service’s aquatic resources*

- *Continued operation and maintenance (O&M) and recreation activities may have effects on water quality on Forest Service managed lands. Relevant water quality plans and regulations should include the East Fork of the West Fork Mojave River*
- *Ensure USGS stream gauges at West Fork Mojave River and East Fork of the West Fork Mojave River remain funded and operable. Real time (and historical) data should be available on the USGS website or some other readily available (and free) website.*

Section 5.3 – Fish and Aquatic Resources

5.3.1.1 Special-Status Aquatic Species page 5-85 to 5-102

- *In the FLA, please revise the definition of a special-status aquatic species, which is considered an aquatic species that is: (1) found on NFS land and listed by USFS as Sensitive (FSS); (2) listed by CDFW as a Species of Special Concern (SSC); or (3) considered fully protected under California law. Aquatic species that are listed as threatened or endangered, or proposed, or a candidate for listing under the ESA are addressed in Section 5.4.*
- *Table 5.3-1 on page 5-88 shows only 4 aquatic special status species potentially affected by the project – it only lists CDFW SSC species; it fails to list any FSS, or USFWS-ESA listed species, such as arroyo toad, which is known to occur in the current project boundary. Please correct the table.*

Table 5.3.2 Known Aquatic Invasive species (pages 5-93 and 5-94);

- *Comment per Section 4.4.1*

Page 5-102: There were 21 occurrences of two of the four targeted AIS invertebrate species located during surveys: 9 occurrences of Asian clam and 12 occurrences of channeled applesnail. No New Zealand mudsnails or European ear snails were observed. There were 193 occurrences of AIS plant species: 25 occurrences of curly leaf pondweed, 45 occurrences of Eurasian watermilfoil, 79 occurrences of coontail, and 44 occurrences of sago pondweed.

- *The report does not state whether any eradication of known AIS was conducted.*

5.3.1.4 Fish

Upstream of Silverwood Lake

Mohave tui chub is the only fish species native to the Mojave River drainage (see Section 5.4.3); all other fish occurrences are the result of deliberate or unintentional introductions. There is limited information on fish using the West Fork Mojave River or the East Fork of the West Fork Mojave River upstream of Silverwood Lake. Due to the seasonal nature of these streams, the ability of fish species to inhabit these stream systems year-round is speculative.

- *The Forest Service disagrees with the terms “seasonal nature” and “speculative”. Since the November 2016 meeting (transcript page 33), the Forest Service has asserted that*

some of these tributaries, which support riparian vegetation, are at least intermittent, while others are classified as perennial.

Page 5-122: Currently, the Silverwood Lake fishery is composed entirely of 18 non-native fishes, and primarily managed as a warmwater fishery consisting of largemouth bass, bluegill, black crappie, striped bass, channel catfish and white catfish. A put-and-take coldwater fishery is maintained by stocking hatchery-raised rainbow trout

- *However, all these non-native fish the can access NFS lands through tributaries to Silverwood Lake during certain flow years.*

Section 5.3.1.5 Amphibians and Semi-Aquatic Reptiles fails to list any FSS or ESA listed species (page 5-134, except for two-striped garter snake (FSS) and western pond turtle (FSS). Missing arroyo chub (FSS).

- *For the FLA: Table 5.3-8 (page 5-136) should show FSS species identification on any species*

5.3.2.4 Effects on Tributaries to Silverwood Lake page 5-145: For these reasons, it is unlikely that non-native fishes and AIS have a significant effect on resources in the SBNF.

- *The Forest Service does not agree with these conclusions. During years with high flows, such as what just occurred in 2019, there is a moderate potential for fish/AIS to move from Silverwood Lake into tributaries and remain there for several years, regardless of whether special status species are present. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals. Allowing AIS to enter without any preventative measures in place is a direct effect of the project and should be considered in the monitoring and mitigations for the license. The DLA did not indicate any measures that are currently in place, or barriers proposed that would contain non-native fish to Silverwood Lake during these high flow events*

Section 5.4 – Terrestrial Resources

5.4.1.3 Unavoidable Adverse Effects – pages 5-212

- *The IVMP needs to include both the State Park and NFS lands for minimizing impacts of the project on all resources.*

Figures 5.4.2-4 pages 5-221 to 5-224 show only wetland and riparian assessments within the proposed project boundary –

- *These surveys should had the total area identified as either wetland or riparian since impacts potentially would occur on the whole habitat type and not just within the proposed boundary. The FLA needs to show the entire habitat area and assessment. Habitats do not recognize boundaries and the impact occurs to the total area, not a partial area, as per the proposed project boundary.*

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- *Thus Table 5.4.2-2 page 5-228 and Table 5.4.2-3 page 5-229 to 5-232 should show all ownerships, not just DWR within the proposed boundary to reflect actual areas of habitat. The effects analysis of Section 5.4.2.2 should be modified to cover the entire habitat type area.*

5.4.3 Federal ESA species pages 5-233

- *Figure 5.4.3-1a page 5-253 of least bell's vireo and sw willow flycatcher surveys did not include habitat in the Miller Canyon area of the WF WFMR – no conclusions should be drawn about Forest Service lands if no data was collected*

Section 5.5 – Recreation Resources

Page 5-267: "While the SBNF makes up for only a small portion of the proposed project boundary",

- *Some visitors consider NFS lands to be their destination point (parking on the Highway of 2N33) to access a less crowded section of the lake (and avoid paying entrance fee). The Project causes the Highway and Forest Service road to be de facto staging areas.*

Page 5-269: "the National Forests are the largest recreation provider in the region and recreation trends on those forest lands are considered to be indicative of trends in the Project area"

- *The FLA should clarify this statement since the user experience on Forest Service lands is different than for a Lake environment.*

Page 5-270: parkland per population results– math incorrect ($2,155,590 / 1000 * 2.5 = 5389$ acres).

- *County population in 2007 was just under 2 million; population given is closer to 2017 number (need reference)*
- *San Bernardino County Economic Forecast (http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic_files/2017/SanBernardino.pdf) estimates population to be 2.7 million by 2050*

Page 5-270: Regarding the number of acres of "park" land available in the county –

- *A large part of the SRA's lands cannot currently be used by the typical visitor in the traditional sense as much of it is steep, brush covered slopes.*
- *The FLA should not draw conclusions broadly given that much of the "park" land is not available for use.*

Page 5-270: "Local parks and recreational amenities throughout the County (Goal OS-1)"

- *The FLA could address methods for meeting the County's general plan vision. The Forest Service suggests that establishing more authorized parking and a standardized trail system on the East side of Silverwood Lake and potentially, to a lesser extent, on the west side.*

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- *DWR could consider re-routing the PCT away from the road/laydown yard.*

Page 5-271: Figure 5.5-1 San Bernardino County Parks and Pacific Crest Trail

- *Switzer Park Picnic Area and Crest Park Picnic Area locations are incorrect; their positions should be reversed. These two parks are not County Parks but USFS Picnic Areas. USFS Baylis Park Picnic Area should be added on the highway where the “t” in “Switzer” is located.*

Page 5-273: Concerning the Pacific Crest Trail

- *There are reasonably foreseeable impacts of this project in scenery resources and potential motorized and mechanized (bicycles) trespass that should be addressed in both the analysis and mitigation actions.*
- *The document correctly identifies that the United States holds a trail easement through the Silverwood Lake State Recreation for 4.9 miles for the public to enjoy the area.*
- *[The Pacific Crest National Scenic Trail Comprehensive Management Plan](#) (1982) was developed based on legislative direction and signed by the Chief of the Forest Service. It provides the foundational direction for the PCT and should be referenced in the analysis. The desired conditions in PCTA’s Strategic Plan are congruent with the legislative intent but are not agency policy. 5.5.1.1 Recreation Opportunities in the Project Region (Volume II) should be updated to reflect the legislative intent outlined below and reference Comprehensive Management Plan direction.*
- *The National Trails System was established (P.L. 90-543, as amended through P.L. 116-9, March 12, 2019), “In order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation.”*
 - *National scenic trails are extended trails located to provide for the “maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass.”*
 - *Other uses along the trail, which will not substantially interfere with the nature and purposes of the trail, may be permitted by the Secretary charged with the administration of the trail. Reasonable efforts shall be made to provide sufficient access opportunities to such trails and, to the extent practicable, efforts shall be made to avoid activities incompatible with the purposes for which such trails were established. (Sec. 7(c))*

Key resource concerns for the PCT in this area are:

- *Impacts to Scenic Resources of the Trail. Key Observation Points outlined in Figure 5.7-1 should be expanded to include an additional point(s) between 14 and 15 to capture the co-incident impacts of the project to the trail. Standard analysis protocol for evaluating national trail scenic resources is modeled from the viewer’s perspective trail itself in all directions and evaluated based on any change that occur from the project. Once the analysis has been completed, further mitigation strategies may be identified.*

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- *Potential Motorized/Mechanized (bicycle) trespass. (The existing condition identifies in Sec. 3.1.5 Disturbance “unmarked trails originating from the Mohave River Fork Campground.”). Non-system roads and trails within and accessing the project area should be further analyzed and mitigation strategies created.*
- *Continued safe hiker and equestrian access throughout the project. (This is especially a concern where the PCT is near the Cedar Springs Dam, Laydown, Maintenance & Storage Yards, and Mojave Siphon Power Plant. While these facilities are defined as non-Project facilities, the operation and site design of these facilities is co-incident with the PCT and impacts to the trail are a reasonably foreseeable future action that should be analyzed, and mitigation strategies created.*
- *PCT Relocation for Safety Considerations: Potential to collaborate on relocating the PCT by bridging the spillway would decreased the co-occurrence of the trail within the project area road system and improve safety for hikers and equestrians near CA HWY 173.*
- *Visitor use management. Visitor use management of the SRA and of the PCT are important considerations. Ensuring that facilities are designed to meet visitor desired capacities at trailheads/access points and campgrounds is critical. Opportunity to align visitor education messages. Typically, interpretation **on** the PCT is not desirable, as the goal is to maximize the naturally appearing landscape – but at trailheads and road crossings, providing information about the PCT and Leave NO Trace practices may be desirable.*

Page 5-275: Please clarify and correctly characterize the ROS system.

- *Several features or attributes of a landscape help determine what kind of recreational opportunities might be available on the landscape. The ROS spectrum is a tool to help manage those resources/experiences.*
- *Recognize that the ROS system is only part of the overall process that helps to determine recreational opportunities on a landscape.*
- *There are six classes within the ROS spectrum; The document is missing the **URBAN** class.*

Page 5-278: 2N33 is also used by lake visitors to park along and hike down to the lake on a system of user created trails.

- *Additionally, Forest Road 2N17X, which connects with 2N33 near the dam is part of the SBNF OHV system.*
- *The FLA should better address the following questions. Did observers see visitors walking down from, or up to the road? Or, was it just assumed that passengers from cars parked on the road had walked down to the lake? How is it known that these users are OHV'ers? What other rec uses do these visitors do? Swimming and picnicking are mentioned, anything else? Were these presumed OHV users, who walked down to the lake observed swimming and picnicking? The FS agrees that users do walk down from 2N33 to the lakes edge.*

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- *The "Field Results and Data Summary" says that there were 17 days of field surveys. The table "DC_observation_table" that shows each day and the observations made, only show 8 days' worth of observations. Do we know where the other 9 days' worth of observational notes are?*
- *Furthermore, the sites on the NE end of the lake (Sycamore/Live Oak) were only visited on 4 of the 8 days, and only twice per day on 2 of the 4 days. Please clarify. Is there sufficient information to make statistical extrapolations?*

Page 5-278: There looks to be some user created unauthorized access across FS lands to the upper end of the penstocks on the Devils Canyon side. Here again, the Project may be attracting unauthorized use by its presence and affiliated infrastructure.

Page 5-280: "Based on the recreation survey work, it appears users are parking vehicles along State Highway 138 and USFS Road 2N33 and walking down to the boat-in day use sites on user made trails."

- *These user created trails need management; for trash and human waste on the Forest Service lands – as there is a direct nexus to the project shoreline*

Page 5-280: Should the Sycamore Landing Day Use Area also be added here?

- *Again, the survey that was conducted failed to determine how many users frequent these areas by walking in, or if there are more rec uses than those that just fish (like swimming and picnicking as mentioned above). Because there were no interviews of visitors, there is no way to determine if these visitors were turned away at the gate because the Project facilities were closed or because it's just where they like to frequent. That lack of data makes it very hard to draw any conclusions about what draws visitors to these areas.*

ADA

- *The Forest Service offers the following comments so the FLA will have more clarity. The Forest Service acknowledges that most of the current recreational facilities are on State lands, and we do not have jurisdictional control.*
- *A number of the campsites use the phrase, "Most of which." Please quantify numbers of compliant amenities.*
- *The DLA uses phrases including "good ADA accessibility" and "ADA compliant". Please clarify the meaning of these terms.*

Page 5-291: Recreation Area Management and Public Safety: Do Rangers patrol areas along the PCT or in those areas where visitors are using the user created trail system? Is this portable restroom near the entrance along the roadside shoulder ADA compliant?

Page 5-291: The FLA should clarify what facilities are provided for anglers that access the reservoir outside the time when the SRA is open. Are anglers who fish, when the park is closed to vehicles, forced to park on Highway 138 or Forest Road 2N33 or other non-park related roads

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and hike in? Does Caltrans allow parking in the turnouts for fisherman? This type of recreation may add to the impacts on FS lands around the park, such as increase created user trails, damage to vegetation from parking and hiking, plus distribution of trash. Do to the fact that there were no quantitative observations made outside of normal park hours there is no way to determine how many users visit/use the lake after hours, or how they access the lake, etc.

Page 5-291: The DLA lacks information for how often the park reaches capacity and is forced to close/turn away visitors?

Page 5-291: Regarding Full Capacity - Either before the park opens or when the park issues a "closure," traffic backs up along Highway 138. This "management" of visitors leads to several issues, some of which result in impacts on the surrounding National Forest Lands. As some people wait to get into the park they exit their vehicles presenting safety concerns with through highway traffic. Some cook with open flame camp stoves, BBQ's, and other devices causing a fire risk to adjacent forest lands. Trash is improperly disposed of along the roadside, often ending up on NF lands. Due to long wait times, some visitors will inappropriately use the roadside or adjacent NFS lands as a restroom.

A statement from a park official stated that park visitor use was up 20% in 2018. The FLA should include the newest information available.

The DLA needs to adequately evaluate all recreation and project related actions to determine overall affects to the area of influence. The Observation Surveys Conducted at Silverwood Lake SRA offer limited value in assessing the effects of project recreation, leaving basic questions regarding the daily use and carrying capacity of the park and its facilities unanswered

Page 5-292: que should be queue.

If 200 cars are the most that will be in the queue, is that number set by CalTrans, CHP, the park? Where does car 201+ go? Does someone count the cars and turn away any that exceed car number 200?

“Some users walk-in”

- Where do these users park? Do they use system roads/trails to get into the park or are they using user created trails to get to their destination? It looks like none of the observations made of users were made outside of the park, and there were no interviews of park visitors, so here again it's hard to know for certain how many users who can't get into the park by car, walk in.*

“Trash is picked up daily at the developed sites”

- Ergo, it is not picked up elsewhere. The FLA should clarify the location and quantity picked up at all locations. Is there any trash pickup by park personnel along FS Road 2N33, HWY 138, the parking area at the dam? If so, how often and by whom?*

Page 5-294: California Department of Parks and Recreation:

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- *The DLA is unclear or inconsistent in explaining when and how often the park reaches capacity and closes. The interviewee states that there are several non-holiday weekends where the park fills up and visitors are turned away.*

Page 5-294: The interview states that the group campgrounds "*are consistently full each weekend*", not just "utilized".

Page 5-296: "*When the park fills to capacity, those destination users often park outside of the SRA and walk in*"

- *Outside the SRA is on Forest Service lands.*

Page 5-296: "occasional pedestrian traffic"

- *has resulted in a substantial user created trail network departing the road and causing damage to vegetation as well as leaving piles of trash on Forest Service lands.*

Page 5-296: "majority of boaters probably come from the nearby desert communities"

- *This is an assumption based on no data.*
- *A study of zip codes for boaters would elucidate where people are coming from, as well as how far they typically travel.*

Page 5-299: **Caltrans**: "*periodic backups*" - The interview with the park indicated that the backup problem occurred on all holiday weekends, many regular weekends and often before the park opens when anglers line up to get in

- *Forest Service agrees. The FLA should acknowledge that these backups put use on Forest Service lands.*

Page 5-300: "Federal Land Access Program"

- *Please provide information regarding agreements with Caltrans over use of pullouts for long term parking. Parking and using the highway for staging is a direct effect and impact on NFS lands. How are safety and sanitation issues dealt with?*

Page 5-301: "new demand for additional parking....."

- *The proposed Recreation Study, in section "1.1.2 Study Goals and Objectives" mentions "determine potential future improvements to or expansion of recreation facilities" - however no comments about the potential expansion of recreation facilities (possible or not possible) were included in the study results or in the GIS data.*

Page 5-304: "Visitation trends indicate that park use is declining slightly over the last 20 years, and this trend is noticeable in the annual visits (Table 5.5-2) and by examining monthly use figures (Figure 5.5-4). Similarly, overnight camping use is also declining at a slightly greater rate than total use (combined day and overnight use) (Figure 5.5-5). Records for boating indicated by number of boat launches show a fairly steady pattern of use for the period of 2011-2017 (Figure 5.5-6).

- *The trends conclusion does not take into account any of the extenuating factors including the Great Recession and fires/algae blooms that have closed the area of the reservoir*

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during the summer. Prior to the fires years of 2016-17, visitation was back to the ballpark of pre-Recession.

- *A statement from a park official stated that park visitor use was up 20% in 2018. The FLA should include the newest information available.*

Page 5-309: As per 5-278

Page 5-310: The number of observations made for this study seems too low to be used in considering the daily use of each site.

Page 5-312: **Carrying Capacity:** As stated earlier, the proposed Rec Study, in section "1.1.2 Study Goals and Objectives" states "determine potential future improvements to or expansion of recreation facilities"

- *No comments about the potential expansion of rec facilities were included in the study results or in the GIS data.*
- *It should be noted that the inadequacy of the completed recreational studies (specifically, the Observation Surveys Conducted at Silverwood Lake SRA) has left several basic questions regarding the daily use and carrying capacity of the park and its facilities unanswered. The same can be said for those areas affected by spill-over, such as the amount of access through NFS lands.*
- *The study results are not adequate to determine short-term usage or future needs and impacts on those areas.*
- *New information will need to be provided to meet this information gap.*

Table 5.5-4: With so many locations listed as "Approaching capacity and at or near capacity on most summer weekends",

- *DWR should include a plan to mitigate or address this need in their DLA.*

Page 5-317: **Table 5.5-5:**

- *The meaning of a "non-peak weekend" should be clarified. This table shows that the park is not near capacity on Average, Daily Non-Peak Weekends", where in Table 5.5-4 it seems the park is at or near capacity on all summer weekends. This is confusing.*
- *This table is misleading because it averages all time periods. The table should be broken into seasons or times of the week to show the changing capacity. The narrative seems to acknowledge that the park fills up and gets closed. This table could make it appear that the Park never reaches capacity. This should be changed in the FLA.*

Page 5-325: Effects and Conclusions: "As noted previously, at times demand exceeds capacity and the recreation facilities are closed to prevent overcrowding and other potential safety issues and likely a diminished quality of recreation experiences for those recreating at the lake. Additionally, some users are walking in on unauthorized trails to access the shoreline areas."

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- *The Forest Service agrees that the recreational capacity does not meet demand. DWR should include a Plan for addressing this issue.*

“The facilities that have been developed are generally meeting the needs of the recreating public”

- *The USFS disagrees with this conclusion because it runs counter to the evidence. The SRA is over capacity, has a backlog of deferred maintenance, and when at full-capacity impact Forest Service lands and resources. User created trails are in places, including SBNF lands, that currently have no authorized facilities*

“Based on the visitation number, interviews with recreation providers, and observation surveys, the Project recreation facilities appear to be accommodating most Project visitor use, providing boating and shoreline access to the main Project reservoir (Silverwood Lake), and providing for public safety, and protection of natural and cultural resources. As noted previously, at times demand exceeds capacity and the recreation facilities are closed to prevent overcrowding and other potential safety issues and likely a diminished quality of recreation experiences for those recreating at the lake.”

- *The FLA should clarify this paragraph to have a consistent theme. It reads like it is trying to portray conditions both ways, one; facilities are meeting the needs, then two; the park must close its doors because there are too many visitors.*
- *The Forest Service agrees that the recreational capacity does not meet demand. DWR should include a Plan for addressing this issue.*

“Recreation use records indicate that, in the last nine years, both overnight and day use visitation is slightly lower than it was in the prior decade.”

- *According to the park official, use is up 20% in 2018. Why are the 2018 numbers not included in the DLA?*

“The analysis also confirmed that there are fairly predictable times on summer weekends, and on Saturdays and Sundays of holiday weekends, when demand exceeds the capacity of facilities and the park reaches capacity and limits the number of vehicles and watercraft. This condition is carefully managed by DPR staff with enforcement officers helping recreationists with information on other nearby recreation facilities and information on park vehicle re-opening procedures.”

- *Which enforcement officers?*
- *What does carefully managed mean?*
- *Information gained from Dispatch incidents over the last 5 years in the Silverwood area (designated Area 14) shows that Law Enforcement, Fire personnel, and Patrol units are called into the area for various incidents throughout the year. Most of these incidents involve one person, though vegetation incidents, fires, traffic collisions, and hazardous spills require a larger response or a 4- or 5-person engine.*

- *DLA did not address the direct effect on NFS lands from the parking on the highway and the safety concerns associated with it. This direct effect to NFS lands contributes to cumulative “spill-over” effects.*
- *This information can also be used in Section 5.6.1.7*

Page 5-329: “There is evidence of increased litter and some trampling of vegetation in these areas; however, developed sites nearby provide sanitary facilities these recreationists can use.”

- *What other facilities? It isn’t specified. And DWR removed the pit toilet facility near the dam.*
- *It's about 8 miles over a Level 2 dirt road from the Dam to Miller Canyon OHV Staging Area. It's about 6 miles from the Dam to the park entrance, which might be closed if it's full.*
- *The FLA needs to clarify what nearby means, especially if the SRA is closed and the developed sites cannot be accessed.*

Page 5-330 and 5-331: Cumulative effects – addresses “spillover” onto NFS lands

- Page 4-2: “Additionally, recreation uses at the Project can affect user patterns in the SBNF”
 - *The Forest Service agrees that the Project is affected Forest Service lands and resources.*
 - *Since DWR did not study recreation on the SBNF, focusing the majority of interviews on uses at Silverwood, they have no basis to conclude that recreation effects on NFS lands would be “less than significant”*
- “Similarly, if Silverwood Lake SRA campgrounds fill to capacity, there could be some spillover to neighboring NFS lands but most users seeking camping opportunities at Silverwood Lake SRA are probably in desire of developed campground experiences rather than primitive camping opportunities.”
 - *The Forest Service agrees that the spillover likely causes effects.*
 - *The Forest Service disagrees with the assertion that users ‘probably’ desire developed experiences. No information was collected through direct user questionnaires.*
 - *Is there any information available that says people would not be interested in primitive camping at the SRA? How about PCT hikers?*
 - *‘Probably’ – the Study Plan did not interview recreators or those on the highway during a busy weekend to assess their desires*

YEAR	VEG	SF	VF	SC	MA	ES	PSA	LE	FA	MISC	TC	HAZ
2018	2	0	2	0	0	0	3	41	5	10	3	0
2017	8	1	1	5	3	0	6	67	0	21	3	0
2016	2	0	0	0	0	2	1	58	0	25	4	1
2015	2	0	1	0	0	0	2	72	0	19	5	0
2014	2	0	0	0	3	1	3	54	0	21	2	0

Attachment 1

- *Page 5-330: To reiterate, on pages 5-325 and 5-326 and in other sections previously commented on, the document states how the facilities generally meet the needs of visitors, and here on page 5-330, and in numerous places previously commented, the document states that the park is again at capacity on several weekends, including holiday weekends during the summer and requests for more recreational opportunity will grow in the future. Again, the document seems to try and go both ways in different places, it seems inconsistent.*

“It is anticipated by Hesperia Recreation and Park District staff that new residents will follow similar patterns of the existing high desert communities’ residents in learning to avoid holidays and peak-use weekends and rather choosing to go to Silverwood Lake SRA during off-peak season periods or weekdays.”

- *Most people still work M-F, leaving them the weekends to recreate. While some of these new residents may visit the new local parks, some of them will try to go to the SRA. Some of these “new” SRA visitors will not be able to get into the park and will spill over onto SBNF lands.*

“it is likely that adverse cumulative effects from additional “spill-over” recreation use on the NFS lands would be less than significant.”

- *The Forest Service disagrees with this conclusion. How can this conclusion be made when again, the document states that in the future recreational use will rise on SBNF lands and the SRA, when last year alone the recreational use of the park was up 20%, according to park officials? It can be shown that there are already significant adverse effects from spill-over recreation, including trash, graffiti, improperly disposed human waste, erosion, and damaged vegetation.*

“Providing enhanced recreation use information under DWR’s Proposal and rehabilitating and upgrading existing recreation facilities should help reduce potential cumulative adverse effects resulting from increased use on the National Forest lands as a result of continued operation of the Project combined with residential development projects discussed above.”

- *With more development occurring everywhere in the region, there will be an increase in visitors wanting to get into the park. Rehabilitating and upgrading (without expansion) facilities will not alleviate the capacity issue or the spill-over onto SBNF lands that now occurs. With more potential visitors on the horizon, providing recreation use information might help, but there will still be a portion of the population that will be unaware of the information or disregard it resulting in an increase of spill-over visitors on SBNF lands when the park is at capacity. Working with others (i.e. SBNF) to expand recreational opportunities on or adjacent to the SRA is a needed solution.*
- *Providing more staff to interact and educate visitors would also greatly reduce adverse effects to the surrounding lands and facilities.*

Section 5.6 – Land Use and Management

No information given of the Direct Effect of the project – Highway safety from overflow parked vehicles.

Page 5-345: Regarding the Devils Canyon Facilities:

- *There looks to be some user created unauthorized access across FS lands to the upper end of the penstocks on the Devils Canyon side. Here again, the Project may be attracting unauthorized use by its presence and affiliated infrastructure.*

Page 5-346: “Flooding and erosion that occurs when the vegetative cover has burned off usually follow wildland fires.”

- *Some damage and erosion issues are due to visitors of the SRA creating user created trails and trampling vegetation.*

Page 5-350: “Consistent management at Silverwood Lake has been effective in controlling shoreline uses; thus, no specific shoreline buffer zone policy has been developed.”

- *There needs to be increased management in the areas where there are user created trails and visitor trash problems, particularly in undeveloped areas like those along Forest Road 2N33.*

“DWR’s proposed change to the existing Project boundary will have no effect on the public’s use of Project lands.”

- *The new boundary would not alleviate DWR's/DPR's responsibility for managing those areas outside of the Proposed Project Boundary that are directly impacted because of the existence of the Project (user created trails, trash, traffic issues, etc.), including those impacts that occur on SBNF lands.*

Section 5.7 – Aesthetic Resources

Page 5-369: The penstocks and associated concrete are in strong visual contrast with the surrounding greens and browns of the landscape as they descend through Devil Canyon. This is an indication that the EVC is moderately altered to heavily altered (DWR 2018). As such, the facility is not meeting the High SIO set in the SBNF Land Management Plan.

- *This contrast was specifically pointed out in Visual Resources PM&E meetings*

However, these types of structures are common and the public is accustomed to viewing these types of facilities. Further, the visual effect of the Project facilities on the Devil Canyon Powerplant side is mitigated, such that most of the views are bracketed by residential areas that have geometric shapes and light color contrast similar to the Project facilities. Overall, the geometric shapes of the Project facilities are not as obtrusive when views are framed by residential housing and developments.

- *This point was brought up in the Visual Resources PME meeting and the Forest Service made the comment in the meeting that residences built with the backdrop of the National Forest do not look at the Forest from the standpoint or comparison of other housing developments.*

Attachment 1

- *The Forest Service disagrees with this conclusion.*

As part of DWR's proposed Visual Resource Management Plan, DWR, at the time of major rehabilitation of these facilities requiring full re-coating of the penstocks or repainting of the exterior of the powerplant building, will consider using colors and materials that will help these industrial facilities blend into the surrounding landscapes, except for those facilities and/or site components that by Occupational and Safety Health Administration standards are required to stand out. Further, in general, DWR will not use colors that are too dark for Project facilities or components where heating and expansion are of concern.

- *The underlined words indicate that the Licensee could avoid dealing with these visual resource issues if they classified work as either not major, or if they weren't doing a full recoating. Also, by only considering there is not a strong message that this will be done.*
- *Forest Service LMP Standard 9 must be followed: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.*

5.7.3 Unavoidable Adverse Effects

DWR's Proposal, including Measure VR1 (Visual Resources Management Plan), would partially mitigate the existing Project's minor adverse effects. The unavoidable Project effects of continuing views of existing Project structures are considered minor due to the localized nature of the effects and the nature of the visual inconsistencies. In addition, the inconsistencies are considered minor because the public using the areas are generally accustomed to these features and understand the function and purpose of such facilities. Also, the facilities pre-date the Land Management Plan and, in many cases, the steep terrain and industrial design and function of Project facilities precludes other functional options where facilities might fit in the landscape with less visual effect.

- *The statement of predating the Forest LMP is not relevant. The Forest Service manages all uses based on the current LMP.*
- *Forest Service LMP Standard 9 must be followed: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.*

Section 5.8 –Cultural and Tribal Resources

Page 5-377: Forest Service disagrees with the proposed project boundary. Recreational support and facilities should be within the project boundary. Recreational studies have shown that the public accesses the recreational facilities from State Highway 138 and Forest Service Road 2N33. Where these use access trails lead from these parking areas to the State park lands, these areas should be included within the project boundary.

Exhibit E - APPENDIX A – DWR's Proposed PM&E Plans and Measures

Attachment 1: EROSION AND SEDIMENT CONTROL PLAN

Section 1.2, Page 1-5: During the PM&E meetings with DWR, the Forest Service stressed that erosion control measures would need to be taken to address recreation related activities,

Attachment 1

including addressing user created trails leading from Highway 138 and Forest Service Road 2N33 into the State Parks area and to the shoreline and recreation facilities. DWR assured the Forest Service that a recreation plan would include these actions. However, in the absence of a completed Recreation Plan, the Forest Service again stresses the need for reference to be made in this plan to address erosion control in other areas as well.

A similar discussion was made regarding the Transportation Plan, though there is a reference to accomplishing this on Page 2-1.

A reference/description should be made, perhaps in the emergency area, to dealing with potential erosion following a wildland fire on State Parks lands.

Attachment 2: HAZARDOUS MATERIALS MANAGEMENT PLAN

Section 1.2, Page 1-5: During the PM&E meetings, much discussion occurred regarding the term hazardous materials. The Forest Service noted multiple times that hazardous waste needed to be added to the definition. Though this plan defines hazardous waste on Page 1-1, DWR did not modify the glossary term to include hazardous waste. Such a change would also cover the use of “hazardous materials” on pages 2-1, 2-5, 4-1, and others.

Section 3.1.1, Page 3-1: The Forest Service, during the PM&E discussion meeting, noted the the term “spill” needed to be defined to note the difference between small spill and large spill, as associated with a threshold quantity.

As with the comment on the Erosion Control Plan, the as yet uncompleted Recreation PM&E needs to have a reference call-back to this plan. In it, there needs to be language to deal with hazardous materials and hazardous waste generated by recreational use both within the State Parks land, but also materials and wastes generated by recreationists waiting to enter the State Park while they stage on Highway 138. Recreationists are also known to park on Forest Service Road 2N33 and access the project reservoir and recreation facilities. Hazardous materials and hazardous wastes associated with these recreationists needs to be addressed.

Attachment 3: AQUATIC INVASIVE SPECIES MANAGEMENT PLAN

The Forest Service has maintained through this relicensing process that non-native rainbow and brown trout should be listed as aquatic invasives. DWR notes them as non-natives. The licensee has concluded that there is a path for stocked fish to make it onto Forest Service lands. Stocked fish have had a negative effect to native species in the upper Mohave River drainages. The Forest Service continues to maintain that this known and acknowledged problem needs to be addressed with a license condition.

Section 2.1.1, Page 2-1: The tasks are written specific to AIS. The Forest Service includes the non-native fish listed in Section 1.0 as being included in this broader term. This broader understanding should be added to the glossary definition of AIS.

Attachment 1

Section 2.1.1, Page 2-1 and following: After producing the BMP task list, the document focuses only on Quagga and Zebra mussels, Cyanobacteria blooms, and Algal blooms and does not address the other AIS and non-native fish species listed earlier. The Forest Service believes this PM&E plan should be expanded to incorporate comments made during the collaborative process.

Attachment 4: INTEGRATED VEGETATION MANAGEMENT PLAN

This measure needs to be applied to both the current project boundary and those areas showing direct, indirect, and cumulative effects from the project.

The current plan (Page 4-2) should not be limited to the proposed project boundary but include areas influenced by Project recreation affects. Areas treated and any resulting weed record will need to be collected in a manner that is consistent with the Forest Service NRIS TESP database to allow for tracking of control efforts on Forest Service lands.

Page 4-2: “DWR will evaluate areas of ground disturbance within the Project boundary caused by Project O&M and construction activities on a site-by-site basis to determine if revegetation is necessary or appropriate.”

- *The Forest Service has maintained through this PM&E process that recreation user-created trails are project-related. When these trails are dealt with, they need to have an erosion control aspect as well as a revegetation aspect associated with the restoration.*
- *The current plan (Page 4-2) should not be limited to the proposed project boundary. All project related areas, including access to the proposed project boundary by recreationists should be addressed.*

Table C.1-1: The 3 special status plants reported are watch list plants. These data need to be collected and provided to the Forest in a manner consistent with adding them into our NRIS TESP database.

Weed records will need to be collected in a manner conducive to the Forest Service inputting the records into NRIS and being able to track control efforts on Forest Service lands.

Attachment 6: FIRE PREVENTION AND RESPONSE PLAN

The plan does not adequately address the emergency evacuation of visitors in both the developed and undeveloped areas, including accountability of those users that walked-in

Pursuant to 18 CFR §16.8(c)(6)

Wildlife Species

The Licensee incorrectly determined the upstream extent of endangered arroyo toad critical habitat in the West Fork Mojave River and did not survey appropriately for the species. Likewise, the Licensee did not survey outside their proposed project boundary for AIS biota and botanical species, as asked for by Forest Service study requests to the PAD. No conclusions can be drawn about the impacts of the Project in these tributaries to the Silverwood Lake because the licensee did not collect information, as asked for by Forest Service study requests to the PAD.

The Licensee concluded that stocked “fish in Silverwood Lake could, under some conditions, enter the tributaries” (Exhibit E, Section 4.2) and that recreation activities have “the potential to spread AIS.” (Section 5.3.2.3) The Forest Service agrees with this conclusion. The Forest Service has evidence of non-native species being in the tributaries to Silverwood and has an ongoing program to eradicate these non-native fish species. Forest Service national policy is to reduce or prevent the spread of non-native species onto NFS lands and is one of the agencies main goals.

On page 5-145, the Licensee concludes that non-native fishes and AIS are unlikely to have a significant effect. The Forest Service disagrees with this conclusion.

Recreation

In Section 4.4.2, the Licensee states, “DWR anticipates that recreation on the SBNF and on non-Project portions of the Silverwood Lake SRA will continue to increase.”

But in the recreation effects section, the Licensee states, “While demand for recreation access at the SRA sometimes exceeds the capacity of recreation facilities and opportunities present at the Project, there appears to be no further room to expand recreational access.”

The Forest Service disagrees with this conclusion. A suggestion was made during the Recreation Study to change the use at the Miller Canyon Group Camp to year round use and to alter the use to accommodate other than groups. The Forest Service has continually suggested to the Licensee that a solution in the Miller Canyon area could be looked at to expand recreational use on Forest Service managed lands.

The DLA states (Page 4-2) that “recreation uses at the Project can affect user patterns on the SBNF.” On pages 5-330 and 5-331, the DLA made an unsupported statement, “Similarly, if Silverwood Lake SRA campgrounds fill to capacity, there could be some spillover to neighboring NFS lands but most users seeking camping opportunities at Silverwood Lake SRA are probably in desire of developed campground experiences rather than primitive camping opportunities.” The Licensee did not collect direct interview information about the desires of users unable to camp in the SRA.

Attachment 2

The Licensee then concludes that these affects would be less than significant. “Providing enhanced recreation use information under DWR’s Proposal and rehabilitating and upgrading existing recreation facilities should help reduce potential cumulative adverse effects resulting from increased use on the National Forest lands as a result of continued operation of the Project combined with residential development projects discussed above.”

The Forest Service disagrees with this conclusion. Since the Study Plan did not have direct interview contact with recreationists displaced from Silverwood, there is no basis to conclude that they wouldn’t choose to use the National Forest and just degrade the land by leaving trash and waste with the lack of developed facilities. No basis is given for why information enhancements would limit use to the Forest. No evidence is given to deal with traffic issues on Forest. With no upgrades in facility parking being contemplated, the Park cannot support more people. DWR did not provide for a solution to the direct effect of using Highway 138 or Forest Service Road 2N33 as staging areas for foot access to the Silverwood Lake SRA.

The Forest Service has evidence that users displaced from the Silverwood Lake SRA facilities are using the Forest Service lands to the detriment of the forest resources. Trash removal has been documented. Law enforcement and emergency support documentation has been provided. The Licensee has not discussed recreational site expansion with the Forest Service during Recreation PM&E meetings.

The DLA is deficient, in that it doesn’t address effects outside the proposed project area. The DLA clearly demonstrates that the current recreational opportunities in insufficient for demand. Either the FLA needs to provide for a solution for this use, or additional information needs to be collected.

Visual Resources

The Forest Service is involved in PM&E discussions with the Licensees regarding visual resources. The Licensee noted that the “penstocks and associated concrete are in strong visual contrast with the surrounding greens and browns of the landscape.” However, the Licensee then concludes that the “Project facilities are not as obtrusive when views are framed by residential housing and developments.”

The Forest Service disagrees with this conclusion. This point was brought up in the Visual Resources PME meeting and the Forest Service made the comment in the meeting that residences built with the backdrop of the National Forest do not look at the Forest from the standpoint or comparison of other housing developments.

The Forest LMP has Standard 9: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.

The Forest Service provided input to the color scheme that the penstocks and concrete should be painted to reduce this visual contrast. The Forest Service does not agree with the Visual Resource Management Plan that states “at the time of major rehabilitation of these facilities requiring full re-coating of the penstocks or repainting of the exterior of the powerplant building, will consider using colors and materials that will help these industrial facilities blend into the

Attachment 2

surrounding landscapes.” The underlined words indicate that the Licensee could avoid dealing with these visual resource issues if they classified work as either not major, or if they weren’t doing a full recoating.

Wed 3/14/2018 11:32 AM

Hi Robert,

Thank you for your e-mail. I have been out of the office for training and am catching up, so apologies for the slightly delayed response. In any case, I will work with our technical folks and check our historical files to address the questions that you have raised and get back to you as soon as possible.

Gwen

From: Taylor, Robert G -FS [<mailto:rgtaylor@fs.fed.us>]

Sent: Monday, March 12, 2018 1:48 PM

To: Knittweis, Gwen@DWR <Gwen.Knittweis@water.ca.gov>

Cc: Wells, William E -FS <williamewells@fs.fed.us>; Noiron, Jody -FS <jnoiron@fs.fed.us>

Subject: FERC P-14797; Groundwater inflow into San Bernardino Tunnel - questions

Gwen,

Our files contain the "Final Geologic Report: San Bernardino Tunnel", Project Geology Report C-81, February 1974.

Even after the contact grouting, consolidation grouting, grouting of the steel liner, there were still recorded water flows after the tunnel lining.

In August 1971, a total of 65 points of inflow were measured with a range of ½ to 26 gpm. 8 of the locations exceeded 5 gpm.

Overall, the outflow remained relatively constant at 273 gpm.

The report is thorough in its description of all that was done to try and seal these flows prior to this phase, but the report details nothing about attempting to stop these flows.

The report notes on September 2, 1971, that "all work completed".

The implication is that groundwater continued to be drained out of the fractured system and into the tunnel.

I am wondering if you have access to additional information, such as inspections through the years when the tunnel is drained of SWP water and inspected. The locations of the inflows were recorded relative to the as-builts of the tunnel.

As we expressed in one of our comments on the PAD, the amount of water calculated going through the Devil's Canyon power plant is larger than the amount calculated to leave Silverwood.

The Forest Service has another project just 5 miles to the east (similar geology, precipitation, etc) where we have shown that the annual extraction of an average of 200 gpm has caused detrimental effects to the species and watershed health.

If the tunnel is draining the local groundwater, I am sure you can understand our concern.

Technology has advanced in the intervening years. If the tunnel is still leaking, then the Forest would be interested in DWR sealing the tunnel and keeping the local groundwater in the local fractured aquifer.

Also, do you know if there was compensation made to the Forest for all the groundwater drained from the system during construction? The report says the total flow averaged 624-721 gpm and the tunnel took 3.5 years to complete. That's a lot of water.

Thanks,



Robert G. Taylor, P.G.

Forest Hydrologist,

DWR FERC IDT Leader

Forest Service

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Tue 1/29/2019 7:47 AM

McNeil, Jeremiah@DWR Jeremiah.McNeil@water.ca.gov

Hi Robert,

I spoke with several people here in DWR and you'll be happy to hear we have been researching your question. The preliminary findings do show that during construction (before the tunnels were completed and lined) there were various levels of seepage. However, after construction was completed, seepage into the tunnel was significantly less and there are indications the local ground water returned to its before tunnel condition. During operation, the tunnel is pressurized by the water in Lake Silverwood. Due to this pressure it is very likely that the seepage is further reduced to a very small amount and very possibly to zero. Added to those facts is the last 900 ft of the tunnel is also steel lined. We had multiple engineers as well as our expert engineering geologist go back and look through the inspection reports after the completion of the tunnels and when dewatered without the static head pressure. What was discovered is over the 3.81 miles of tunnel there was only a cumulative 2 cfs of seepage. Again, this was with no static head pressure, while the pipe is normally operated under pressure. While I believe it was worthwhile to look into your concerns and we are developing a brief White Paper on the issue I don't see the question warranting further investigation or studies at this time. On the other hand if the National Forest Service has noticed any specific detrimental impacts around or related to the San Bernardino Tunnel those impacts could warrant further investigation.

Please feel free to contact me any time if you have questions regarding our initial conclusions.

Thank you,
Jeremiah

Jeremiah McNeil, P.E.
Department of Water Resources

Principal Engineer, Water Resources
Hydropower License Planning and Compliance Office
Executive Division
(916) 557-4555

From: Taylor, Robert G -FS <rgtaylor@fs.fed.us>
Sent: Thursday, January 3, 2019 2:35 PM
To: McNeil, Jeremiah@DWR <Jeremiah.McNeil@water.ca.gov>
Cc: Alvarez, Dawn -FS <dalvarez@fs.fed.us>
Subject: FW: FERC P-14797; Groundwater inflow into San Bernardino Tunnel - questions

Jeremiah,

After I sent this email to Gwen, she requested a copy of the report I cited, and I provided that. She said the engineering group would look into it and get back to me. The only correspondence I got was an acknowledgement that they are looking into it. With the Silverwood DLA coming out soon, I am hoping this is adequately addressed. It was not addressed in the PAD and until I produced this report, I felt like my groundwater concerns were being blown off by your consultants.



Robert G. Taylor, P.G.
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Mon 4/22/2019 9:55 AM
McNeil, Jeremiah@DWR Jeremiah.McNeil@water.ca.gov
RE: DC FERC - Groundwater white paper

Hi Robert,

It's not in the DLA. It's a separate document and I'll get back to you on the status as soon as I touch base with the person putting it together...

Thanks,
Jeremiah

From: Taylor, Robert G -FS <rgtaylor@fs.fed.us>
Sent: Monday, April 22, 2019 9:51 AM
To: McNeil, Jeremiah@DWR <Jeremiah.McNeil@water.ca.gov>
Subject: DC FERC - Groundwater white paper

Jeremiah,

I haven't gone through the entire DLA yet, but is that White paper you mentioned about the San Bernardino tunnel included in the DLA, or is it separate?



Robert G. Taylor, P.G.
Forest Hydrologist,
DWR FERC IDT Leader

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Wed 5/15/2019 10:55 AM

Chandler, Chris W -FS chris.chandler@usda.gov

RE: Silverwood FERCC Data

Hey Rob,

As I don't know what the criteria was for including or excluding user created trails, maybe it was decided that this area was not to be included. However, I was out here yesterday (see picture) and walked out to point A and point B. There was some light trash and a few foot prints. I agree the "trail" there is not heavily used. From point C to the high point on the ridge to point B looks to be an old road bed. There is an old gate at point C where the trail is overgrown but passible for a couple of hundred feet. It then opens up reasonably well until the roadbed kind of ends and becomes more brushed over again. These user created trails do not appear in the GIS data (at least not the dataset I pulled down) and don't seem to have been referenced in any of the documents I have seen, so there is no way to tell if they were even evaluated – that's my main point.

I also came across two motorcycles and one side-by-side using the road, and drove past 3 vehicles (non-OHV) parked along 2N33. There was quite a bit of trash and a little graffiti in the area above Live Oak Landing.

Thanks.



Chris Chandler
GIS Coordinator
Forest Service

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Caring for the land and serving people



From: Taylor, Robert G -FS
Sent: Wednesday, May 15, 2019 9:47 AM
To: Chandler, Chris W -FS <chris.chandler@usda.gov>
Subject: FW: Silverwood FERC Data

If we have data, either aerial or picture proof that more than what they found is there, we should include that.



Robert G. Taylor, P.G.
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DWR FERC IDT Leader

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Caring for the land and serving people

From: Rorie, Bryan [<mailto:Bryan.Rorie@stantec.com>]
Sent: Tuesday, May 14, 2019 3:30 PM
To: Taylor, Robert G -FS <robert.taylor2@usda.gov>
Cc: McNeil, Jeremiah@DWR <Jeremiah.McNeil@water.ca.gov>; Miller, Aaron S.@DWR <Aaron.S.Miller@water.ca.gov>; Miller, Jill (Sacramento) <jill.miller2@stantec.com>; Gilbert, Kirby <kirby.gilbert@stantec.com>
Subject: RE: Silverwood FERC Data

Hi Robert,

Per Chris Chandler's request at the April 30th Recreation Plan PM&E meeting, we reviewed all GIS data collected during the recreation study and did not find any additional trail or other layers that are not already posted on the Devil Canyon relicensing website. During the recreation study, we did not identify any dispersed use trails or a trail network leading from 2N33 to Sycamore Landing. The main area where dispersed use trails were identified (consistent with Recreation Provider interviews information), were from 2N33 leading to Live Oak Landing and the adjoining "Twin Coves" areas (this data is posted to the Devil Canyon relicensing website).

Devil Canyon Recreation Study data is saved to the Devil Canyon public website at the following link (Study-9-Recreation/Data/Maps And GIS Data). <http://devil-canyon-project-relicensing.com/studies/>

Please let us know if you have any questions or comments.

Thank you,

Bryan Rorie

Project Manager

Direct: (916) 418-8254
Mobile: (916) 296-8653

Stantec Consulting Services Inc.

From: Taylor, Robert G -FS <robert.taylor2@usda.gov>
Sent: Thursday, May 9, 2019 1:49 PM
To: Miller, Jill (Sacramento) <jill.miller2@stantec.com>; Gilbert, Kirby <kirby.gilbert@stantec.com>
Cc: McNeil, Jeremiah@DWR <Jeremiah.McNeil@water.ca.gov>
Subject: FW: Silverwood FERC Data



Robert G. Taylor, P.G.
Forest Hydrologist,
DWR FERC IDT Leader

Forest Service

San Bernardino National Forest Supervisor's Office

p: 909-382-2660
c: 909-693-2875
robert.taylor2@usda.gov

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From: Chandler, Chris W -FS
Sent: Thursday, May 9, 2019 1:42 PM
To: Taylor, Robert G -FS <robert.taylor2@usda.gov>
Subject: Silverwood FERC Data

Rob,

At the meeting last week (5/2/19), I believe Stantec told me they would provide me with the data for the user created trails leading to the Sycamore Landing Day Use Area from FS Road 2N33. Can you please check with them to find out if they have it and can send it?

Thanks.



Chris Chandler
GIS Coordinator

Forest Service

San Bernardino National Forest

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Mon 8/21/2017 2:31 PM

Miller, Aaron S.@DWR Aaron.S.Miller@water.ca.gov

RE: FERC P-14797; Cedar Springs Dam closure - letter to FERC

Robert,

I've been able to follow up on your question regarding the pit toilet at Cedar Springs Dam. DWR staff did not have any records, so we had to follow up on your inquiry with CA State Parks. The capacity of the pit toilet is 250 gallons. State Parks also did not have any written documentation on the number of times the pit toilet is pumped out. State Parks staff advised that the toilet is pumped out once a week. The toilet may or may not be full when it is pumped out each week. How full the toilet is upon clean out each week depends on the level of usage with peak season/peak weekends receiving the higher usage levels.

I hope this helps answer your question.

Aaron S. Miller, P.E.
Senior Engineer, Water Resources
[Hydropower License Planning and Compliance Office](#)
CA Department of Water Resources
(916) 557-4560
Aaron.S.Miller@water.ca.gov

From: Taylor, Robert G -FS [<mailto:rgtaylor@fs.fed.us>]
Sent: Thursday, July 27, 2017 12:37 PM
To: Miller, Aaron S.@DWR
Cc: Stamer, Marc -FS; Dorsey, Jeremy -FS; Sirski, Jerry -FS; Scholl, Gwen@DWR
Subject: RE: FERC P-14797; Cedar Springs Dam closure - letter to FERC

Aaron,

The documentation sent back in May (by Jerry Snow) to inform us of this action only included language regarding the fence. The removal of the pit toilet was not a part of the discussion, nor was it identified on the map that showed fence location proposals.

Do you have records of how often the pit toilet was pumped through the years of its use and the capacity of the pit?

To surmise that filling it would not lead to sanitation and water quality issues seems premature. If it is the only toilet in the area and it is removed, and if the volume of waste removed is not insignificant, then removal of such a location would have the potential to cause the public to use the landscape in a dispersed fashion.

I would prefer to see data and not move forward under a hypothesis of "no problem".



Robert G. Taylor, P.G.
Forest Hydrologist,
DWR FERC IDT Leader
Forest Service

San Bernardino National Forest Supervisor's Office**p: 909-382-2660****c: 909-693-2875**rgtaylor@fs.fed.us602 S Tippecanoe Ave
San Bernardino, CA 92408www.fs.fed.us**Caring for the land and serving people****From:** Miller, Aaron [S.@DWR \[mailto:Aaron.S.Miller@water.ca.gov\]](mailto:Aaron.S.Miller@water.ca.gov)**Sent:** Wednesday, July 26, 2017 3:59 PM**To:** Taylor, Robert G -FS <rgtaylor@fs.fed.us>**Cc:** Stamer, Marc -FS <mstamer@fs.fed.us>; Dorsey, Jeremy -FS <jdorsey02@fs.fed.us>; Sirski, Jerry -FS <jsirski@fs.fed.us>; Scholl, Gwen@DWR <Gwen.Scholl@water.ca.gov>**Subject:** RE: FERC P-14797; Cedar Springs Dam closure - letter to FERC

Hi Robert,

Gwen asked me to look into your questions regarding the Cedar Springs Dam closure and I have the following answers for you:

- Do you happen to know whom you reached out to? - DWR staff (Gerald Snow) working on the closure issue indicated he called Jeremy Dorsey at the USFS on 5/12/17. Jeremy was also sent an email from Mr. Snow on the same date notifying him of a meeting time and location for a field review of the closure, which took place on 5/18/17.
- Do you know if the recreation study plan data gathering will look at the sanitation/water quality/etc issues associated with the removal of this facility (vault toilet) will be covered? - The recreation study team will not prepare an effects analysis of potential sanitation issues or water quality issues. The recreation section will evaluate issues and trends for recreation resource effects (nuisance, displacement, quality of experience, etc.) and will reference other sections specific to the resource effected and where the evaluations occur (vegetation trampling effects would be addressed in botanical sections, water quality implications of sanitation issues in water quality sections of the Draft License Application). The study will identify environmental damage and threats due to past, present, ongoing, and future recreation use and where relevant, sanitation as well as litter, erosion, vegetation trampling issues/concerns are being documented. Once documented we will evaluate potential impacts to recreation resources for the DLA. This information will also be passed on to other study leads for evaluation of possible effects to other resources. Given all of this, it seems highly unlikely that filling a pit toilet with concrete and removal of a structure would lead to any sanitation/water quality issues that need to be studied.
- Do you anticipate the CEQA document to address the removal of this sanitation facility and how that removal could cause effects on adjoining lands? - Staff has indicated there will not be a

CEQA analysis for removal of the vault toilet. Filling the void with concrete and taking down the structure is an exempt activity under CEQA, CEQA Guidelines Section 15301.

I hope you find these answers helpful. Should you have any further questions please let me know.

Aaron

Aaron S. Miller, P.E.
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From: Taylor, Robert G -FS [<mailto:rgtaylor@fs.fed.us>]
Sent: Tuesday, July 25, 2017 11:30 AM
To: Scholl, Gwen@DWR
Cc: Stamer, Marc -FS; Dorsey, Jeremy -FS; Sirski, Jerry -FS
Subject: FERC P-14797; Cedar Springs Dam closure - letter to FERC

Gwen,

In your letter to FERC that posted today, you note that you reached out to the Forest Service and received no reply. Do you happen to know whom you reached out to? I don't recall seeing the request for comments, but I understand that since it is a current license issue, it may have gone to a different Forest contact.

"DWR is also working with stakeholders that may be affected by the closure of Cedar Springs Dam to public access. DWR has consulted with the Pacific Crest Trail Association and has agreed to put in fencing that is similar (and muted) in color to vegetation near the trail to provide an aesthetically pleasing environment for the trail users. Since the proposed fencing and gate are located near United States Forest Service (USFS) Road 2N33, DWR also reached out to USFS regarding alignment and did not receive any comments. DWR will be posting a public notice and providing a 30-day comment period."

Marc, Jeremy, myself, and some others met with Stantec (Kirby, Lisa) on July 11 and the use of the dam facilities, bleed out onto the Forest, and parking in that area were discussed. I note in your current letter the plan to remove the vault toilet that is in that vicinity.

Do you know if the recreation study plan data gathering will look at the sanitation/water quality/etc issues associated with the removal of this facility will be covered?

I also note that there is a plan to do a CEQA biological technical memo. Do you anticipate the CEQA document to address the removal of this sanitation facility and how that removal could cause effects on adjoining lands?

I'll look for the public notice and 30-day comment period. The Forest will address our concerns and would hope that with the Stantec data gathering going on now, that some of that information can be drawn into the ramifications that this dam and facility closure will have on adjoining Forest Service lands.



Robert G. Taylor, P.G.
Forest Hydrologist,
DWR FERC IDT Leader

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State of California - Natural Resources Agency
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Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



July 8, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

SUBJECT: COMMENTS FROM THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON CALIFORNIA DEPARTMENT OF WATER RESOURCES' DRAFT LICENSING APPLICATION AND PROPOSED STUDY PLANS AND REQUESTS FOR NEW STUDIES FOR THE DEVIL CANYON PROJECT, FERC NO. 14797 (CURRENTLY LICENSED AS PART OF FERC NO. 2426)

Dear Secretary Bose:

The California Department of Fish and Wildlife (CDFW) has received and reviewed the Draft Licensing Application (DLA), and Proposed Study Plans filed by the California Department of Water Resources (DWR, Licensee) for the separate licensing of the Devil Canyon Project (Project). The Project is currently licensed with the Warne and Castaic Power Developments under Federal Energy Regulatory Commission (FERC) Project No. 2426, which is co-licensed to DWR and the Los Angeles Department of Water and Power. DWR has requested a separate license, and FERC docket number 14797 has been designated to this Project. The DLA was submitted by DWR on April 10, 2018. CDFW has participated in the Traditional Licensing Process relicensing proceedings since DWR filed their Notice of Intent to file a new Commission license for the Project on August 1, 2016. With this letter, CDFW submits comments on the contents of the DLA and proposed study plans and provides requests for additional resource studies.

AUTHORITIES

CDFW is the relevant State fish and wildlife agency for resource consultation pursuant to the Federal Power Act Section 10(j) (16 U.S.C. section 803 (j)). The fish and wildlife resources of the State of California are held in trust for the people of the State by and through CDFW (Fish & G. Code § 711.7). CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish & G. Code § 1802). Information generated through the appropriate studies will be utilized by the CDFW in the development of recommendations.

Conserving California's Wildlife Since 1870

The mission of CDFW is to manage California's diverse fish, wildlife, and plant resources, and the habitats on which they depend, for their ecological values and for their use and enjoyment by the public. It is the goal of CDFW to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife, and plant species within the FERC-designated boundaries of the Project, as well as the areas adjacent to the Project in which resources are affected by ongoing Project operations, maintenance, and recreational activities.

COMMENTS ON DRAFT LICENSING APPLICATION (DLA)

The NOI, Pre-Application Document (PAD), and request to use the Traditional Licensing Process (TLP) were filed by Licensee with FERC on August 1, 2016. FERC approved Licensee's request to use the TLP on September 30, 2016. Licensee held a site visit and public meetings on November 2 and 3, 2016 respectively. An extension of time request was submitted by CDFW to DWR on January 3, 2017. On March 2, 2017, the CDFW submitted comments on the contents of the PAD and proposed study plans and provided requests for additional resource studies. Within the Devil Canyon Project Relicensing FERC Project Draft License Application Project No. 14797 Appendix E Volume II Exhibit E – Environmental Report (Section 1.4.2.1 *DWR's Consideration of Requested Study Modifications and New Studies Included in NOI and PAD Comment Letters*), Table 1.4-5 - *CDFW-Requested Study Modifications and New Studies, and How DWR Addressed the Requests in Its Relicensing Studies* was included. The table included DWR's responses to CDFW's requests to modify proposed studies, as well as, request for new studies to be performed (See table below). CDFW is providing additional comments on the 16 original comments to the PAD and is including 4 new additional comments that were not addressed.

Table 1. Requested Study Modifications and New Studies Comments

#	Study	Requested Modification to DWR Proposed Study in PAD or New Study (March 2, 2017)	DWR Response (April 2019)	CDFW Follow Up Comments (July 8, 2019)
REQUESTED MODIFICATIONS TO DWR PROPOSED STUDY IN ITS PAD				
1	Aquatic Invasive Species	CDFW requested the following modifications to DWR's proposed study: (1) expand study area to include all tributaries to Silverwood Lake and the West Fork Mojave River downstream of Cedar Springs Dam to Grass Valley Creek; (2) clarify the survey protocol; (3) survey once per month from May through September over two years and describe survey locations; 4) clarify if the study will develop PM&E measures; and (5) record incidental observations on non-native amphibians and reptiles.	Adopted with Modification: DWR developed an AIS study within the proposed Project boundary at Silverwood Lake, which included a detailed description of the protocol, will be used to develop PM&E measures, and included incidental observations of AIS not specifically surveyed for. DWR did not adopt the CDFW's request for AIS surveys in all tributaries to Silverwood Lake and the West Fork Mojave River downstream of Cedar Springs Dam to Grass Valley Creek of the Project for two reasons. First, CDFW provides no indication that there are Project-related AIS impacts in stream reaches two miles away from the Project, so the need for the information has not been established. Second, CDFW does not describe the nexus to the Project. There is no Project O&M in tributaries upstream or downstream of the Project; therefore, Project O&M would not introduce AIS in these tributaries. The single survey was intended to provide a snapshot of AIS present in the reservoir to lead PM&E	O&M are not the only activities that can spread nonnative species. Water release can move nonnative species to other locations. The California Aquatic Invasive Species Management Plan (State of California Resources Agency Department of Fish and Game January 2008) is a comprehensive plan that discusses management actions for addressing aquatic invasive species (AIS) threats to the State of California, including water delivery & diversion systems. This entails accounts on bullfrogs, African clawed frogs, as well as, other aquatic plants and animals that can be harmful to native species, including the arroyo toad. By definition, nonnative species typically have: (a) high reproductive rates, (b) short time to maturity and reproduction, (c) an ability to live in diverse environments, (d) to be associated with human activities and environmental disturbances, (e) good dispersal abilities, and (f) an ability to outcompete native species for resources. Given that the vast majority of water within Silverwood Lake is delivered via the State Water Project (SWP), and releases of water from Silverwood Lake to downstream areas is therefore primarily comprised of SWP water, CDFW believes it is not unreasonable to request that AIS surveys be performed in all tributaries to Silverwood Lake and the West Fork Mojave River downstream of Cedar Springs Dam to Grass Valley Creek. For example, bullfrogs, which are known predators to a number

			<p>development, particularly for those species not already known to be present. Performing additional years of study could potentially find more species but would not substantially inform the development of PM&E measures.</p>	<p>of native amphibians and fish, can move up to 159 meters in one night and have been found at isolated temporary ponds (Degenhardt et al. 1996)¹, while Smith and Green (2005)² found they are able to move up to well over one kilometer.</p> <p>Measure AR-2 states that DWR will implement the Aquatic Invasive Species Management Plan (Appendix A Attachment 3 – Aquatic Invasive Species Management Plan) to prevent the introduction and spread of aquatic invasive species. The list of aquatic invasive species of concern within the Management Plan includes species known, or with the potential, to occur in the Project, including: cyanobacteria; aquatic plants (curly leaf pondweed (<i>Potamogeton crispus</i>), Eurasian watermilfoil (<i>Myriophyllum spicatum</i>), coontail (<i>Ceratophyllum demersum</i>), and sago pondweed (<i>Potamogeton pectinatus</i>)); reptiles (red-eared slider (<i>Trachemys scripta elegans</i>)); and fish (Shimofuri goby (<i>Tridentiger bifasciatus</i>) and Inland silverside (<i>Menidia beryllina</i>)). In addition, other AIS that have a known risk of being introduced to Project impoundments and may be added if they are suspected or reported to occur in Project impoundments include: aquatic plants (hydrilla (<i>Hydrilla verticillata</i>), water hyacinth (<i>Eichhornia crassipes</i>), and parrot's feather milfoil (<i>Myriophyllum aquaticum</i>)); amphibians (American bullfrog (<i>Lithobates catesbeianus</i>) and African clawed frog (<i>Xenopus laevis</i>)); and crustaceans (red swamp crayfish (<i>Procambarus clarkii</i>)). Contrary to these findings, the Plan only identifies measures for 2.2.1.1 Quagga and Zebra Mussels (Section 2.2.1.1), Cyanobacteria Blooms (Section 2.2.1.2), and Taste and Odor Algal Blooms (Section 2.2.1.3).</p>
2	Botanical Resources	<p>CDFW requested the following modifications to DWR's proposed study: (1) expand study area to include West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek; and (2) perform systematic field surveys over the entire study area.</p>	<p>Adopted with Modification: DWR performed systematic field surveys over the entire study area, including a 100-foot buffer. DWR did not expand the study area to include West Fork Mojave River downstream of Cedar Springs Dam because the Project does not affect downstream flow, and botanical resources in this area are not anticipated to be affected by Project operation.</p>	<p>In Appendix B – Project Operations and Resource Utilization (Section 2.0 <i>General Description of the Project</i>), it asserts: “The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the U.S. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits”.</p>

				<p>As part of the FERC licensing, reservoirs and impoundments need to be identified. For the Devil Canyon Project Relicensing Project, this would include Cedar Creek Dam, which impounds both natural flow and water from the State Water Project in Silverwood Lake. While the energy from the Devil's Canyon Project is provided by pumping water from Silverwood Lake to Devil's Canyon where it is released, another portion of State and natural water within Silverwood Lake that is adjudicated exits Cedar Springs Dam, through the West Fork and then the Mojave Forks Dam/Mojave River. Within the License Application Exhibit E – Environmental Report Devil Canyon Project Relicensing, FERC Project No. 14797 Appendix E Section 4.2 <i>Geographic Scope for Analysis of Cumulative Affected Resources</i>), for aquatic resources, “the geographic scope extends from the headwaters of the West Fork Mojave River and East Fork of the West Fork Mojave River, through Silverwood Lake to the normal maximum water surface elevation (NMWSE) of the Mojave River Dam. Therefore, it was determined that The NMWSE of the Mojave River Dam is the downstream terminus because the facility is a major water project. Any Project effect below the NMWSE of the Mojave River Dam would be <i>de minimus</i>”. The CDFW again requests that DWR (1) use the same geographic scope for botanical resources and expand the study area to include West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek; and (2) perform systematic field surveys over the entire study area.</p>
3	Non-Native Invasive Plants	<p>CDFW requested the following modifications to DWR's proposed study: (1) expand the study area to include West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek; and (2) perform systematic field surveys over the entire study area.</p>	<p>Adopted with Modification: DWR performed systematic field surveys over the entire study area, including a 100-foot buffer. DWR did not expand the study area to include West Fork Mojave River downstream of Cedar Springs Dam because the Project does not affect downstream flow, and NNIP are not anticipated to be introduced into, or if occurring downstream, are not anticipated to be affected by, Project operation.</p>	<p>Within the Integrated Vegetation Management Plan (Section 2.2 <i>Non-Native Invasive Plants Within Project Boundary</i>), it states: “Surveys for target NNIP were completed in 2017, along with a comprehensive and systematic botanical inventory, within the Project boundary (where accessible) in support of the Project relicensing. A total of 177 occurrences of 13 target Non-Native Invasive Plan (NNIP) species were observed during field surveys. For occurrences that extended beyond the Project boundary, attributes of the entire occurrence, including estimated numbers of individuals and acreage, were recorded”.</p>

				<p>Furthermore, "Where contiguous NNIP occurrences extend beyond the Project boundary by up to 50 feet, DWR, DPR, and USFS (when also on NFS lands) will coordinate at the annual agency consultation meeting to develop a schedule and identify the appropriate level of control measures for existing populations of target NNIP populations that are in areas where there is a high potential for disturbance and/or dispersal to areas beyond the existing occurrence. This may include plans to cooperatively manage existing known target NNIPs."</p> <p>CDFW agrees that the NNIP should extend beyond the project boundary, particularly given nonnatives invasive nature and the project encompasses headwaters within the watershed. However, CDFW would like to better understand why a 50-foot threshold was chosen before any coordination and nonnative remediation measures are taken.</p>
4	Special-Status Terrestrial Wildlife Species	CDFW requested the following modifications to DWR's proposed study: perform focused surveys for at least bald eagle, peregrine falcon, and bats.	Adopted with Modification: DWR did not perform protocol level surveys for wildlife species. Additionally, DWR's Terrestrial Wildlife Species – California Wildlife Habitat Relationship Study assessed habitat for special-status species with the potential to be affected by Project O&M, which is sufficient for compiling the Project-related information needed to develop license measures.	CDFW understands that the licensing involves a federal agency (FERC) and appreciates that assessments of habitat for state special-status species with the potential to be affected by Project O&M were performed. However, CDFW recommends the completion of surveys for State Special-Status Terrestrial Wildlife Species similar to those that were conducted for Non-Native Invasive Plants (# 3 above), ESA-Listed Bird Species – Southwestern Willow Flycatcher and Least Bell's Vireo (#5 below), and ESA – listed Plant (#6 below) so that Project-related information can be compiled to develop effective measures.
5	ESA-Listed Bird Species – Southwestern Willow Flycatcher and Least Bell's Vireo Riparian Habitat Evaluations and Surveys	CDFW requested the following modifications to DWR's proposed study: (1) expand study area to include West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek; (2) include a 500-foot buffer on the survey area; and (3) clarify that "potentially affected" survey areas include areas of both direct and indirect effects.	Adopted with Modification: DWR performed surveys for southwestern willow flycatcher and least Bell's vireo in potentially suitable habitat within the proposed Project boundary, except for the area over the subterranean San Bernardino Tunnel. Surveys were not performed along the West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek, because the Project does not affect natural flows	According to License Application Exhibit E – Environmental Report Devil Canyon Project Relicensing, FERC Project No. 14797 Appendix E (Section 5.4.3 <i>Federal Endangered Species Act Listed and Candidate Species</i>), "The Action Area is the area within the proposed Project boundary (as proposed by DWR in this Application for New License) and the West Fork Mojave River and adjacent areas downstream of Cedar Springs Dam. Under the ESA, the Action Area is defined as 'all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action' (50 CFR § 402.02). The downstream extent of the Action Area is defined

			downstream of the Project as described above. The need for a 500-foot buffer was not justified.	as the point where the effects of DWR's Proposal are no longer measurable'." Therefore, CDFW recommends that the "potentially affected" survey areas include areas of both direct and indirect effects, which includes, at a minimum, West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek.
6	ESA-Listed Plants	CDFW requested the following modifications to DWR's proposed study: (1) expand the study area to include West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek; and (2) perform systematic field surveys over the entire study area.	Adopted with Modification: DWR performed surveys for ESA-listed plants and other botanical resources systematically throughout the study area (i.e., within the proposed Project boundary). Surveys were not performed along the West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek, because the Project does not affect natural flows downstream of the Project as described above.	See #5 ESA-Listed Bird Species – Southwestern Willow Flycatcher and Least Bell's Vireo Riparian Habitat Evaluations and Surveys above.
Added	Project Boundary	N/A	N/A	The proposed changes to the project boundary are based on "DWR's current and historic use of land for the Project, DWR's comprehensive review of facilities, operations, and land information to date, and additional new information and data available for facilitating a more refined boundary delineation. The most significant change in the delineation is the use of a 100-foot buffer from Silverwood Lake's NMWSE to define the proposed Project boundary around portions of the lake, which reduces the land area considerably on the eastern, western, and southern side of Silverwood Lake" (Draft License Application Exhibit A – Project Description 6.0 Proposed Changes to the Project Boundary). CDFW requests copies of the additional new information and data used to select a 100-foot buffer from Silverwood Lake's NMWSE to define the proposed Project boundary.

REQUESTED NEW STUDIES				
7	Instream Flow Habitat	CDFW requested DWR perform an instream flow study in the West Fork Mojave River downstream of Cedar Springs Dam. The methods would be selected in consultation with Relicensing Participants.	Not Adopted: DWR did not perform CDFW's requested study. The Project does not affect flow downstream of the Project because the Project does not use natural flow as described above. Therefore, the requested study would provide no useful information.	Please see comment 2, 3, and 10.
8	Water Quality	CDFW requested DWR collect water quality samples in Silverwood Lake, in tributaries to Silverwood Lake and the West Fork Mojave River. CDFW did not describe which parameters would be measured and stated that sampling methods would be the same as those currently used by DWR in Silverwood Lake.	Adopted with Modification: DWR adopted portions of CDFW's requested study. The Project has no nexus to water quality upstream of the Project because the Project does not use natural flow, as described above. However, to augment existing information, DWR added a Water Quality and Temperature Study to its relicensing studies.	No Additional Comment
9	Special-Status Aquatic Species	CDFW requested DWR perform surveys for arroyo toad and CRLF in tributaries to Silverwood Lake and in the West Fork Mojave River from Cedar Springs Dam to Deep Creek. Methods would follow USFWS established protocols.	Not Adopted: DWR did not perform CDFW's requested study, which would not inform license requirements. The Project does not impound, divert or add to flows in tributaries of Silverwood Lake upstream of the Project, nor does the Project affect flow in the West Fork Mojave River downstream of the Project, as described above. CDFW provided no information to indicate that arroyo toad occurs in tributaries to Silverwood Lake, which are considered by USFWS to be insufficient habitat to support populations.	CDFW is aware that United States Fish and Wildlife Service (USFWS) removed Subunit 22c (approximately 234 ac (95 ha)) from the final revised critical habitat designation. Although Subunit 22c is within the geographical area occupied by the species at the time of listing, they concluded that the existence of Cedar Springs Dam had altered the hydrology of the 1-mile (1.6 km) reach of the upper West Fork of the Mojave River to the upper end of Silverwood Lake to such an extent that it did not contain the features essential to the conservation of the species and, therefore, does not meet the definition of critical habitat for the arroyo toad. This did not exclude the downstream portion of the West Fork from the Cedar Springs Dam to the Mojave River Dam. In fact, the boundaries are defined by DWR for arroyo toad as follows: "DWR defines the geographic scope as extending from north of the Highway 173 bridge downstream to the NMWSE of the Mojave River Dam. The bridge is the upstream terminus because that coincides with

				<p>the upstream extent of arroyo toad critical habitat in the West Fork Mojave River. Silverwood Lake is not suitable habitat for arroyo toad, and the West Fork Mojave River upstream of the lake lacks essential habitat elements to support an arroyo toad population. USFWS (2009) described Cedar Springs Dam and Silverwood Lake as an “insurmountable barrier to further movement upstream.” As described above, the Project could affect water and aquatic resources below Cedar Springs Dam. The NMWSE of the Mojave River Dam is the downstream terminus for the reasons stated above”. License Application Exhibit E – Environmental Report Devil Canyon Project Relicensing, FERC Project No. 14797 Appendix E Section 4.2 <i>Geographic Scope for Analysis of Cumulative Affected Resources</i>).</p> <p>CDFW reaffirms that DWR should perform surveys following USFWS protocol for arroyo toad in tributaries to Silverwood Lake and in the West Fork Mojave River from Cedar Springs Dam to Deep Creek that contain suitable habitat.</p>
10	Tributary Fish	<p>CDFW requested DWR perform electrofishing surveys in tributaries to Silverwood Lake and in the West Fork Mojave River from Cedar Springs Dam to Deep Creek each quarter. Methods would follow CDFW for three-pass depletion and include identification of potential fish spawning habitat.</p>	<p>Not Adopted: DWR did not perform CDFW’s requested study. The Project has no nexus to stream fish upstream of the Project because the Project does not impound, divert or add to flows upstream of the Project. With regard to downstream of the Project, the Project does not affect flow downstream, as described above.</p>	<p>See #3 Non-native Invasive Plant above. In addition, Appendix E Section 4.2 <i>Geographic Scope for Analysis of Cumulative Affected Resources</i>) indicates that “The headwaters are a reasonable upstream terminus because fish in Silverwood Lake could, under some conditions, enter the tributaries”. Additionally, “the defined geographic extent of cumulative effects on aquatic resources encompasses the headwaters of the West Fork Mojave River and the East Fork of the West Fork Mojave River and other tributaries of Silverwood Lake, Silverwood Lake itself, and downstream to the NMWSE of the Mojave River Dam. Introduction of non-native fish is also a cumulative effect, with deliberate releases of gamefish and escape of bait fish, such as arroyo chub, likely beginning early in the twentieth century and eventually leading to extirpation of the native Mohave tui chub and affecting native amphibians”.</p> <p>Past and present cumulative actions are primarily associated with the construction and operation of the State Water Project, including Silverwood Lake, as a water delivery project. In addition, the operation of Silverwood Lake is influenced by the State Water Project, due to its connectivity with transferred water from the Sacramento-San Joaquin Delta through aqueducts. Introduced species from the Delta, may</p>

				<p>potentially represent long-term biological effects. These introductions may also affect water quality and aquatic resources in the West Fork Mojave River downstream of Cedar Springs Dam through increased predation and competition, and some of the species may increase water turbidity (e.g., common carp). Because the West Fork Mojave River below Horsethief Creek dries seasonally, non-native aquatic species may not be persistent after each introduction" (Section 5.3.2.7 Cumulative Effects).</p> <p>CDFW continues to request that DWR perform electrofishing surveys in the West Fork Mojave River from Cedar Springs Dam to Deep Creek each quarter following CDFW's three-pass depletion protocol and include identification of potential fish spawning habitat.</p>
11	Entrainment	<p>CDFW requested DWR conduct a fish entrainment study. The study would include the following: (1) examine existing intake drawings and date to describe approach velocities; (2) describe location of intakes in relation to depth, proximity to shoreline, and habitat; (3) describe fish species in Silverwood Lake, including potential to use similar habitats and depths as intakes; (4) compare estimated swim speed of fish that may be near the intakes to the estimated intake approach velocities; and (5) conduct quarterly fish sampling of Devil Canyon Powerplant using nets.</p>	<p>Not Adopted: DWR performed a desktop Entrainment Risk Study.</p>	<p>Please see comment 2, 3, and 10.</p>
12	Fish Microhabitat Assessment	<p>CDFW requested DWR assess the condition of fish microhabitat</p>	<p>Not Adopted: DWR did not adopt CDFW's requested study because it is not needed.</p>	<p>No Additional Comment</p>

		mitigation placed by DWR in Silverwood Lake. The methods would include assessment via underwater camera.	As stated by CDFW staff in various reports regarding the fish population in Silverwood Lake, the fish community is healthy and robust. Regular fish sampling by CDFW shows multiple game fish species each with a well-represented and diverse size class present. In order for this distribution of self-sustaining size classes to exist, especially among species not regularly stocked in Silverwood Lake (e.g., largemouth bass), there must be a successful naturally reproducing population. The existence of this successful fish community infers the presence of adequate habitat for all life stages.	
13	Benthic Macroinvertebrate	CDFW requested DWR collect and analyze BMI data in spring and summer using the SWAMP in tributaries to Silverwood Lake and in the West Fork Mojave River downstream of Cedar Springs Dam to Deep Creek. Nine sampling sites would be selected in consultation with Relicensing Participants.	Not Adopted: DWR did not perform CDFW's requested study. The Project has no nexus to BMI upstream of the Project because the Project does not impound, divert or add to flows upstream of the Project. With regard to downstream of the Project, the Project does not affect flow downstream of the Project, as described above.	Please see comment 2, 3, and 10.
14	Bald Eagle	CDFW requested DWR perform one full year of nesting, wintering, and night roost surveys of bald eagles within the proposed Project boundary, and a half-mile buffer. The methods would follow CDFW (2010) and Jackman and Jenkins (2004). Information regarding osprey nesting would also be collected.	Adopted with Modification: DWR did not perform protocol-level surveys for wildlife species. Additionally, DWR's Terrestrial Wildlife Species – California Wildlife Habitat Relationship Study assessed habitat for special-status species with the potential to be affected by Project O&M, which is sufficient for compiling the Project-related information needed to develop license measures.	The bald eagle is a fully protected species that may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock (Fish & G. Code §§ 3511, 4700, 5050 and 5515). Also, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto (Fish & G. Code § 3503), as well as, in orders Falconiformes or Strigiformes (birds of prey) (Fish & G. Code § 3503.5). Finally, Appendix B – Project Operations and Resource Utilization (Section 4.3.5.1 <i>Vertebrate Pest Management</i>) states that "DWR implements rodent control as needed in facility interiors using non-

				restricted rodenticides, which are applied in accordance with the label instructions. Rodent control occurs within the Devil Canyon Powerhouse". Predatory and scavenging birds, like the bald eagle, can eat dead or dying rodent and thus, become poisoned. This can also include using strychnine and other poisons to control mice, rats or ground squirrels within recreational areas (e.g. camping). Therefore, CDFW strongly encourages non-chemical pest control methods and if pesticides are used, follow all label directions.
15	Peregrine Falcon	CDFW requested DWR perform one full year of nesting surveys of peregrine falcon within the proposed Project boundary, and a half-mile buffer. The methods would follow Pagel (1992).	Adopted with Modification: DWR did not perform protocol level surveys for wildlife species. Additionally, DWR's Terrestrial Wildlife Species – California Wildlife Habitat Relationship Study assessed habitat for special-status species with the potential to be affected by Project O&M which is sufficient for compiling the Project-related information needed to develop license measures.	Please see comment #14 above.
16	Special-status Bats	CDFW requested DWR perform a study of special status bats at all Project facilities that may be used by bats. The study would include an initial reconnaissance and site selection followed by focused acoustic sampling.	Adopted with Modification: DWR did not perform protocol level surveys for wildlife species. Additionally, DWR's Terrestrial Wildlife Species – California Wildlife Habitat Relationship Study assessed habitat for special-status species with the potential to be affected by Project O&M which is sufficient for compiling the Project-related information needed to develop license measures	Appendix B – Project Operations and Resource Utilization (Section 4.3.5 <i>Hazard Trees</i>) generally defines hazardous trees as "dead or dying trees or trees with defects that may result in failure and have the potential to cause property damage, personal injury, or death – are removed as needed". Removal will be conducted with a chainsaw, handheld saw, or other equipment. Within License Application Exhibit E – Environmental Report Devil Canyon Project Relicensing, FERC Project No. 14797 Appendix E (Section 5.4.1.2 <i>Effects of DWR's Proposal</i>), it states "Special-status bats may actively use Project facilities if they are accessible. Bats are sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites. There are no known roost sites within the proposed Project boundary, but any bats that are established in Project facilities or recreation areas would have been subject to and tolerant of ongoing human activities. As there are no proposed changes to Project activities, any potential roost sites would continue at the same level of

				<p>disturbance to which they are already accustomed. Therefore, there would be no adverse effects on any established bat roosts, if present".</p> <p>Lastly, Table 5.4.1-5 Special Status Terrestrial Wildlife Species with the Potential to Occur within the Proposed Project lists a number of state sensitive bats (pallid, Townsend's big-eared, western mastiff, western red, and western yellow) that may occur in the project area and/or could roost in trees. Like other plans that were included (i.e. Aquatic Invasive Species Management Plan included in Appendix A DWR'S Proposal Environmental Measures (Attachment 3) and the Integrated Vegetation Management Plan (Attachment 4)), a bat protection plan should be prepared for maintenance avoidance measures for removing trees and other potential roosting areas (e.g. dam structures, buildings, etc.).</p>
Added	Golden Eagle	N/A	N/A	See 'Bald Eagle' comment above.
Added	Southwestern Pond Turtle	N/A	N/A	<p>The project has a potential to affect three aquatic special- status species: two-striped garter snake, western spadefoot, and southern western pond turtle, with the southern western pond turtle being observed in Silverwood Lake. DWR proposes two measures: Measure WR1 that will limit fluctuation within Silverwood Lake and Measure TR1, which would assure that vegetation management, including herbicide use, minimizes potential effects.</p> <p>CDFW agrees that the above measures could benefit southwestern pond turtles. However, because this species is preyed upon by nonnative fish and bullfrogs, CDFW recommends that a Non-Native Invasive Species Plan be prepared that incorporates measures to reduce/eliminate predators to this species.</p>
Added	Natural Water Flow Hydrology	N/A	N/A	<p>The Draft License Application Exhibit B – Project Operations and Resource Utilization (Section 3.1.1.3 <i>Local Ungaged Drainage</i>) states: "Agreements between DWR and each of the Mojave Water Agency (MWA) and Las Flores Ranch (LFR) include an agreed upon method for determining natural inflow into Silverwood Lake, which incorporates a table (see Table 4.1.1 in Section 4.1.4.3) relating measured inflow at the two USGS gages to total inflow to Silverwood Lake. The flow in the</p>

				<p>local ungaged drainage is the difference between the calculated total natural inflow and the measured flow at the two upstream gages." Table 4.1-1 also indicates that the synthetic inflow ranges from 70% higher than gaged inflow at low flows, rises to twice the flow at 25 cfs gaged, and then increases to 2.1 times at 680 cfs gaged inflow.</p> <p>There are other uses of water downstream than just the LFR, including habitat, behind Mohave Forks Dam. Though an agreement with LFR 45 years ago may have been sufficient at the time, CDFW believes that there may be more advanced models that incorporate a changing environment (climate, fire return interval, vegetative recovery). The algorithm/agreement used may be underestimating the natural inflow and needs to be analyzed to ensure the assumptions are still valid today.</p>
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¹ Degenhardt, G., C. Painter, and A. Price. 1996. Amphibians and Reptiles of New Mexico. UNM Press, Albuquerque, NM. 431 pp

² Smith, M. A. and D. M. Green. 2005. Dispersal and metapopulation paradigm in amphibian ecology and conservation: are all amphibian populations metapopulations? *Ecography* 28: 110 –128.

CDFW appreciates Licensee's consideration of the study requests provided above and looks forward to working collaboratively with the Licensee and other Project relicensing participants to develop the study plans proposed by Licensee as well as those proposed by CDFW. Additionally, CDFW appreciates the opportunity to provide comments on the DLA.

If you have questions regarding our comments or study requests or would like to discuss the contents of this letter further, please contact Kim Romich at Kimberly.romich@wildlife.ca.gov or (909) 980-3818.

Sincerely,



Leslie MacNair
Regional Manager

cc (by e-file): Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

ec: Scott Wilson, CDFW, scott.wilson@wildlife.ca.gov
Jeff Brandt, CDFW, jeff.brandt@wildlife.ca.gov
Joanna Gibson, CDFW, Joanna.gibson@wildlife.ca.gov

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FEDERAL ENERGY
REGULATORY COMMISSIONU.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

April 15, 2019

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Dear Honorable Bose:

This is in response to your request for comments regarding a Draft application for new license, Major Project – Existing Dam – Devil Canyon Project.

Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands) require all Federal agencies “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of the floodplains/wetlands and to avoid direct or indirect support of floodplains/wetland development wherever there is a practicable alternative.” Federal agencies are responsible for implementing Executive Orders (EO) through their own regulations. The EO states that, at a minimum, Federal agencies must comply with National Flood Insurance Program (NFIP) regulations.

The requirements for environmental considerations are found in Vol. 44 Code of Federal Regulations (44 CFR), Part 9 Floodplain Management and Protection of Wetlands, and part 10 Environmental Considerations. These regulations set forth the policy, procedures, and responsibilities to implement and enforce EO 11988 and 11990. The minimum floodplain management building requirements of the NFIP are described in 44 CFR, Section 60.3.

Please review the current effective Flood Insurance Rate Maps (FIRM) for the San Bernardino County (Community Number 060270) for land that has been mapped with high, moderate and low flood risks. The FIRM was last revised September 2, 2016.

A summary of the National Flood Insurance Program floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map.

Honorable Kimberly D. Bose, Secretary

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April 15, 2019

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any **development** must not increase base flood elevation levels. **The term development means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials.** A hydrologic and hydraulic analysis must be performed prior to the start of development and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways.
- All buildings constructed within a coastal high hazard area, (any of the “V” Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.
- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA’s Flood Map Revision Application Packages, please refer to the FEMA website at <http://www.fema.gov/business/nfip/forms.shtm>.

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. They do this for many reasons, one of the biggest is to account for risk and uncertainty in order to protect their communities from larger than predicted flood events. FEMA strongly advises you to contact and work with the local community’s floodplain manager for more information on local floodplain management building requirements which could be incorporated into your project and provide added levels of protection. The San Bernardino County floodplain manager can be reached by contacting Gerry Newcombe, Director, Public Works Department, at (909) 387-7906.

If you have any questions or concerns, please do not hesitate to contact me at (510) 627-7186 who can provide your agency with floodplain management technical expertise and guidance.

Sincerely,



Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

Honorable Kimberly D. Bose, Secretary

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April 15, 2019

cc:

Gerry Newcombe, Director, Public Works Department, San Bernardino County

**Garret Tam Sing, State of California, Department of Water Resources, Southern Region
Office**

**Gregor Blackburn, CFM, Branch Chief, Floodplain Management and Insurance Branch,
DHS/FEMA Region IX**

Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX

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Appendix D

PM&E Resolution Meeting Summary

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Devil Canyon Project Relicensing, FERC Project No. 14797 Summary of PM&E and Studies Resolution Meeting

Pursuant to Section 16.8(c)(6) of Title 18 of the Code of Federal Regulations (CFR), the California Department of Water Resources (DWR) held a meeting with agencies and interested parties to attempt to reach agreement on protection, mitigation, and enhancement (PM&E) measures proposed by DWR in its April 2019 Draft Application for a New License Major Project – Existing Dam (DLA) for the Devil Canyon Project Relicensing, Federal Energy Regulatory Commission (FERC) Project Number 14797 (Project), and PM&E measures and new studies suggested in written comments by interested parties on DWR's DLA.

Excluding a letter from FERC, five comment letters were received from resource agencies and one comment letter was received from a non-governmental organization. The letter from the Federal Emergency Management Agency (FEMA) did not include any recommended PM&E measures or studies. No comment letters were received from Native American tribes. The comment letters and date of receipt are listed below:

- U.S. Department of Agriculture, Forest Service (USFS) letter dated July 8, 2019
- National Park Service (NPS) letter dated July 5, 2019
- FEMA letter dated April 15, 2019
- California Department of Fish and Wildlife (CDFW) letter dated July 8, 2019
- State Water Resources Control Board (SWRCB) letter dated July 8, 2019
- Pacific Crest Trail Association (PCTA) letter dated July 8, 2019

The meeting was scheduled through ongoing consultation with Relicensing Participants and was held on August 22, 2019, from 9:30 a.m. to 4:30 p.m., at TownePlace Suites San Bernardino/Loma Linda, 10336 Richardson Street, Loma Linda, California. On August 7, 2019, DWR filed with FERC, and distributed to agencies and interested parties, the agenda for the meeting (see Attachment 1).

In addition to DWR representatives and the facilitators, 17 people participated in the joint meeting, either in person or by phone. These participants included: one representative from CDFW; two representatives from the California Department of Parks and Recreation (DPR); one representative from FERC; one representative from the Metropolitan Water District of Southern California; two representatives from NPS; one representative from the PCTA; seven representatives from USFS; and two representatives from the Serrano Nation of Mission Indians (see Attachment 2).

This summary provides a brief description of the differences conveyed in the comment letters, along with the outcomes from the meeting. The summary has been organized as follows:

- Resolved PM&E Measure Differences
- Unresolved PM&E Measure Differences
- Resolved Recommended Study Differences
- Unresolved Recommended Study Differences

Resolved PM&E Measure Differences

Hazardous Material Management Plan

USFS requested that the term “hazardous waste” be added to the glossary section of the Hazardous Materials Management Plan, and that the term “spill” be defined in the plan to differentiate between small spills and large spills as a threshold quantity for reporting.

DWR agreed to include in its plan a definition for hazardous materials, including hazardous waste, in the glossary, and to include information regarding spill requirements for reporting, consistent with those requirements in DWR’s Hazardous Materials Business Plan. DWR confirmed with USFS that the above changes resolve the differences.

Integrated Vegetation Management Plan

CDFW encouraged the use of non-chemical pest control methods at the Project and, if pesticides are used, that DWR follow all label directions.

DWR agreed to modify its plan to include the use of non-chemical pesticides and herbicides when applicable. DWR confirmed with CDFW that this change resolves the difference.

Bat Management Plan

CDFW requested that DWR prepare a bat protection plan that includes maintenance avoidance measures for removing hazard trees and other potential bat roosting areas.

DWR agreed to modify its Integrated Vegetation Management Plan to incorporate a measure for pre-construction bat surveys and biological monitoring for proposed hazardous tree removal or major work at Project facilities. These activities may include dawn and dusk surveys, temporal avoidance, and/or monitoring during hazard tree removal. If no bats are present, DWR will proceed; and if bats are present, DWR will coordinate with CDFW to identify appropriate measures.

In addition, DWR agreed to include in the first full calendar year of the new license, bat surveys at existing Project recreation facilities and the timely installation of bat exclusion devices where bats are found. Where warranted, new recreation facilities would include appropriate bat exclusion devices. DWR confirmed with CDFW that these changes resolve the difference.

Stream Flow Gages

USFS requested that U.S. Geological Survey (USGS) stream flow gages on the West Fork Mojave River and on the East Fork of the West Fork Mojave River be funded to ensure gages are maintained, and that gage data be made available to the public.

During the meeting, DWR stated that these gages are not used for Project purposes, but for water supply delivery. DWR funds USGS to ensure these stream gages are maintained, and DWR makes real-time data from the gages available to the public. With those clarifications, USFS withdrew its recommendation. As such, DWR considers this difference to be resolved.

Fire Prevention and Response Plan

USFS requested that DWR address emergency evacuation in its Fire Prevention and Response Plan.

DWR agreed to modify its plan to include a statement indicating that once DWR reports a fire as described in the plan, the agency responsible for controlling the fire will determine the need and/or plan for necessary evacuation and direct the evacuation (i.e., DWR does not have the authority to order an evacuation or the resources to manage an evacuation). In addition, DWR agreed to state in the plan that DPR has an emergency evacuation plan for the Silverwood Lake State Recreation Area (SRA); and that DWR has an Emergency Action Plan that is routinely tested with key agencies, including DPR and USFS. DWR confirmed with USFS that these changes resolve the differences.

USFS and DPR agreed during the meeting that they may discuss evacuation procedures from Silverwood Lake SRA that could affect National Forest System (NFS) lands, and that, based on these discussions, USFS and DPR may suggest to DWR additional wording to be included in the Fire Prevention and Response Plan.

Visual Resources Management Plan

PCTA requested that DWR treat a metal corral fence at the Rio Group Campground with Natina®. The fence is visible from the Pacific Crest National Scenic Trail (PCT).

Based on the photo and description from the specialist who visited the site, the fencing for the corral already blends in well with the landscape. However, DWR has agreed to include a measure for treatment of the metal corral fence in the Visual Resources Management Plan. DWR considers this difference to be resolved.

PCTA requested that DWR not install interpretive signage on or near the PCT.

DWR is committed to developing appropriate signage and visitor use measures for Silverwood Lake users to help reduce user conflicts and encourage appropriate use of the PCT. Section 3 of the Visual Resources Management Plan notes that “DWR, in consultation with the USFS and Pacific Crest Trail Association, will determine the final location and content for the interpretive sign.” Additionally, DWR agreed to add language to Exhibit E, noting that the interpretive sign will not be placed on the PCT. DWR considers these differences to be resolved.

PCTA requested that DWR include measures to reduce visual impacts of all Project facilities on PCT users, including the San Bernardino Tunnel Intake, and that DWR should incorporate Scenic Integrity Objectives into future projects that may affect the PCT.

The Visual Resources Management Plan includes considerations for maintaining scenic values that are within the viewshed of the PCT. DWR agreed to add language to the Visual Resources Management Plan stating that if/when Project facilities are replaced or updated, DWR will consult with USFS regarding potential effects and, if possible, considerations to improve visual quality. DWR considers these differences to be resolved.

USFS requested that DWR include measures in the Final License Application (FLA) to ensure the Devil Canyon penstocks and associated concrete conform to the Scenic Integrity Objectives in the San Bernardino National Forest’s Land Management Plan.

This comment is addressing the contents of Section 2.1.11 in the DLA and FLA, which provides a description of routine maintenance for the existing Project; it does not describe environmental effects or DWR’s proposed PM&E measures. Therefore, this section in the FLA has not been modified contrary to USFS’s suggestion. Refer to Section 5.7 in Exhibit E of the FLA for a discussion of potential Project effects on visual resources and DWR’s proposed PM&E measures related to visual resources.

DWR is committed to improving how well facilities blend into the landscape. However, recoating the penstocks before the useful life of the existing coating – for a small gain in scenery as a view in the backdrop from distant residential areas – would seem excessive. DWR is committed to treating the penstocks with materials that will better blend into the landscape, as long as the performance, safety, and integrity of the penstocks and surge chamber facility are not jeopardized by the rehabilitation. Regarding the future visual quality improvements for the penstocks and powerhouse, see the discussion below and, based on that, DWR considers these differences to be resolved.

USFS stated that it does not agree with the Visual Resource Management Plan that states “at the time of major rehabilitation of these facilities requiring full re-coating of the penstocks or repainting of the exterior of the powerplant building, will consider using colors and materials that will help these industrial facilities blend into the surrounding landscapes.” The underlined words indicate that the Licensee could avoid dealing with these visual resource issues if they classified work as either not major, or if they were not doing a full recoating.

DWR agreed to strike the word “major” as a qualifier in terms of when repairs, and thus visual treatments, might be made to penstocks or the powerhouse. However, the concept is that the treatments would be undertaken when the penstocks are in need of re-coating, not prior. Most of the penstocks and the whole of the powerhouse are not on NFS lands and, therefore, are not subject to the Scenic Integrity Objectives of the San Bernardino National Forest Land Management Plan. DWR agrees that the Devil Canyon Powerhouse would be handled in the same way, when new paint and exterior treatment is needed. DWR will paint the building with a color that blends into the surrounding landscape to the extent practicable. Additionally, DWR agreed to review penstock treatment options to better match the surrounding landscape; and, if reasonable treatment options are identified, new treatment methods will be applied during repairs and rehabilitations. DWR considers these differences to be resolved.

Recreation Management Plan

USFS requested that DWR develop and implement a recreation trail management and maintenance plan.

A draft Recreation Management Plan (RMP) was not included in the DLA. However, DWR provided a draft version of the RMP to agencies (i.e., USFS, PCTA, and other Relicensing Participants) for review and collaboration during the preparation of the FLA, and the plan was included with the FLA filed with FERC. It was pointed out that the RMP does address Project trails and maintenance of the Project trails falls under maintenance of Project recreation facilities in Section 3.1.1 of the RMP. DWR considers this difference to be resolved.

USFS requested that DWR mitigate for recreation effects outside the Project boundary (i.e., ‘spill-over’ recreation use on NFS lands), including dispersed use impacts and user-created trails. USFS also requested that DWR address erosion control relative to recreation-related activities, including user-created trails leading from State Highway 138 and Forest Service Road 2N33 into the State Parks area, and to the shoreline and recreation facilities.

There are public recreational uses on the surrounding lands and on the PCT that pass through the Project. These are multiple-use public areas administered by others, but are not part of the Project (e.g., the PCT). There are also several public roads used to access Project recreation facilities and shorelines; however, these are not solely used for Project purposes and are public rights-of-way used by other recreationists. DWR

intends to continue to cooperate with the California Department of Transportation (Caltrans), DPR, PCTA, and USFS in the management and needs of those recreation uses. DWR has proposed cooperative management PM&E measures to assist agencies in multiple-use resource management needs.

The DLA addresses Project recreational effects inside and outside both the existing and proposed Project boundaries; and the environmental assessment included in the DLA was not limited to lands within the Project boundary. The RMP developed in collaboration with Relicensing Participants addresses recreation management considerations around Silverwood Lake, not just the developed facilities and trails.

Regarding user-made trail impacts, DWR agrees there are documented user-created trails leading to the Silverwood Lake shoreline from the public roads. The Project boundary encompasses the primary shoreline areas that contain the user-made trails identified in DWR's Recreation Facilities Condition and Demand Assessment conducted for the Project. The RMP includes a measure to address user-made trail damage from trails stemming from USFS Road 2N33. DWR intends to concurrently address the smaller network of user-made trails coming off State Highway 138 (above Chamise Day Use Area) at the same time the management considerations are being evaluated for the areas leading to Live Oak Landing from State lands above the lake where USFS Road 2N33 passes. DWR considers these differences to be resolved.

NPS requested that DWR include a litter control measure in its Recreation Management Plan, including on the PCT.

DWR's RMP includes a litter control program, including litter control on sections of the PCT that pass through the Silverwood Lake SRA. As noted above, DWR provided a draft version of the RMP to agencies, including the PCTA, for review and collaboration during the preparation of the FLA. DWR considers this difference to be resolved.

NPS requested that DWR include a crosswalk with triggered lighting or a pedestrian overpass where the PCT crosses State Highway 138 within the Project boundary.

The PCT crosses State Highway 138 through an underpass that leads to the park entrance road. The PCT follows the shoulder of the park entrance road while in the underpass. On both sides of the underpass the route includes crossings at the intersections of a northbound off-ramp and southbound on-ramp to State Highway 138. However, for the southbound on-ramp, there is a stop sign for vehicles coming off the highway at the bottom of the ramp at the location of the PCT crossing. The RMP has included management considerations for public safety, including PCT users and other recreationists in and around public roads within the Project boundary at Silverwood Lake SRA. Specifically, DWR included language in the RMP to improve safety measures and signage for the PCT at the State Highway 138 crossing, and has agreed that no signage will be placed on or adjacent to the PCT without consulting with USFS and PCTA. DWR considers these differences to be resolved.

NPS requested that DWR include long-term monitoring of user-created trails on NFS and State lands and consider ways to partner with the City of Hesperia, Caltrans, and USFS on PCT-related items.

The RMP addresses monitoring of dispersed use trails and discusses how partnering with others, particularly with regard to litter control, can help improve existing conditions for which the measures are aimed. DWR considers these differences to be resolved.

PCTA requested that DWR include management and mitigation for an increase in recreation on adjacent and non-Project portions of Silverwood Lake SRA and the Tapestry Development.

As noted above, the RMP was prepared in consultation with PCTA, USFS, and other Relicensing Participants. In its RMP, DWR first and foremost addressed recreation management considerations for the 31 developed Project recreation facilities. DWR has proposed cooperative management PM&E measures, such as increased litter patrols, that can assist agencies in addressing multiple-use resource management needs on their lands. DWR considers these differences to be resolved.

PCTA requested that DWR provide sufficient and safe access for equestrian users, including trails.

The level of equestrian use as observed by Park Rangers is low, but the existing equestrian facilities provide room for trailers and access to the PCT in this section of the trail. This comment does not request a specific improvement. However, DWR recognizes other uses in and adjacent to the proposed Project boundary. Equestrian uses, while not a Project waterway recreation use, are being accommodated by the Project and represent joint cooperation on managing the multiple recreational uses in the area. DWR considers these differences to be resolved.

Unresolved PM&E Measure Differences

Aquatic Invasive Species

USFS requested that preventative measures be implemented to reduce or prevent the spread of aquatic invasive species (AIS) on NFS lands, along with barriers to contain non-native fish to Silverwood Lake during high-flow events at the Project.

DWR has not included in the FLA a measure to prevent aquatic organisms from moving upstream from Silverwood Lake into tributaries on NFS lands for two reasons. First, USFS has provided no evidence, nor is DWR aware of any evidence, that non-native species in Silverwood Lake actually have an adverse effect on native species in upstream tributaries. Second, USFS has provided no specific measures, including scope and expected benefits and costs, other than the general suggestion of installing barriers to block upstream fish migration. During the meeting, DWR asked USFS if it had a specific proposal, and USFS said it did not at this time. Given this lack of

evidence of any Project adverse effect and that a specific measure is not described, DWR cannot meaningfully evaluate USFS' recommendation, and does not believe that further evaluation is warranted.

USFS requested that the glossary included in the AIS Plan be modified to include stocked fish as an AIS, and that DWR list non-native rainbow and brown trout as AIS. Additionally, USFS suggested that stocked fish have had a negative effect on native species in the Upper Mojave drainages and requested a license condition to preclude fish stocked in Silverwood Lake from moving upstream.

DWR has not modified the AIS Plan to list rainbow trout and brown trout as AIS because DWR does not consider these fish species as invasive, nor has DWR included in its FLA a measure related to this item. DWR has not modified the plan because page 1-2 in the AIS Plan in Exhibit E of the FLA notes that CDFW has stocked rainbow trout and brown trout in Silverwood Lake for many decades, as it does in many surface waters in California. DWR does not believe that CDFW annually stocks, by their very definition, AIS in California's surface waters, especially considering that California Fish and Game Commission policy states "hatchery trout shall not be stocked [by CDFW] in waters where they may compete or hybridize with trout which are threatened, endangered or species of special concern."

Further, DWR has not included a measure in the FLA to prevent fish stocked in Silverwood Lake from moving upstream into tributaries on NFS lands for two reasons. First, USFS has provided no evidence, nor is DWR aware of any evidence, that stocked fish in Silverwood Lake may have an adverse effect on native species in the upstream tributaries. Second, as discussed above, USFS provided no specific measure, including scope and expected benefits and costs. Given this lack of evidence of any Project adverse effect and that a detailed measure is not described, DWR cannot evaluate in detail USFS' recommendation, nor is further evaluation warranted.

DWR considers this measure to be unresolved.

CDFW requested that DWR develop and implement a non-native invasive species management plan to address predation on southern western pond turtle by non-native fish and bullfrogs.

During the meeting, CDFW clarified that its recommendation did not pertain to Silverwood Lake, but that CDFW was concerned about small ponds surrounding the lake (i.e., within 500 feet of the lake) where southern western pond turtle may nest and bullfrogs from the lake could enter and prey on the turtles. DWR thanked CDFW for the clarification and said it was unaware of any such small ponds adjacent to Silverwood Lake, but would confirm with its amphibians specialists that there are none. CDFW stated if there are none, then a measure is not needed.

Groundwater

USFS requested that the loss of groundwater due to infiltration into the San Bernardino Tunnel be mitigated or stopped through improvements.

DWR has not included in the FLA a proposed measure that would require DWR to modify the San Bernardino Tunnel to mitigate or stop infiltration of local groundwater into the tunnel for two reasons. First, USFS has provided no compelling evidence to support its assumption that the existing Project has an adverse effect on groundwater aquifers. Rather, while drainage of water into a tunnel during initial construction is a well-documented condition, this does not mean that drainage continues after the tunnel is pressurized. Once that occurs, the water pressure in the tunnel exceeds the pressure of the groundwater, and if any exchange occurs, it is more likely that water in the tunnel passes into the local aquifer. In effect, due to pressurization of the San Bernardino Tunnel, the import of water into the area from the State Water Project (SWP), and the presence of Silverwood Lake originally constructed by the Project, it is more likely that the Project has resulted in a net benefit to local groundwater aquifers. Second, USFS has provided no details regarding its recommended measure (e.g., specifically, what USFS proposes, the expected benefits, and anticipated cost). Therefore, DWR cannot evaluate the benefits, if any, against the costs of USFS' recommended measure. DWR considers these differences to be unresolved.

Visual Resources Management Plan

PCTA requested that DWR include DPR administrative buildings as Project facilities and, as such, address these facilities in the Visual Resources Management Plan.

The DPR administrative facilities are non-Project facilities within the proposed Project boundary and are used exclusively by DPR for administration of DPR operations for not just Silverwood Lake SRA, but also other park units in the southern California districts of which Silverwood Lake SRA is a part. The offices, therefore, are not there for the purposes of DWR's FERC licensed Project and are not part of the Project facilities. As such, DWR will not adopt this request. At this time, DWR considers these differences to be unresolved.

Visual Resources Management Plan / Recreation Management Plan

USFS suggested that the DLA did not address methods to meet the County of San Bernardino General Plan vision, and requested that DWR consider realigning or relocating portions of the PCT, especially at the road/laydown yard. Additionally, PCTA requested that DWR relocate sections of the PCT to mitigate visual effects of the Project so trail users would not have to walk along a portion of a Primary Project Road that coincides with the PCT.

DWR has used San Bernardino County plans and other resource plans in developing and guiding its development of PM&E measures. Of note, DWR has no responsibility for routing the PCT, which was aligned and constructed by USFS after Silverwood Lake

and Cedar Springs Dam were in place and is subject to an easement agreement between USFS and DWR on State lands near Cedar Springs Dam (including the road/laydown yard) that specifies that USFS is responsible, at its sole cost, for constructing and maintaining the PCT in this area. However, DWR has agreed to review and enter cooperative discussions on a rerouting proposal, if one is put forward by USFS as the administering agency for the trail. Notwithstanding, the provision of Project recreation facilities is consistent with the County of San Bernardino General Plan vision. The Project PM&E measures related to recreation are described in Section 5.5.2 of the FLA and the RMP for the Project. At this time, DWR considers these differences to be unresolved.

Recreation Management Plan

USFS requested that DWR add mitigation to address what USFS suggests are insufficient recreational opportunities relative to demand.

DWR agrees that demand during peak use periods will occasionally exceed capacity at Silverwood Lake SRA. However, DWR's Recreation Facilities Condition and Demand Assessment for the Project evaluated the potential for expansion of the Silverwood Lake SRA, and DWR's consultation with DPR resulted in a determination that expansion is not feasible, as Silverwood Lake SRA is built out. The attraction for users is Silverwood Lake – which only can accommodate a certain level of use regardless of regional population growth and demand. Adding more people to Project shorelines and waters would likely degrade the quality of the recreation experience that users desire. Rather, DWR's approach to satisfying future recreation demand focuses on repurposing and improving existing facilities, along with additional visitor services programs to better serve the recreating public, combined with capacity controls to help reduce crowding and impacts from littering and other use considerations. At this time, DWR considers these differences to be unresolved.

Resolved Recommended Study Differences

Pacific Crest National Scenic Trail

PCTA requested that DWR conduct recreation use surveys of the PCT during spring months and peak use periods.

The PCT was not surveyed in the Recreation Facilities Condition and Demand Assessment as it is not a Project facility. However, the relationship of the PCT to the Project recreation facilities and uses, along with management concerns, were identified in the assessment. DWR agrees to add additional language to Exhibit E where the PCT use information is presented to make it clear that no field studies were undertaken to directly evaluate use levels or patterns on the PCT; rather, that characterization came from interviews and discussions with recreation providers. At this time, DWR considers these differences to be resolved.

Unresolved Recommended Study Differences

Natural Inflow into Silverwood Lake

USFS and the SWRCB requested that DWR conduct modeling to accurately determine natural inflow into Silverwood Lake, and CDFW requested that DWR analyze algorithms and agreements used in the existing license to ensure the assumptions are still valid.

DWR has not included modeling or an analysis of algorithms and agreements to calculate natural inflow into Silverwood Lake and releases into the West Fork Mojave River for three reasons. First, there is no explanation as to how further modeling would potentially inform license conditions. Second, the water delivery agreements among the parties do not affect Project generation or other Project uses because the Project uses only water from the SWP, and not natural flow, to generate power. Therefore, the manner in which the agreements allocate flow has no Project nexus. Third, since releases of natural inflow from Silverwood Lake are under the purview of the Watermaster for the 1996 Mojave River Decree, the Mojave Water Agency (MWA), it would be difficult to model such subjective decisions.

West Fork Mojave River from Cedar Springs Dam to Deep Creek

With regard to the area encompassing the West Fork Mojave River from Cedar Springs Dam to Deep Creek, CDFW requested that DWR conduct protocol-level three-pass electrofishing sampling and identify potential fish spawning habitat; conduct botanical surveys; and conduct surveys for Endangered Species Act (ESA)-listed species, including arroyo toad.

DWR did not conduct quarterly three-pass electrofishing surveys for fish or identify potential fish spawning habitat in the West Fork Mojave River from Cedar Springs Dam to Deep Creek because the Project does not affect this area. CDFW has provided no

mechanism under which the Project would affect fish in this area; the Project does not have any facilities in the reach, does not include performance of any work in the reach, and does not affect flow entering the reach.

DWR did not conduct botanical surveys in the West Fork Mojave River from Cedar Springs Dam to the Mojave River Dam because CDFW has not provided a Project nexus or how the information would be used to inform license requirements. The Project does not have any facilities in this reach, does not include performance of any work in this reach, and does not control water releases from Silverwood Lake into the reach. Therefore, there is no reasonable mechanism for the Project to affect botanical resources in the reach, and the information from a botanical study in the reach would have no benefit in the relicensing.

DWR did not conduct surveys for ESA-listed species, including arroyo toad, in tributaries to Silverwood Lake and in the West Fork Mojave River from Cedar Springs Dam to Deep Creek because the Project does not affect these areas, and CDFW has provided no mechanism under which the Project would affect ESA-listed species, including arroyo toad, in these areas. More specifically, the Project does not have any facilities in the areas, does not include performance of any work in these areas, and does not affect flow in these areas. Moreover, DWR has not included arroyo toad, an ESA-listed species, to the list of special-status aquatic species because it does not meet the definition of a special-status aquatic species. Arroyo toad is addressed with other ESA-listed species in Section 5.4 of DWR's FLA.

State Special-Status Terrestrial Species Study

CDFW requested that DWR conduct a study for California Special-Status terrestrial species similar to DWR's studies conducted for the Project (i.e., Non-Native Invasive Plants; ESA-Listed Bird Species – Southwestern Willow Flycatcher and Least Bell's Vireo; and ESA-Listed Plant Species).

DWR did not conduct detailed surveys for the eight State special-status aquatic species (Tables 5.3-1 and 5.3-8 in the FLA) and the 42 State special-status terrestrial species (Table 5.4.1-5 in the FLA) that may be affected by the Project. Other than stating, without explanation, that it needs the results of these studies to recommend effective measures, CDFW provides no support for its recommendation. Additionally, CDFW does not state why existing information – including data from DWR's studies described in the DLA – is not adequate; DWR believes existing information is adequate and there are no data gaps to fill. Further, CDFW does not recommend study methods, other than saying it requests studies “similar to those that were conducted.” Additionally, CDFW did not supply costs for each of its potentially 50 new studies; therefore, DWR cannot evaluate the benefits and costs for conducting the recommended studies.

Aquatic Invasive Species Surveys

CDFW requested that DWR perform surveys in tributaries to Silverwood Lake and the West Fork Mojave River downstream of Cedar Springs Dam to Grass Valley Creek.

DWR did not conduct AIS surveys in tributaries to Silverwood Lake because the studies would not further inform license requirements. More specifically, if AIS were found, it would be impossible to determine whether the AIS were in the streams due to non-Project activities, such as recreation unrelated to the Project; or, with regard to American bullfrog, due to dispersal from other areas; or due to Project activities. Therefore, the information from the study would not help to inform license requirements. Regarding the West Fork Mojave River, DWR performed a reconnaissance survey of the stream noting any AIS observed; thus, this information exists. The survey noted that the majority of the reach was dry for long periods of time each year.

Recreation at Silverwood Lake

USFS noted that a study for zip codes of boaters at Silverwood Lake would elucidate where people are coming from, and that new information will be needed to expand the Recreation Facilities Condition and Demand Assessment to include information relative to daily use and carrying capacity.

The information regarding where boaters came from was derived from multiple interviews and it is likely that the majority of boaters come from the nearby desert communities. It is not clear how information on exact zip codes would inform license conditions. The Recreation Facilities Condition and Demand Assessment filled numerous data gaps and provided adequate information to prepare a comprehensive recreation plan for the Project to help meet recreational needs over the term of the new license. DWR agreed to clarify the basis and sources of information used for statements in Exhibit E regarding the origin of boaters.

In addition, regarding daily use and carrying capacity, the Recreation Facilities Condition and Demand Assessment evaluated the potential for expansion of the Silverwood Lake SRA, which resulted in the determination that expansion is not feasible since the SRA is built out.

At this time, DWR considers these differences regarding boater origins to be resolved, but does not concur with USFS that further expansion of the 31 developed recreation facilities or adding more would improve overall recreation use and enjoyment of Project waterways.

List of Attachments

Attachment 1 - PM&E and Studies Resolution Meeting Agenda

Attachment 2 - PM&E and Studies Resolution Meeting Sign-In Sheet

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Attachment 1

PM&E and Studies Resolution Meeting Agenda

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AGENDA

**Devil Canyon Project Relicensing
Draft License Application
Protection, Mitigation and Enhancement and Studies Resolution Meeting
FERC Project No. 14797**

Date:	Thursday, August 22, 2019
Time:	9:30 am – 4:30 pm
Location:	TownePlace Suites San Bernardino/Loma Linda – 10336 Richardson Street, Loma Linda, California 92534
Objective:	The objective of this meeting is to satisfy the requirements of 18 CFR Section 16.8(c)(6) that states if a resource agency or Indian Tribe has a substantive disagreement with the applicant's conclusions regarding resource impacts or its proposed protection, mitigation and enhancement (PM&E) measures on its draft license application (DLA), the applicant will, in consultation with the agency or Indian tribe, schedule and hold a meeting with the disagreeing agency or tribe, and invite to the meeting other agencies or Indian tribes with an interest in the issue, no later than 60 days from the date of the comment letter to discuss and attempt to reach agreement of the applicant's plan for PM&E measures.

- **WELCOME**
- **INTRODUCTIONS AND OBJECTIVE**
- **SAFETY MOMENT**
- **COMMENT LETTERS ON DLA**

Excluding a letter from FERC, five comment letters were received from agencies and one comment letter was received from a non-governmental organization as follows. The FEMA letter did not include any recommended PM&E measures or studies. No comment letters were received from Indian tribes.

- USFS letter dated 7/8/19
- NPS letter dated 7/5/19
- FEMA letter dated 4/15/19
- CDFW letter dated 7/8/19
- SWRCB letter dated 7/8/19
- PCTA letter dated 7/8/19

- **PM&E MEASURES DIFFERENCES**

1. DWR's Hazardous Material Management Plan

- a. USFS – Include in the Glossary a definition for hazardous waste

2. DWR's Integrated Vegetation Management Plan

- a. CDFW – encourages use of non-chemical pest control methods and, if pesticides are used, follow all label directions

3. DWR's AIS Plan

- a. USFS – Discuss treatment of all AIS mentioned in the plan

b. USFS – Add in Glossary that non-native fishes are AIS

4. Excluding AIS and Non-Native Fish from Tributaries on NFS Lands

a. USFS – Contain AIS and non-native fish in Silverwood Lake

5. Non-Native Invasive Species Management Plan to Prevent Predation on Southwestern Pond Turtle

a. CDFW – Develop and implement a non-native invasive species management plan to address predation on Southwestern pond turtle

6. Stream Flow Gages on West Fork Mojave River and on the East Fork of the West Fork Mojave River

a. USFS – Provide funding to USGS to ensure gages are maintained

b. USFS – Provide gage data to the public in real-time

7. Groundwater

a. USFS – Mitigate or stop the loss of groundwater due to infiltration into the San Bernardino Tunnel

8. Bat Management Plan

a. CDFW – Develop and implement a bat management plan

9. DWR's Fire Prevention and Response Plan

a. USFS – Include emergency evacuation from Silverwood Lake SRA

10. DWR's Visual Quality Plan

a. PCTA – Treat the metal corral fence visible from the PCT with Natina

b. PCTA – Do not use interpretive signage on or near the PCT

c. PCTA – Include measures to reduce visual impacts of San Bernardino Intake structure and all Project facilities on PCT users

d. PCTA – Include DPR Administration buildings as Project facilities and address in plan

e. USFS – Include measures to assure the Devil Canyon penstocks and associated concrete conform to the SIOs in the SBNF's Land Management Plan

11. Recreation Trail Plan

a. USFS – Develop and implement a recreation trail management and maintenance plan

12. Recreation Management Plan (To Be Developed)

a. NPS – Include a litter control measure, including on PCT

b. NPS – Include a crosswalk with triggered lighting or pedestrian overpass on the PCT that crosses Highway 138 within the Project boundary

c. NPS – Include long term monitoring and consider ways to partner with the City of Hesperia, Cal Trans, and the USFS on PCT-related items

d. PCTA – Include management and mitigation for increase in recreation on adjacent and non-Project portions of Silverwood Lake SRA and the Tapestry Development

e. PCTA – Provide sufficient and safe access for equestrian users, including trails

f. PCTA – Consider realigning or relocating portions of the PCT, especially at the road/laydown yard

g. USFS – Include a 'call back' to the Hazardous Materials Management Plan and Erosion Control Plan

- h. USFS – Mitigate for recreation effects outside the Project boundary (i.e., ‘spill-over’ recreation use on NFS lands), including dispersed use impacts and user-created trails in Miller Canyon area
- i. USFS – Add mitigation to address that ‘current recreational opportunities [are] in insufficient for demand’
- j. USFS – Include all roads to access Project recreation facilities

- **RECOMMENDED STUDIES**

- **1. Natural Inflow into Silverwood Lake**

- a. USFS and SWRCB – Conduct modelling to accurately determine natural inflow into Silverwood Lake
- b. CDFW – Analyze algorithm/agreement used in existing license to ensure assumptions are still valid

- **2. West Fork Mojave River from Cedar Springs Dam to Deep Creek**

- a. CDFW – Conduct surveys for AIS; protocol-level three-pass electrofishing sampling and identify potential fish spawning habitat; botanical surveys; and ESA-Listed species, including arroyo toad

- **3. Tributaries to Silverwood Lake**

- a. CDFW – Conduct surveys for AIS and arroyo toad

- **4. State Special-Status Terrestrial Species Study**

- a. CDFW – Conduct study for State Special-Status Terrestrial Species similar to those DWR conducted for Non-Native Invasive Plants, ESA-Listed Bird Species - Southwestern Willow Flycatcher and Least Bell's Vireo, and ESA-Listed Plant

- **5. Recreation at Silverwood Lake**

- a. USFS – Conduct a study for zip codes of boaters
- b. USFS – Expand study of daily use and carrying capacity

- **6. PCT**

- a. PCTA – Conduct recreation use surveys of PCT during spring months and peak use periods

- **REVIEW AGREEMENTS**

- **ADJOURN**

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Attachment 2

PM&E and Studies Resolution Meeting Sign-In Sheet

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Resolution Meeting
Thursday, 9:00 am – 4:30 pm / August 22, 2019
TownePlace Suites San Bernardino/Loma Linda
Sign-In Sheet

Name	Organization	Phone Number	E-mail	Initial
Bowes, Stephen	NPS	415-623-2321	stephen_bowes@nps.gov	on phone
Elliot, Kelly	Parks		Kelly.Elliott@parks.ca.gov	KB
Gilbert, Kirby	Stantec	425-896-6954	Kirby.gilbert@stantec.com	KWG
Gill, Ryan	Parks	760-389-2499 951-287-8876	Ryan.Gill@parks.ca.gov	Rb
Gleim, James	DWR-HLPCO	916-541-9025	James.Gleim@water.ca.gov	JG
Goebel, Scott	DWR-HLPCO	916-557-4561	Scott.Goebel@water.ca.gov	SG
Henriquez-Santos, Jose O.	USFS		jhenriquezsantos@fs.fed.us	on phone
Kass, Anita	PCTA	760-977-8684	akass@pcta.org	AK
Knittweis, Gwen	DWR-HLPCO	916-557-4554	Gwen.Knittweis@water.ca.gov	GW
Lee, Lisa D.	DWR-HLPCO	916-557-4557	Lisa.Lee@water.ca.gov	LL
Lynch, Jim	HDR	916-679-8740	Jim.Lynch@hdrinc.com	JL
McNeil, Jeremiah	DWR-HLPCO	916-557-4555	Jeremiah.McNeil@water.ca.gov	JM
Miller, Aaron S.	DWR-HLPCO	916-557-4560	Aaron.S.Miller@water.ca.gov	ASM
Miller, Jill	Stantec	916-418-8439	jill.miller2@stantec.com	JM
Olcott, Kyle	FERC		kyle.olcott@ferc.gov	on phone
Rorie, Bryan	Stantec	916-669-5974	Bryan.Rorie@stantec.com	BR
Swiger, Mike	VNF		mas@vnf.com	on phone
Taylor, Robert G.	USFS	909-382-2660	rgtaylor@fs.fed.us	RT
Torres, Ralph	DWR-HLPCO	916-798-9825	torresraphael13@yahoo.com	RT

Name	Organization	Phone Number	E-mail	Initial
Winchell, Frank	FERC		frank.winchell@ferc.gov	
Salazar, Joseph	DWR, SFD	661-916-3647	joseph.salazar@water.ca.gov	JS
CASINO VERAZQUE	DWR SFD	661-400-2323	GUTERAZ@water.ca.gov	CV
Sarah Bartlett	Metropolitan WDOF SC	213 217 6166	sbartlett@mwfh2o.com	SB
Moyle, Joanelyn	DWR-SFD	661-944-8537	jmoyle@water.ca.gov	JM
STAMER, MARC	USDA-FS	909-382-2728	mstamere@fs.fed.us	MS
Alvarez, Dawn	US Forest Service	707-985-0914	dawn.alvarez@usda.gov	DA
Chandler, Chris	USFS	909-382-2657	chris.chandler@usda.gov	CC
DAVID Austin	USFS	909-382-2233	DAVID.AUSTIN@USDA.GOV	DA
Kim Romich	CDFW	909 980 3818	Kimberly.romich@wildlife.ca.gov	KR
MARCO Cochran	SERRANO TRIBE	(909) 5289632		
ISAAC Abril	Serrano Tribe		Avenue Tattoo 709 - @gmail.com	IA
Jenni Mun	RUN	916-872-1774	Jenni.mun@water.ca.gov	JM
Jody Dixon	USFS			

on phone

- Katarine Devert, DWR
- SUSAN ROSEBOROUGH, NPS

Appendix E

DWR's Proposed PM&E Plans and Measures

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APPENDIX E

DWR’S PROPOSAL – ENVIRONMENTAL MEASURES

The California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project). As part of its Application for New License, DWR has proposed to undertake operations and management activities as conditions of the new license for the Project. These conditions will be undertaken for the purpose of protecting or mitigating impacts that would otherwise result from DWR’s Proposal, as described in DWR’s Application for New License, or for the purpose of enhancing resources that could be affected by DWR’s Proposal.¹

For the purpose of this appendix, DWR has assumed that FERC’s requirements regarding inspections of Project facilities (e.g., annual FERC inspections, Part 12 Dam Safety Inspections, and Environmental and Public Use Inspections) and other similar general FERC requirements (e.g., requirement for Emergency Action Plans) will apply to DWR’s Proposal under a new license. DWR also has assumed that the specific requirements included in related approvals, such as dam certificates issued by the Division of Safety of Dams (DSOD) for Project dams within DSOD’s jurisdiction, and appropriated water rights issued by the State Water Resources Control Board for power generation, will not change under a new license. Therefore, DWR has not included proposed conditions related to these activities in this Application for New License. In addition, DWR has assumed that FERC will include in the new license FERC’s *Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States* (Form L-5 Standard Articles).² Therefore, DWR has not included proposed conditions that would otherwise be addressed by FERC’s Form L-5 Standard Articles.

Table A-1 lists the measures included in DWR’s Proposal, and for each measure specifies the Relicensing Participant that agrees with and supports the measure, and indicates if the proposed measure is a continuation of an article in the existing FERC license or other agreement that pertains to the Project.

¹ DWR’s Proposal includes: continued operation of the Project, modification of the Project boundary, addition of 1 existing reservoir gage (USGS gage no. 10260790), addition of 10 existing roads as Project facilities under the new license, and 12 proposed environmental measures.

² L-5: Constructed Major Project Affecting Navigable Waters and Lands of the United States, 12 Federal Power Commission (F.P.C.) 1329 (October 23, 1953), 17 F.P.C. 110 (January 13, 1957), 38 F.P.C. 203 (July 26, 1967), 54 F.P.C. 1832 (October 31, 1975)

Table A-1. Measures Proposed by DWR for Inclusion in a New License for the Project

DWR’s Proposed Measure	Description
Geology and Soils	
GS1	Implement the Erosion and Sediment Control Plan
Water Resources	
WR1	Silverwood Lake Minimum Pool and Water Surface Elevations ¹
WR2	Implement the Hazardous Materials Management Plan
Aquatic Resources	
AR1	Silverwood Lake Fish Stocking ²
AR2	Implement the Aquatic Invasive Species Management Plan
Terrestrial Resources	
TR1	Implement the Integrated Vegetation Management Plan
Recreation	
RR1	Implement the Recreation Management Plan ³
Land Use	
LU1	Implement the Transportation System Management Plan
LU2	Implement the Fire Prevention and Response Plan
LU3	Implement a Project Safety Plan ⁴
Aesthetics	
VR1	Implement the Visual Resources Management Plan
Cultural Resources	
CR1	Implement the Historic Properties Management Plan

Notes:

¹This measure is similar to the Silverwood Lake minimum pool and water surface elevation limits provided in the existing March 25, 1969, DWR/USFS Memorandum of Understanding (MOU), as amended on December 27, 1971, and the March 12, 2003, DWR/California Department of Fish and Game MOU, and is essentially a continuation of Article 58 in the existing license.

²This measure is similar to Article 51 in the existing license.

³DWR understands that the California Department of Parks and Recreation supports this measure.

⁴This measure addresses safety provisions, as does Articles 60 and 402 in the existing license.

Key:

DWR = California Department of Water Resources

The complete text for each measure proposed by DWR is provided below by resource area.

Geology and Soils

Measure GS1, Erosion and Sediment Control

Within six months of license issuance, implement the Erosion and Sediment Control Plan included in this Appendix as Attachment 1.

Water Resources

Measure WR1, Silverwood Lake Minimum Pool and Water Surface Elevation

- (A) DWR will, in order to facilitate general recreation use at Silverwood Lake, operate Silverwood Lake with the objective of maintaining the water surface elevation (WSE) in Silverwood Lake as follows:
- From March 1 through September 15 of each year, maintain the WSE within a range of not more than 11 inches each day, and within a range of not more than 30 inches each 7-day period (beginning at midnight on Sunday), except that:
 - DWR may exceed the 11-inches-per-day WSE fluctuation limit by 3 inches, for a total of 15 days between March 1 and September 15.
 - DWR may raise the WSE by up to 18 inches on weekends (i.e., midnight on Friday to midnight on Sunday)
 - DWR may exceed the 30-inches-per-day WSE weekly fluctuation limit if required during certain months to allow DWR to economically meet its commitments for delivery of water under existing water supply contracts.
 - In the case of emergency conditions which cause the water surface variations or drawdown to exceed the limits specified herein, such as aqueduct shutdown, or during scheduled aqueduct shutdowns, the objective of maintaining WSEs within the specified limits shall not apply. During emergency conditions, DWR will, at the earliest opportunity, notify all parties having responsibility for operating or managing any of the multipurpose facilities at Silverwood Lake, and provide an interim operational plan to cover the period of the emergency and the recovery therefrom.
- (B) To protect the bass spawning in Silverwood Lake, DWR will use best efforts not to lower the WSE by more than 3 feet from April 1 through June 30 of each year. In the event DWR lowers the WSE 3 feet or more between April 1 and June 30, DWR will notify the California Department of Fish and Wildlife (CDFW) within 24 hours by telephone and email. Within 3 business days a written notification will

be sent by overnight mail to the Regional Manager, Eastern Sierra Inland Deserts, CDFW. Whenever possible, DWR will notify CDFW as far in advance as possible of the need to exceed the 3 foot lowering. During an emergency outage or other circumstance preventing advance notification, DWR will notify CDFW as soon as possible after the fact that the exceedance has occurred.

- (C) DWR will maintain a minimum storage of no less than 7,800 acre-feet in Silverwood Lake, except in an emergency.

Measure WR2, Hazardous Materials Management Plan

Within six months of license issuance, implement the Hazardous Materials Management Plan included in this Appendix as Attachment 2.

Aquatic Resources

Measure AR1, Silverwood Lake Fish Stocking

Beginning in the first full calendar year after license issuance and annually thereafter during the stocking season (October 1 to May 30), DWR will stock Silverwood Lake with a target of 20,000 pounds of catchable trout (i.e., approximately two fish per pound). This poundage is an average annual target that may fluctuate slightly from year to year. The average will be measured as a five-year running average to maintain consistent stocking over the term of the new license. DWR, after consultation with CDFW, will stock the fish at an appropriate time of the year, which is anticipated to typically be at least two events per month between October 1 and May 30 of each year. The fish stocking events will occur between the Cleghorn Boat Launch or the Sawpit Canyon Boat Launch. DWR may contract with CDFW or one or more State-registered private fish hatcheries to raise and plant the fish.

Beginning in the first full calendar year after license issuance and once every six years thereafter, DWR will conduct an angler survey at Silverwood Lake. DWR may contract with CDFW to perform the surveys. The surveys will focus on trout, the stocked species, with an option to survey for other fish. The surveys will be performed approximately eight to 10 days during each month from October 1 (or after the first stocking event, whichever is later) through May 30 (or no later than 10 days after the last seasonal stocking event), for a total of 64 to 80 survey days. The specific days to be surveyed in each month will be randomly selected by DWR, with five days in each month in two strata: (1) a high-use stratum (i.e., Saturday, Sunday, and federal holidays); and (2) a low-use stratum (i.e., Monday through Friday, excluding federal holidays). The time that the survey begins each day will be randomly selected between a morning start and an afternoon start, but all surveys will be performed in the daytime. The daily survey location will be the shoreline from Cleghorn Day Use Area to Sawpit Day Use Area, including the Sawpit boat launch. The duration of each survey day will be four hours.

The surveyor(s) will ask anglers a standard series of questions regarding their fishing experience. The surveyor(s) will ask the anglers questions to determine angling effort (i.e., hours fished per angler that day) and target fish (i.e., were the anglers fishing for trout or some other fish species). The surveyor(s) will also ask the anglers one to four standard “yes or no” questions, along with the number of trout caught, to determine their angling satisfaction. The first standard question will be: “Were you satisfied with your angling experience for trout today?” The second standard question will be: “How many trout did you catch today?”

Two additional questions will be asked if the angler reports catching one or more trout: “Were you satisfied with the number of trout caught?” and “Were you satisfied with the size of trout caught?” If the anglers caught trout, the surveyor(s) will then ask questions about catch rate (i.e., the number of trout caught, including trout kept and released and why, by length of time fished), size (in inches) of trout caught, and gear used to fish. DWR may add other questions at its discretion (e.g., questions related to other fish species sought; where the anglers fished in the reservoir; number of anglers in their party; how often the anglers fish at Silverwood Lake; timing and duration of fishing trips; if the anglers are camping at Silverwood Lake or are just there for the day; and the distance the angler traveled to the lake).

By December 31, in the third full calendar year after license issuance and every other year thereafter (i.e., in license years 5, 7, 9, 11, etc.), DWR will file with FERC a report documenting Silverwood Lake trout stocking in the previous October to May stocking season, and any DWR-conducted angler surveys in those calendar years. For each of the previous two calendar years, the report will include for stocked trout: the poundage and approximate number of trout stocked; strain; size class; dates stocked; release location; method of stocking (e.g., truck); and the hatchery of origin if the fish were not obtained from CDFW. The report will also document compliance with the five-year running average stocking requirement indicated under this condition. The report will include a running summary by year of DWR’s Silverwood Lake trout stocking (i.e., poundage of trout stocked each stocking season and the five-year running average). If DWR performed an angler survey in one of the two previous calendar stocking seasons, the report will include the results of the survey, including: when and where surveys were conducted; number of anglers surveyed; total hours fished; total number of trout caught and kept; total number of trout caught and released; catch rate (i.e., number of trout caught by hours fished); length-frequency of caught trout; angler satisfaction results (i.e., response to the standard questions described above); and other information as appropriate. In addition, if an angler survey was performed in one of the two previous stocking seasons, the report will include a comparison of that season’s angler survey results to other trout angler surveys performed by DWR under this condition.

In years in which the report includes angler survey results for the previous two calendar years, prior to filing the report with FERC, DWR will provide a draft of the report to CDFW and consult with CDFW regarding the fish stocking program. CDFW will have 30 calendar days to provide written comments on the draft report, including recommending any changes to the fish stocking program. DWR will include all relevant documentation

of consultation with CDFW in the final report filed with FERC. If DWR does not adopt a particular written recommendation by CDFW, the final report will include DWR’s reasoning for the decision.

Measure AR2, Aquatic Invasive Species Management Plan

Within six months of license issuance, implement the Aquatic Invasive Species Management Plan included in this Appendix as Attachment 3.

Terrestrial Resources

Measure TR1, Integrated Vegetation Management Plan

Within six months of license issuance, implement the Integrated Vegetation Management Plan included in this Appendix as Attachment 4.

Recreation

Measure RR1, Recreation Management Plan

Within six months of license issuance, implement the Recreation Management Plan included in this Appendix as Attachment 5.

Land Use

Measure LU1, Transportation System Management Plan

Within six months of license issuance, implement the Transportation System Management Plan included in this Appendix as Attachment 6.

Measure LU2, Fire Prevention and Response Plan

Within six months of license issuance, implement the Fire Prevention and Response Plan included in this Appendix as Attachment 7.

Measure LU3, Project Safety Plan

DWR will continue to implement a Project Safety Plan.

Aesthetics

Measure VR1, Visual Resources Management Plan

Within six months of license issuance, implement the Visual Resources Management Plan included in this Appendix as Attachment 8.

Cultural Resources

Measure CR1, Historic Properties Management Plan

Within six months of license issuance, implement the Historic Properties Management Plan (HPMP) included in this Appendix as Attachment 9.

Protection, Mitigation, & Enhancement (PM&E) Map

This map depicts the locations of the following protection, mitigation, and enhancement (PM&E) measures: (1) Measure GS1, Erosion and Sediment Control; (2) Measure WR2, Hazardous Materials Management Plan; (3) Measure AR1, Silverwood Lake Fish Stocking; (4) Measure AR2, Aquatic Invasive Species Management Plan; (5) Measure TR1, Integrated Vegetation Management Plan; (6) Measure LU2, Fire Prevention and Response Plan; (7) Measure VR1, Visual Resources Management Plan; (8) Measure WR1, Silverwood Lake Minimum Pool and Water Surface Elevation; and (9) Measure RR1, Recreation Management Plan. This map is included in this Appendix as Attachment 10.

Attachments

- Attachment 1 – Erosion and Sediment Control Plan
- Attachment 2 – Hazardous Materials Management Plan
- Attachment 3 – Aquatic Invasive Species Management Plan
- Attachment 4 – Integrated Vegetation Management Plan
- Attachment 5 – Recreation Management Plan
- Attachment 6 – Transportation System Management Plan
- Attachment 7 – Fire Prevention and Response Plan
- Attachment 8 – Visual Resources Management Plan
- Attachment 9 – Historic Properties Management Plan (Privileged)
- Attachment 10 – Protection, Mitigation, & Enhancement (PM&E) Map

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Attachment 1

Erosion and Sediment Control Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



EROSION AND SEDIMENT CONTROL PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources



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COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

Application for New License	DWR's Application for a New License for Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
LRWQCB	Lahontan Regional Water Quality Control Board
NFS	National Forest System
O&M	operation and maintenance
Plan	Erosion and Sediment Control Plan
PM&E measures	Protection, Mitigation, and Enhancement measures, which are operation and management activities to: (1) protect resources against impacts from continued operation and maintenance of the Project; (2) mitigate any impacts from continued operation and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operation and maintenance
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
Project boundary	The area to which DWR requires access for normal Project operations and maintenance; the boundary is shown in Exhibit G of DWR's Application for New License
SARWQCB	Santa Ana Regional Water Quality Control Board
SBNF	San Bernardino National Forest
SRA	State Recreation Area
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project).

DWR included this Erosion and Sediment Control Plan (Plan) in its November 2019 Application for New License. All elevation data in this exhibit are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Description of the Project

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. Project facilities range in elevation from 3,378 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel; Devil Canyon Powerplant Penstocks and Surge Chamber; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation, on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., the Pacific Crest Trail) traverse or are located in the Silverwood Lake SRA but are not Project facilities. The Project does not include any open water conduits or transmission lines. DWR operates the Project in a run-of-release mode using SWP water for deliveries to downstream SWP water users.

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). USFS administers the SBNF in conformance with the SBNF Land Management Plan (USFS 2005), as subsequently amended (USFS 2006).

DWR will continue to operate the Project as it has been operated historically, with the addition of a number of Protection, Mitigation, and Enhancement (PM&E) measures,

which are operation and management activities to: (1) protect resources against potential impacts from continued operation and maintenance (O&M) of the Project; (2) mitigate any impacts from continued O&M of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project O&M. This Plan is one of those PM&E measures.

Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including DWR's Project boundary.



Figure 1.1-1. Devil Canyon Project Vicinity

1.2 PURPOSE OF THE PLAN

The purpose of this Plan is to minimize future erosion and sedimentation related to the Project. This plan covers ground-disturbing activities from routine O&M and new construction that could produce undesirable erosion or sedimentation conditions near, streams, reservoirs, or infrastructure.

To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The primary goal of the Plan is to describe existing DWR and USFS Best Management Practices (BMP) (USFS 2012) on NFS lands to control site-specific erosion and sedimentation impacts during routine O&M and reconstruction of Project facilities, including emergency erosion control measures and protocols to control sedimentation during or after severe storm events. The objective of the Plan is to provide necessary current guidelines to meet Plan goals.

1.4 CONTENTS OF THE PLAN

This Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including the purpose, goals, and objectives of the Plan.
- Section 2.0. Methods for Minimization of Erosion and Sedimentation during Continued Project Operation and Maintenance. This section describes the methods for minimization of site-specific erosion and sedimentation impacts during continued operation and maintenance of the Project, including potential slope failures, new construction and/or reconstruction of Project facilities.
- Section 3.0. Consultation, Reporting, and Plan Revisions. This section describes consultation between DWR and the SBNF, reporting, and Plan revisions.
- Section 4.0. References Cited. This section includes the resource documents cited in this Plan.

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2.0 METHODS FOR MINIMIZATION OF EROSION AND SEDIMENTATION DURING CONTINUED PROJECT OPERATION AND MAINTENANCE

2.1 OVERALL EROSION AND SEDIMENT CONTROL PLANNING PROCESS FOR THE DEVIL CANYON PROJECT

Figure 2.1-1 is a flowchart that generally describes the overall erosion and sediment control planning, consultation, permitting, treatment, and monitoring pathways for the Project. Normally, erosion treatment projects are either planned in advance (Box 1 in Figure 2.1-1) or arise as, or are initially implemented as, emergency actions (Box 2 in Figure 2.1-1). Prior to implementation, some permanent erosion control/stabilization activities may require consultation with the Lahontan Regional Water Quality Control Board (LRWQCB) or the Santa Ana Regional Water Quality Control Board (SARWQCB). The SBNF will be consulted on NFS lands (Box 10 in Figure 2.1-1). Permanent erosion control features are defined as constructed features such as road drainage features, rip-rap, and retaining walls.

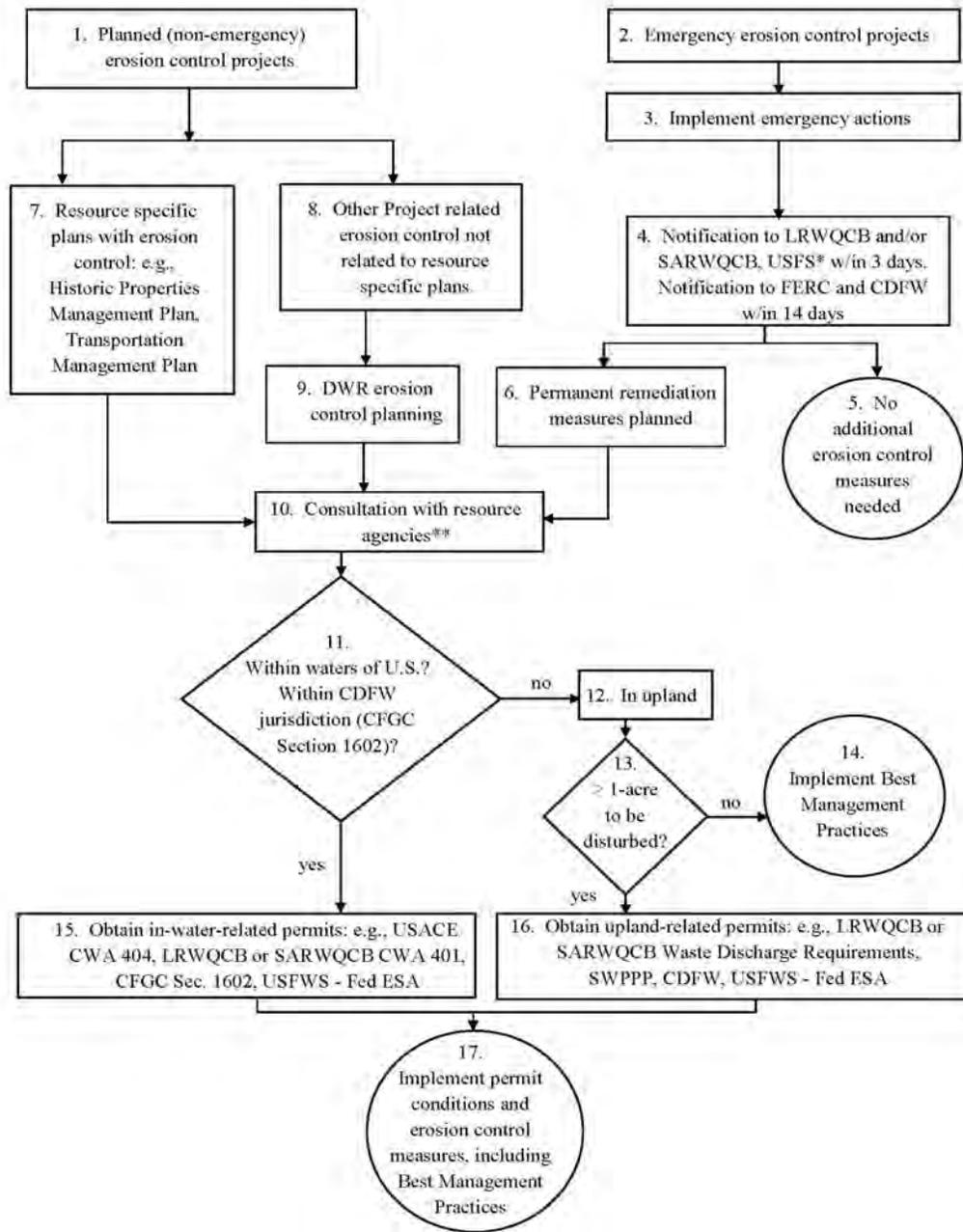
When erosion control takes place on an emergency basis, then concurrent or after-the-fact notification to the LRWQCB, SARWQCB, California Department of Fish and Wildlife (CDFW), USFS (when on or affecting NFS lands), and/or FERC may be necessary (Box 4 in Figure 2.1-1). If after the emergency erosion control actions are completed and more permanent stabilization measures are needed, then DWR will prepare a site plan with appropriate remediation and monitoring measures (Box 6 in Figure 2.1-1). If the emergency action does not require more permanent stabilization activities, then no other erosion control measures will be implemented (Box 5 in Figure 2.1-1).

Generally, planned (non-emergency) erosion control activities fall into one of two categories: (1) those associated with an erosion control element in a specific resource plan included in the new license (e.g., Historic Properties Management Plan, Transportation Management Plan, etc.) (Box 7 in Figure 2.1-1); or (2) any Project-related erosion control not addressed by specific resource plans included in the new license (Box 8 in Figure 2.1-1). Prior to implementation, planned erosion treatment plans and designs normally require consultation with USFS when on or affecting NFS lands, and potentially the LRWQCB or SARWQCB (Box 10 in Figure 2.1-1).

DWR will seek a Section 401 certification, as appropriate, if an erosion control activity will involve federal approval for a discharge into waters of the United States.

Erosion treatment projects that fall within designated “waters of the United States” may be subject to a U.S. Army Corps of Engineers (USACE) permit (Box 11 in Figure 2.1-1). This may be a Nationwide or an Individual permit, depending upon the specific circumstances.

Erosion treatment projects may also fall under California Fish and Game Code (CFGC) Section 1602.



Notes:

*USFS consultation applies when on or affecting National Forest System lands.

**Resource agencies may include LRWQCB, SARWQCB, CDFW, USFWS, USACE, and others, as appropriate.

Key:

CDFW = California Department of Fish and Wildlife

CFGC = California Fish and Game Code

CWA 401 = Clean Water Act, Section 401 Certification

CWA 404 = Clean Water Act, Section 404 Permit Program

Fed ESA = Federal Endangered Species Act

LRWQCB = Lahontan Regional Water Quality Control Board

SARWQCB = Santa Ana Regional Water Quality Control Board

USACE = U.S. Army Corps of Engineers

USFS = U.S. Department of Agriculture, Forest Service

USFWS = U.S. Fish and Wildlife Service

Figure 2.1-1. Erosion and Sediment Control Plan Process Flow Chart

Construction work that disturbs a land area greater than one acre may be subject to a Statewide General Permit for stormwater discharge associated with construction activity, which may require a Stormwater Pollution Prevention Plan (SWPPP) (Box 16 in Figure 2.1-1). If the Project is smaller than 1 acre of land disturbance, then the Statewide General Permit is not required (Box 14 in Figure 2.1-1).

After the appropriate permits are obtained, and in compliance with the requirements of such permits, DWR would implement the erosion treatment (Box 17 in Figure 2.1-1).

2.2 MEASURES RELATED TO NEW CONSTRUCTION

Temporary erosion prevention and control measures are normally implemented during construction or reconstruction of Project facilities and infrastructure. This includes, but is not limited to, reconstruction at dam sites, road reconstruction, and recreation site development, where ground disturbance and/or vegetation removal is expected. These measures are typically based on State and federal permit requirements as applicable; BMPs for NFS land; DWR BMPs, including the development of a SWPPP when required; and measures included in a Section 1602 Agreement, if obtained. Table 2.2-1 provides a general list of priority BMPs for erosion control at construction sites.

DWR, or its contractor(s), normally prepare and implement a SWPPP, if required, during development of detailed construction plans and drawings, and prior to initiating erosion control measures for each site larger than one acre. A copy of the SWPPP and Section 1602 Agreement, if one is obtained for the work, is usually maintained on site while the site is under construction, commencing with the initial mobilization and ending with the termination of coverage under a USACE permit, if applicable.

For construction and maintenance activities on NFS lands within the FERC Project boundary, DWR complies with the applicable non-stormwater BMPs adopted by USFS. For construction and maintenance activities on non-NFS lands within the Project boundary, DWR implements DWR's non-stormwater BMPs, depending on the specifics of a particular project. These BMP measures normally are site-specific for each planned construction project and might extend past the final construction inspection, if re-vegetation is included for more permanent site stabilization and erosion control.

Table 2.2-1. General List of Best Management Practices for Erosion and Sediment Control at Construction Sites

BMP Topic	Key Elements
Construction Scheduling	<ul style="list-style-type: none"> • Sequence construction activities so that the soil is not exposed for long periods of time. • Schedule or limit grading to small areas. • Install key sediment control practices before site grading begins. • Schedule site stabilization as described below. • Avoid rainy periods when scheduling major grading activities. • Incorporate time for establishment of vegetation into the conclusion of the construction schedule. • Monitor rainfall and rain forecasts.
Preservation of Existing Vegetation	<ul style="list-style-type: none"> • Minimize clearing and the amount of exposed soil. • Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity. • Protect streams, stream barriers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.
Site Stabilization	<ul style="list-style-type: none"> • Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed, or during temporary periods of inactivity. • Schedule temporary stabilization at inactive disturbed areas as soon as possible upon cessation of soil disturbing activities. • Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.
Silt Fencing	<ul style="list-style-type: none"> • Inspect and maintain silt fences after each storm event. • Make sure the bottom of the silt fence is buried. • Securely attach the material to the stakes. • Don't place silt fences in the middle of a waterway or use them as a check dam. • Install silt fence along topography contours with ends turned uphill in areas where sheet flow typically occurs. Stormwater should not flow around the silt fence. • Each silt fence should drain a maximum slope length of 100 feet.
Storm Drain Inlet Protection	<ul style="list-style-type: none"> • Use rock or other appropriate material to cover the storm drain inlet to prevent trash and debris from entering the storm sewer system. • Make sure the rock size is appropriate (usually 1 to 2 inches in diameter). • If you use inlet filters, maintain them regularly. • Storm drains should not drain an area larger than 1 acre. If they do, stormwater must be routed through additional BMPs, such as sediment basins or sediment traps.

Table 2.2-1. General List of Best Management Practices for Erosion and Sediment Control at Construction Sites (continued)

BMP Topic	Key Elements
Buffers	<ul style="list-style-type: none"> • Depending on site specifics, maintain vegetative buffers or buffers by other means along water bodies to slow and filter stormwater run-off. • Maintain buffers periodically to ensure their effectiveness.
Fugitive Dust Suppression	<ul style="list-style-type: none"> • Apply water on access roads. • Haul materials in properly tarped or sealed containers. • Restrict vehicle speeds to 15 miles per hour. • Cover excavated areas and material after excavation activity ceases. • Reduce the excavation size and/or number of excavations. • Water-down equipment and excavation faces.
Stabilized Construction Entrances	<ul style="list-style-type: none"> • Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway. • Maintain or repair the construction entrance so that it does not become buried in soil. • Properly size entrance BMPs for all anticipated vehicles. • Crushed rock and gravel pads may be used as a stabilized construction entrance. • Replace gravel material when surface voids are visible. • Remove all sediment deposited on roadways within 24 hours.
Waste Management	<ul style="list-style-type: none"> • Collect concrete and wash water in concrete washout facilities, especially when operations are near water resources. Containers must be adequately sized to handle solids, wash water, and possible rainfall. • Choose smaller, covered containers and more frequent collection. • Do not allow waste to accumulate on site. • Separate recyclable materials from waste and keep covered. • Conduct visual inspections of dumpsters and recycling bins, removing containment and keeping containers covered. • Ensure proper storage of stockpiled materials and material storage on site. • Stockpile processed materials on-site separately. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

Key:
BMP = Best Management Practice

2.3 MEASURES RELATED TO ROUTINE MAINTENANCE ON NATIONAL FOREST SYSTEM LANDS

DWR normally adheres to USFS' National Best Management Practices for Water Quality Management on National Forest System lands (USFS 2012) for any routine maintenance activities affecting NFS lands. These BMPs are designed to minimize soil disturbance and reduce delivery of sediment to water bodies. On non-NFS lands, DWR's erosion control BMPs include sediment control measures such as silt fences, sandbag and straw wattles; revegetation of areas after ground-disturbing activities; re-grading slopes to prevent concentrated runoff into water bodies; scheduling activities

outside rainy periods (when possible); and installation of rock revetment structures; as described in the general list of BMPs in Table 2.2-1.

2.4 MEASURES RELATED TO OTHER EMERGENCY EROSION CONTROL EVENTS

DWR will be prepared to monitor for unexpected, emergency erosion control events within the Project boundary that develop in response to significant events (e.g., storms and wildfires). Erosion control measures typically include the protocols for documentation of specific erosion threats, appropriate agency notifications, and short/long-term actions that can be taken to stabilize each site and address public safety.

For emergency erosion control work, DWR will provide notification to CDFW, as appropriate, pursuant to CFGC Section 1610, which requires notification to be submitted within 14 days of beginning the emergency work. "Emergency work" as defined in CFGC Section 1610 includes: (1) immediate emergency work necessary to protect life or property, and (2) immediate emergency repairs to public service facilities necessary to maintain service as a result of a disaster in an area in which a state of emergency has been proclaimed by the governor of California.

2.5 MONITORING OF EROSION AND SEDIMENT CONTROL ACTIVITIES

Monitoring of erosion and sediment control plans generally includes both implementation monitoring (i.e., whether the BMP was installed correctly) and effectiveness monitoring (e.g., whether maintenance or adaptive management is required, whether revegetation is meeting required standards). Monitoring of erosion and sediment control activities for the Project will follow the parameters of the applicable permits (e.g., Section 1602 Agreement, 404 permit and 401 certification), and/or license implementation plan. Various implementation plans in the license (e.g., the Integrated Vegetation Management Plan and Transportation System Management Plan) include specific erosion control-related provisions.

If the work is on or affects NFS lands, the monitoring will adhere, as appropriate, to USFS 2012. The implementation plans incorporate the USFS Handbook requirements so no conflict is anticipated between the implementation plans and the USFS Handbook requirements. However, if a discrepancy does occur between the specific permits and license implementation plans, the monitoring required in the permit will take priority over the monitoring required in the implementation plan.

The USFS Land Management Plan (USFS 2005) requires USFS to annually audit BMP implementation and effectiveness on NFS lands to meet USFS policy. The USFS audit sites are chosen at random by USFS and may include sites related to this license. These audits would be conducted by USFS in cooperation with DWR.

3.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

3.1 CONSULTATION AND REPORTING

DWR will annually review with the SBNF activities related to erosion and sediment control on or affecting NFS lands in the previous calendar year, as well as any activities related to erosion and sediment control on NFS lands planned for the current calendar year. In addition, DWR will consult with the SBNF, as needed, regarding erosion and sediment control.

3.2 PLAN REVISIONS

DWR, in consultation with the SBNF, will review, update and/or revise this Plan, as it pertains to erosion and sediment control on NFS lands. Any updates to the Plan pertaining to the SBNF will be prepared in coordination and consultation with the SBNF. The SBNF will have 60 days after receipt of the updated plan to provide written comment and recommendations before DWR files the updated Plan with FERC for approval. DWR will include documentation of all relevant coordination and consultation associated with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation by the SBNF, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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4.0 REFERENCES CITED

- U.S. Department of Agriculture, Forest Service (USFS), San Bernardino National Forest. 2012. FS 990a – National Best Management Practices for Water Quality Management on National Forest System Lands - Volume 1: National Core BMP Technical Guide. 177 pp. Available online:
https://www.fs.fed.us/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf.
- _____. 2006. San Bernardino National Forest Land Management Plan, Final Environmental Impact Statement, Record of Decision. U.S. Department of Agriculture, Forest Service, Pacific Southwest Region. April. Available online:
https://www.fs.usda.gov/wps/portal/fsinternet/cs/main!/ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfljo8zijQwgnNHCwN_DI8zPwBcqYKAfDIZggAM4GuhHEaMfj4Io_MaH60dhtSLMB2ECITMKckMjDDIdFQEHRNG/dz/d5/L2dBISEvZ0FBIS9nQSEh/?position=BROWSEBYSUBJECT&pname=San%20Bernardino%20National%20Forest-%20Planning&navtype=BROWSEBYSUBJECT&ss=110512&pnavid=13000000000000&navid=1301000000000000&ttype=main&cid=FSE_003756.
- _____. 2005. Land Management Plan, Part 2, San Bernardino National Forest Strategy. Department of Agriculture. Pacific Southwest Region. 117 pp. and appendices. Available online:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf.

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Attachment 2

Hazardous Materials Management Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



HAZARDOUS MATERIALS MANAGEMENT PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources



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COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

Application for New License	DWR's Application for a New License for the Devil Canyon Project Relicensing, FERC Project Number 14797
OES	Office of Emergency Services
CDFW	California Department of Fish and Wildlife
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DPR	California Department of Parks and Recreation
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
hazardous material	A material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment, if released into the workplace or the environment
hazardous waste	A solid or liquid waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may pose a substantial present or potential hazard to human health and safety or the environment, if improperly treated, stored, transported, disposed of, or otherwise managed
LRWQCB	Lahontan Regional Water Quality Control Board
NFS	National Forest System
O&M	operation and maintenance
Plan	Hazardous Materials Management Plan
PM&E measures	Protection, Mitigation, and Enhancement measures, which are operation and management activities to: (1) protect resources against impacts from continued operation and maintenance of the Project; (2) mitigate any impacts from continued operation and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operation and maintenance
PPE	personal protective equipment
Project	Devil Canyon Project Relicensing, FERC Project Number 14797

Project boundary	The area to which DWR requires access for normal Project operations and maintenance. The boundary is shown in Exhibit G of DWR's Application for New License.
SBNF	San Bernardino National Forest
SDS	Safety Data Sheet
SPCC	Spill Prevention, Control, and Countermeasure Plan
SRA	State Recreation Area
SWP	State Water Project
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service

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1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project).

DWR included this Hazardous Materials Management Plan (Plan) in its November 2019 Application for New License. This Plan addresses hazardous materials, including hazardous waste, defined as “a solid or liquid waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may pose a substantial present or potential hazard to human health and safety or the environment, if improperly treated, stored, transported, disposed of, or otherwise managed” (California Health and Safety Code, Section 25501[n][1]). Hazardous wastes are further defined by the California Department of Toxic Substances Control as “liquids, solids, or contained gases, and can be the by-products of manufacturing processes, used oil, discarded used materials, or discarded unused commercial products, such as cleaning fluids (solvents) or pesticides” (DTSC 2016).

All elevation data in this exhibit are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Description of the Project

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. Project facilities range in elevation from 3,378 feet to 1,778 feet and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel; Devil Canyon Powerplant Penstocks and Surge Chamber; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation (DPR), on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., the Pacific Crest National Scenic Trail) traverse or are located in

the Silverwood Lake SRA but are not Project facilities. The Project does not include any open water conduits or transmission lines. DWR operates the Project in a run-of-release mode using SWP water as the water is delivered to downstream SWP water users.

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). USFS administers the SBNF in conformance with the SBNF Land Management Plan (USFS 2005), as subsequently amended (USFS 2006).

DWR will continue to operate the Project as it has been operated historically, with the addition of a number of Protection, Mitigation, and Enhancement (PM&E) measures, which are operation and management activities to: (1) protect resources against potential impacts from continued operation and maintenance (O&M) of the Project; (2) mitigate any impacts from continued O&M of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project O&M. This Plan is one of those PM&E measures.

Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including DWR's Project boundary.



Figure 1.1-1. Devil Canyon Project Vicinity

1.2 PURPOSE OF THE PLAN

This Plan is intended to provide guidance for the storage, use, and transportation of hazardous materials used or generated within the Project boundary. To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The primary goal of the Plan is to describe the current standard practices that DWR follows when storing, using, transporting, and disposing of hazardous materials used for routine O&M of the Project. The objective of the Plan is to provide the guidance necessary to meet Plan goals.

1.4 CONTENTS OF THE PLAN

This Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including the purpose and goals of the Plan.
- Section 2.0. Project-Specific Hazardous Materials Use, Transport, Storage, and Disposal. This section provides a list of hazardous materials that DWR uses, transports, stores, and disposes in the routine O&M of the Project. The volume and location of the hazardous materials are described. DWR does not dispose of any hazardous substance within the Project boundary.
- Section 3.0. Hazardous Materials Management. This section lists the practices that DWR employs to manage hazardous materials during O&M of the Project.
- Section 4.0. Consultation, Reporting, and Plan Revisions. This section describes consultation between DWR, California Department of Fish and Wildlife (CDFW), and the SBNF; reporting; and Plan review regarding hazardous materials.
- Section 5.0. References Cited. This section includes the resource documents cited in this Plan.

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2.0 PROJECT-SPECIFIC HAZARDOUS MATERIALS USE, TRANSPORT, STORAGE, AND DISPOSAL

DWR uses hazardous materials during routine O&M of the Project's facilities. DWR also transports hazardous materials to sites located in the Project boundary when they are to be used for periodic maintenance work, as described below. Table 2.0-1 provides a general description, by location, of hazardous materials that may be used, stored, or transported for routine Project O&M. Refer to Section 3.2 of this Plan regarding procedures for clean-up of hazardous material spills, including during transport.

DWR and DPR have Hazardous Materials Business Plans and Spill Prevention, Control, and Countermeasure (SPCC) plans for the hazardous materials stored at Devil Canyon Powerplant and Silverwood Lake SRA, as shown in Table 2.0-1. Devil Canyon Powerplant is the only Project facility where DWR stores hazardous materials. DPR hazardous materials are stored at the DPR maintenance facility at Silverwood Lake SWRA. In addition, limited quantities of gasoline and other materials, as listed in Table 2.0-1, are kept by DPR at the marina. Neither DWR's Devil Canyon Powerplant nor DPR's maintenance facility are located on NFS lands.

Table 2.0-1. Devil Canyon Project Facilities and Hazardous Materials Stored, Used, or Transported for Routine Operation and Maintenance

Hazardous Materials*	Location	O&M Activity	Quantity
DEVIL CANYON FACILITIES¹			
Transformer oil	Exterior Transformer Yard, North of Powerplant	Plant maintenance, Electrical Plant Transformers	30,000 gallons
Diesel fuel No. 2	Exterior, North of Transformer Yard	Plant SEG Fuel Tank	1,800 gallons
Welding gas (75% argon, 25% CO ₂)	Exterior, South of Powerplant	Plant Maintenance Activity	> 100 cubic feet
Chevron hydraulic oil AW 32	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, Plant Hydraulic Equipment	>220 gallons
Chevron gear lubricant – Meropa 150	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, DC 225Ton Crane	>110 gallons
Chevron hydraulic fluid - Rando HD 150	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, EBX Unit Oil	>165 gallons
Chevron motor oil SAE 15W-40	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, Plant and Ck Site SEG Oil	>110 gallons
K-1 Kerosene	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, Used in Steam Cleaner	> 110 gallons
Mobil EAL 224H – hydraulic fluid	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, EBX Hydraulic Power Unit Oil	>165 gallons
Used oil/waste	Hazmat/Waste & Storage area NW of Powerplant	Transported offsite for recycling @ 55gal	>55 gallons
Oily rags	Hazmat/Waste & Storage area NW of Powerplant	Transported offsite for recycling @ 55gal	>150 pounds
Used oil	Hazmat/Waste & Storage area NW of Powerplant	Transported offsite for recycling @ 55gal	>165 gallons
Shell Diala oil AX	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, EBX Transformer Oil	>110 gallons
SIGMA M-460 compressor fluid	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, EBX Compressor Oil	>110 gallons

Table 2.0-1. Devil Canyon Project Facilities and Hazardous Materials Stored, Used, or Transported for Routine Operation and Maintenance (continued)

Hazardous Materials*	Location	O&M Activity	Quantity
Texaco Starplex Moly MPGM2 - grease	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, EBX Pump Grease	>120 pounds
Chevron turbine oil GST 68	Hazmat/Waste & Storage area NW of Powerplant	Plant maintenance, DC Unit Plant Oil	>110 gallons
Used oil/waste	Plant Elev. 1938, U2 Oil Coalescer	Needle Oil/Water Separator	>50 gallons
Nitrogen	Plant elev. 1938, Cylinder Storage Cage	Plant maintenance, Plant Nitrogen for TSV System	3,800 cubic feet
Chevron turbine oil GST 68	Plant elev. 1938, Day Tanks near Units 1-4	Plant maintenance, Needle Day Tanks	>100 gallons
Nitrogen	Plant elev. 1938, E. end nitrogen bank	Plant maintenance, TSV System Nitrogen	22,500 cubic feet
Chevron turbine oil GST 68	Plant elev. 1938, TSV accumulation tanks	Plant maintenance, U1 & 2 TSV HPU	>350 gallons
Chevron turbine oil GST 68	Plant elev. 1938, TSV HPU control cabinet	Plant maintenance, U1 & 2 TSV HPU	>400 gallons
Chevron Dura-Lith grease EPNRG12	Plant elev. 1938, Hazmat/Storage Area	Plant Maintenance, PM grease	>400 pounds
Used oil/waste	Plant elev. 1938, Hazmat/Storage Area	Transported offsite for recycling @ 55gal	>30 gallons
Used antifreeze	Plant elev. 1938, Hazmat/Storage Area	Transported offsite for recycling @ 55gal	>35 gallons
Used/crushed oil filters	Plant elev. 1938, Hazmat/Storage Area	Transported offsite for recycling @ 55gal	>75 pounds
Acetylene	Plant elev. 1938, Portable	Plant Maintenance Welding	>150 cubic feet
Oxygen	Plant elev. 1938, Portable	Plant Maintenance Welding	>105 cubic feet
Chesterton 801 Industrial & Marine Solvent	Plant elev. 1938, Oil Centrifuge Room	Plant maintenance part cleaning (Pink Soap)	>30 gallons

Table 2.0-1. Devil Canyon Project Facilities and Hazardous Materials Stored, Used, or Transported for Routine Operation and Maintenance (continued)

Hazardous Materials*	Location	O&M Activity	Quantity
K-1 kerosene	Plant elev. 1938, Oil Centrifuge Room	Plant maintenance, Used in Steam Cleaners	>30 gallons
Oily rags	Plant elev. 1938, Oil Centrifuge Room	Transported offsite for recycling @ 55gal	>75 pounds
Texaco Ursa Super Plus 15W-40 oil	Plant elev. 1938, Oil Centrifuge Room	Plant maintenance, Plant & Check Site SEG	>30 gallons
Chevron turbine oil GST 68	Plant elev. 1938, Oil Centrifuge Room	Lubricates generator and turbine bearings	>30 gallons
Motor oil 15w-40	Plant elev. 1938, Oil Room	Plant maintenance, Plant & Check Site SEG	>190 gallons
Chevron turbine oil GST 68	Plant elev. 1938, Oil Room	Plant maintenance, Dirt/Clean Tanks Oil System	>1,970 gallons
Used oil/waste	Plant elev. 1938, Oil Room sump pit	Centrifuge Overflow, Transported offsite for recycling @ 55gal	>50 gallons
Dowtherm heat transfer fluid	Plant elev. 1938, HVAC Room	HAVAC Maintenance PM	>30 gallons
Carbon dioxide	Plant elev. 1938, Storage Room	Fire Suppression System	9,170 cubic feet
Nitrogen	Plant elev. 1938, West Nitrogen Bank	Plant maintenance, TSV System Nitrogen	22,500 cubic feet
Chevron turbine oil GST 68	Plant elev. 1938, West Nitrogen Bank	U3, 4 & Bypass Vlv HPU	>350 gallons
Lead acid batteries	Plant elev. 1954, East Battery Room	Essential Buss Emergency Plant Power	315 gallons
Carbon dioxide	Plant elev. 1954, East CO ₂ Bank	Fire Suppression System	39,300 cubic feet
Acetylene	Plant elev. 1954, portable	Plant Maintenance Welding	>150 cubic feet
Oxygen	Plant elev. 1954, portable	Plant Maintenance Welding	>100 cubic feet
Lead acid batteries	Plant elev. 1954, West Battery Room	Essential Buss Emergency Plant Power	>45 gallons
Carbon dioxide	Plant elev. 1954, West CO ₂ Bank	Fire Suppression System	30,130 cubic feet

Table 2.0-1. Devil Canyon Project Facilities and Hazardous Materials Stored, Used, or Transported for Routine Operation and Maintenance (continued)

Hazardous Materials*	Location	O&M Activity	Quantity
Chevron turbine oil GST 68	Plant elev. 1954, Turbine/LGB Reservoir	Lubricates generator and turbine bearings	>840 gallons
Waxie City Seal	Plant elev. 1970, North wall stairwell	Floor wax building maintenance	>40 gallons
Waxie W-400 Sealer	Plant elev. 1970, North wall stairwell	Floor wax building maintenance	>75 gallons
Oxygen	Plant elev. 1970, Exterior Cylinder Gas Storage Case	Plant Maintenance Welding	>200 cubic feet
Acetylene	Plant elev. 1970, SW Cylinder Gas Storage Closet	Plant Maintenance Welding	>500 cubic feet
Argon compressed	Plant elev. 1970, SW Cylinder Gas Storage Closet	Plant Maintenance Welding	1,600 cubic feet
Chevron turbine oil GST 68	Plant elev. 1970, Motor UGB/Governor Reservoir	Lubricates generator and turbine bearings	>2,320 gallons
A-1025 shielding gas	Plant elev. 1970, West Welding Shop	Plant Maintenance Welding	>1,800 cubic feet
Acetylene	Plant elev. 1970, West Welding Shop	Plant Maintenance Welding	>100 cubic feet
Argon compressed	Plant elev. 1970, West Welding Shop	Plant Maintenance Welding	>500 cubic feet
Oxygen	Plant elev. 1970, West Welding Shop	Plant Maintenance Welding	>200 cubic feet
SILVERWOOD LAKE STATE RECREATION AREA (DPR) ²			
Diesel fuel	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Refuel heavy equipment	1,000 gallons
Latex paint	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance	220 gallons
Port o pot blue (toilet deodorizer)	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance	220 gallons
Disinfectant	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance	200 gallons

Table 2.0-1. Devil Canyon Project Facilities and Hazardous Materials Stored, Used, or Transported for Routine Operation and Maintenance (continued)

Hazardous Materials*	Location	O&M Activity	Quantity
Liquefied petroleum gas (LPG)	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA.	HVAC	5,000 gallons
Gasoline	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Refuel equipment	4,000 gallons
Oxygen	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance - welding	1,000 cubic feet
Used lubricating oils	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Heavy equipment maintenance	35 gallons
Acetylene	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance - welding	750 cubic feet
Roundup Pro Concentrate	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance	100 gallons
Sodium Hypochlorite – Clorox Bleach	DPR maintenance facility: 14651 Cedar Cir, Hesperia, CA	Facility maintenance	100 gallons

Note:

*This list represents the products used or onsite during the writing of this plan. It is not intended to limit the type, volume, or storage location of products used or held during the term of the license.

¹DWR maintains a Hazardous Materials Business Plan for this facility.

²DPR maintains a Hazardous Materials Business Plan for this facility.

3.0 HAZARDOUS MATERIALS MANAGEMENT

3.1 ROUTINE O&M

Prior to conducting any O&M task, DWR staff normally develops solutions that will eliminate, nullify, or prevent hazards that may be encountered during task implementation, including hazards associated with hazardous substance handling.

3.1.1 Training

Using best practices and good judgment, and as required by regulations, DWR staff who handle hazardous materials during routine O&M are trained in the following:

- Safe handling of hazardous materials, including appropriate protocols with respect to hazardous substance storage, labeling, and Safety Data Sheets (SDS)
- Location and use of appropriate equipment and materials for cleaning up hazardous materials spills
- Procedures for cleaning up spills
- Use of spill control and personal protective equipment (PPE)

DWR formally documents all trainings.

3.1.2 Notification Procedures

DWR staff who handle hazardous materials are familiar with notification and reporting procedures in case of a hazardous materials spill or incident during routine O&M activities. These notification and reporting procedures may include:

- As soon as possible, but no later than 24 hours after the event of a reportable-quantity hazardous substance spill or accident, DWR informs the appropriate federal, State and county agencies and DPR; DWR initially notifies the California Governor's Office of Emergency Services (Cal OES) at 800-852-7550 or 916-262-1621.
- If the spill occurs on or affects resources on NFS lands, DWR will contact the SBNF to report the spill and discuss corrective actions. The contact information for SBNF Emergency Command Center dispatch, to initiate the SBNF's Emergency Response Plan is 909-383-5651 (24-hour emergency); or 909-382-2619 or 909-382-2633 (for office, general questions).
- Depending on the type of release, DWR may contact CDFW's Office of Spill Prevention and Response at 800-852-7550 or 916-845-0045, and/or the U.S. Department of the Interior, Fish and Wildlife Service for Natural Resource Damage Assessment: 760-431-9440 (extension 271) or 760-431-9440 (extension 291).

- Reporting includes the following details regarding the spill: product, magnitude, nature, time, date, location and actions taken. Reports can be made by any employee involved in release, the Site Manager, or DWR's Incident Commander.
- DWR will notify FERC of the event, including the agencies notified by DWR, pertinent details regarding the event, and any corrective actions or requirements of the responsible agencies.

In the rare event during which spill prevention activities fail, clean-up supplies from the Devil Canyon Powerplant will support product release response and control measures by DWR. From this inventory, trucks used for O&M are normally equipped with a fire extinguisher, shovel and bucket, as a matter of routine.

At DWR-maintained facilities within the Project boundary, the clean-up material inventory is specific to the products in use. Those clean-up materials may include, but are not limited to:

- Emergency Spill Kit
 - PPE (e.g., safety glasses, rubber gloves, booties, etc.)
 - Absorbent socks
 - Absorbent drip pillow
 - Absorbent skimmers
 - Absorbent spill pillows, 24-inch x 18-inch
 - Lite-dri absorbent (or equal)
 - Flat-bladed shovel and broom
 - Disposal bags and ties
 - Hazardous Materials Business Plan
 - Hazardous waste labels
 - Waste material containment drums for collection of spilled materials, including disposable spill kit items used in the spill response (e.g., absorbent socks and pillows, rubber gloves, etc.) for disposal in accordance with federal, state and local regulations.
- Absorbent Pads – Each pad (18 inches x 18 inches) is polypropylene fabric that absorbs 11 times its weight in liquid. Pads absorb 10 gallons of liquid per bale of 100 pads. Each clean-up crew normally has 100 absorbent pads.

- Absorbent Skimmers Booms – Skimmers float indefinitely before or after saturation with oils. Skimmers are made of meltdown polypropylene fill that repels water. They absorb 10 times their weight in oil and can be used in lakes, streams, or on the ground. Each skimmer normally has a harness kit attached that is made of yellow polypropylene rope with grommets that are used to connect skimmers. Each boom is usually 8 feet x 10 feet. Absorbent skimmer booms are useful when work is performed near water.
- Clean Drum – One 55-gallon clean drum, lined with polypropylene material or an overpack drum, can be used to store spill response materials until needed. When a spill occurs, soiled pads, pillows, skimmers and contaminated soil will be placed in the drum for disposal after the cleanup is accomplished.

3.2 SPILL RESPONSE

In the unlikely event that a spill occurs, DWR will determine the appropriate method of spill response according to the degree of hazard the spill represents, as characterized by two classes of spills: incidental spill; or non-incidental spill, which are defined below:

Incidental Spill:

- A spill that represents a low risk to personnel and the environment
- A spill that is either contained or the volume of spilled material is no more than five gallons
- A spill that can be absorbed and controlled at the time of release by trained employees working in the area
- A spill that will not reach a floor drain or storm drain or will contact soil

Non-Incidental Spill:

- A spill that represents a risk to human health or has the potential to harm the environment
- Therefore, the first action in response to a spill is to evaluate the hazard to determine whether it is an incidental or non-incidental spill, then implement the spill response actions according to DWR's procedures outlined below that facility personnel carry out when responding to, and reporting on, a spill/release.

3.2.1 Spill Response – Immediate Actions

- Evaluate the spill area. Does the spill represent a high or low risk of harm to human health or the environment, per the definition in Section 3.2?

- ***If a HIGH RISK spill (i.e., NON-INCIDENTAL SPILL, per the definition in Section 3.2) occurs***, the spill must be addressed by DWR's emergency personnel or qualified emergency response contractor:
 - Quickly identify and assess the situation and its potential hazards:
 - What material has spilled?
 - Where is the spill?
 - What happened to cause the spill?
 - How much spilled?
 - How much remains that could be spilled?
 - Is it contained?
 - When did the spill occur?
 - Are there any surface waters, groundwater, or wells nearby that could be affected?
 - Is help needed? Is help on the way?
 - Are there current or foreseeable weather conditions that could cause the spill to spread and/or worsen the potential hazard?
 - Notify Your Supervisor. Warn your supervisor and affected personnel in accordance with internal emergency response system procedures. If you can, do not leave the spill unattended when reporting to your supervisor; instead either communicate with your supervisor electronically (e.g., mobile phone, radio) while you monitor the spill, if possible, or find someone nearby to monitor the spill and to enforce safety/security measures and keep non-response personnel at a safe distance. Use the information you have gathered to inform your supervisor of the situation. The supervisor assures that the Incident Commander of a DWR facility assumes incident command for directing a coordinated response and ensuring the required external reporting notifications per Section 3.2.2.
 - When reporting a non-incident spill, provide the following information:
 - Contact number and location of the person reporting the spill (recommend giving this information first in case phone connection is lost)
 - All assessment information compiled from the list above

- Any other site-specific information that may be relevant, such as the presence of outside contractors that may be working in the area, or other unusual conditions or circumstances
- Alert the Area Control Center to notify employees of the danger and/or need for any evacuation
- Determine if you can act safely to stop the spill at an upstream valve. If you cannot shut off a valve, determine if you can dike or block-off the leak with absorbent materials. Remember – do everything only from a safe distance and avoid contact with the spilled product. Do not endanger yourself or others.
- Secure the Work Area. Clear the immediate area. Block off the spill site and areas where exposure may be a problem. Keep all sources of ignition away from the area. Assign several coworkers as needed to stand at safe points around the scene to keep people and vehicles from passing through the spill area. Shut down machinery that could ignite the spill. If machinery cannot be removed from the path of the spill, surround equipment with absorbent materials. Be aware of the potential for electric shock.
- Dispose. After the spill response has been completed, DWR's Environmental and Safety Manager will oversee the disposal process with contracted waste handlers.
- ***If a LOW RISK spill (i.e., INCIDENTAL SPILL, per the definition in Section 3.2) occurs***, the spill must be addressed by DWR's emergency personnel or a qualified emergency response contractor. The spill may be controlled in the following manner:
 - Alert your supervisor that an incidental spill has occurred.
 - Assess the spill:
 - Spill source
 - Material and quantity
 - Potential hazards
 - Potential environmental receptors
 - Before beginning any cleanup or containment operation, check the SDS for the type of PPE needed for the released product. Don PPE appropriate for controlling the release to prevent skin and eye contact (e.g., booties or shoe covers, nitrile gloves, eye protection, Tyvek[®] suit). A respirator may be donned to protect against inhalation hazards if appropriate for the spill

- response and the responder is certified for its use. The type of PPE needed will vary according to the type and degree of hazard.
- Control the source of the spill (e.g., shut-off valve, diking) to prevent further spill;
 - Protect floor drains, sumps, storm drains and other pathways leading to the environment with plugs, pigs, or drain covers.
 - Surround the spill with absorbent material such as pads or pigs
 - Surround the spill with absorbent material such as pads or pigs
 - Absorb the spill
 - Collect the residue, place it in an appropriate container, and properly label the container per DWR's Common Waste Stream protocols
 - Clean the spill area with detergent and water.

3.2.2 Spill Reporting

3.2.2.1 *Immediate Reporting*

- Upon discovery of a spill, if the spill cannot be handled internally, the Incident Commander of a DWR facility will contact San Bernardino County OES at 909-386-8425 or Cal OES at 800-852-7550 or 916-262-1621 for any of the following conditions:
 - Any significant spill/release of petroleum
 - Discharges of any hazardous materials, oil, or petroleum products into State waters
 - Discharges that may threaten or impact water quality
- If San Bernardino County OES determines that emergency response assistance is required, the DWR Incident Commander will make a good faith effort to notify the following agencies:
 - Local Emergency Response Agency (9-1-1, or Local Fire Department)
 - San Bernardino County Fire – Hazardous Materials Division at 909-386-8425
 - Lahontan Regional Water Quality Control Board (LRWQCB) at 760-241-6583 or 530-542-5400
 - CDFW at 916-445-0045; press 5 for Spill Prevention and Response.

- DWR's Incident Commander will make a good faith effort to contacts the U.S. Coast Guard National Response Center at 800-424-8802 if any of the following conditions are met:
 - The spill/release will reach a navigable body of water or an adjoining shoreline
 - Water quality standards could be violated
 - The spill/release could cause a film, sheen, or discoloration
 - The spill/release could cause a sludge or emulsion
 - The spill/release exceeds federal reportable quantities under the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA.
- For serious injuries or harmful exposures to workers, DWR's Incident Commander will make a good faith effort contact the California Department of Industrial Relations/Division of Occupational Safety and Health District Office in San Bernardino at 909-383-4321 within eight hours.
- For hazardous waste tank system releases or secondary containment releases, DWR's Incident Commander will make a good faith effort to contact the California Environmental Protection Agency, Department of Toxic Substances Control at 916-255-3545.

To the extent known, DWR's Incident Commander provides the following information to the federal, State, and local reporting agencies during the initial telephone notifications:

- Identity of the caller and telephone number at which they can be reached
- Location, date, and time of the spill/release incident, or threatened spill/release incident
- Substance and quantity involved
- A description of what happened
- Medium or media affected by the spill/release (water or land)
- Time and duration of the spill/release
- Proper precautions to take
- Danger or threat posed by the spill/release
- Number and types of injuries (if any)

- Weather conditions at the incident location
- Any other information that may help emergency personnel responding to the incident

3.2.2.2 Follow-Up Reporting

- As soon as practical, but no later than 30 days of the spill/release, DWR's Incident Commander normally files a Section 304: Emergency Release Follow-Up Notice Reporting Form with Cal OES. (A blank Section 304: Emergency Release Follow-Up Notice Reporting Form is provided in Appendix A).
- If the spill/release is greater than 1,000 gallons, or is the second spill/release event of more than 42 gallons of oil within 12 months, DWR's Incident Commander will prepare a written report of the incident. The report normally will be submitted to the U.S. Environmental Protection Agency Regional Administrator and LRWQCB within 60 days of the triggering incident. The written report must include the following.
 - Name of the facility
 - Incident Commander's name
 - Location of the facility
 - Maximum storage or handling capacity of the facility and normal daily throughput
 - Corrective action and countermeasures taken, including a description of the equipment repairs and replacements
 - An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary
 - The cause of the discharge, including failure analysis of the system or subsystem in which the failure occurred
 - Additional preventative measures taken or contemplated to minimize the possibility of recurrence
 - Other information the Regional Administrator may reasonably require pertinent to the SPCC Plan or discharge incident(s)

3.2.3 Best Management Practices

On NFS lands, BMP FAC-6 Hazardous Materials (USFS 2012) will be used. The following Best Management Practices will be adhered to on non-NFS lands:

- Vehicles and equipment will not be maintained or refueled in areas where hazardous materials may enter or contact surface water, groundwater, or soil.
- No debris, soil, silt, sand, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products, or any other materials which could be hazardous to aquatic life, will be stored or otherwise placed in an area where they may enter or contact surface water, groundwater, or soil.

3.3 NEW CONSTRUCTION

In addition to its own standard practices, should DWR hire a contractor to perform any maintenance work or new construction for the Project within the Project boundary, prior to the work, each contractor will have a work-specific SPCC plan in place, if one is required for the work. DWR will notify the SBNF of any new construction for the Project if the new construction is on NFS lands. The project-specific SPCC plan will normally include:

- Designating a supervisor to oversee and enforce proper spill prevention measures
- Providing spill response and prevention education for employees and subcontractors
- Stocking appropriate clean-up materials onsite near product storage, unloading, and use areas
- Designating hazardous waste storage areas away from storm drains or watercourses
- Minimizing production or generation of hazardous materials onsite or substitute materials used onsite with less hazardous materials

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4.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

4.1 CONSULTATION AND REPORTING

DWR will annually review with the SBNF activities related to hazardous materials on NFS lands in the previous calendar year, as well as any activities related to hazardous materials on NFS lands planned for the current calendar year. In addition, DWR will consult with the SBNF, as needed, regarding hazardous materials.

DWR will follow SBNF reporting requirements for hazardous substance events.

4.2 PLAN REVISIONS

DWR, in consultation with the SBNF, will review, update and/or revise this Plan, as it pertains to use of hazardous materials on NFS lands. Any updates to the Plan will be prepared in coordination and consultation with the SBNF. The SBNF will have 60 days after receipt of the updated plan to provide written comment and recommendations before DWR files the updated Plan with FERC for FERC's approval. DWR will include documentation of all relevant coordination and consultation with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation by the SBNF, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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5.0 REFERENCES CITED

- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2016. Defining Hazardous Waste. Last updated March 22, 2016. Available online:
https://www.dtsc.ca.gov/HazardousWaste/upload/HWMP_DefiningHW111.pdf
- U.S. Department of Agriculture, Forest Service (USFS). 2012. FS 990a – National Best Management Practices for Water Quality Management on National Forest System Lands - Volume 1: National Core BMP Technical Guide. 177 pp. Available online:
https://www.fs.fed.us/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf
- _____. 2006. San Bernardino National Forest Land Management Plan, Final Environmental Impact Statement, Record of Decision. U.S. Department of Agriculture, Forest Service, Pacific Southwest Region. April 2006. Available online:
https://www.fs.usda.gov/wps/portal/fsinternet/cs/main!/ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfljo8zijQwgnNHCwN_DI8zPwBcqYKAfDIZggAM4GuhHEaMfj4Io_MaH60dhtSLMB2ECITMKckMjDDIdFQEHRNG/dz/d5/L2dBISEvZ0FBIS9nQSEh/?position=BROWSEBYSUBJECT&pname=San%20Bernardino%20National%20Forest-%20Planning&navtype=BROWSEBYSUBJECT&ss=110512&pnavid=13000000000000&navid=1301000000000000&ttype=main&cid=FSE_003756
- _____. 2005. San Bernardino National Forest Land Management Plan, Part 2, San Bernardino National Forest Strategy. Department of Agriculture. Pacific Southwest Region. 117 pp. and appendices. Available online:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf

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Appendix A

Section 304: Emergency Release Follow-Up Notice Reporting Form

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Written Reporting of Emergency Releases

The requirements for written reports can be found in the California Code of Regulations - Title 19, Division 2, Chapter 4, Article 2, Section 2705, which states:

- (a) If required to submit a written emergency release follow-up notice pursuant to 42 U.S.C. section 11004(c) (1989), or as that section may be subsequently amended, a business shall prepare the written emergency release follow-up notice using the form specified in subsection (c) of this section.
- (b) A written emergency release follow-up notice prepared pursuant to subsection (a) shall be sent to the Chemical Emergency Planning and Response Commission (CEPRC) at 3650 Schriever Avenue, Mather, CA 95655. This written report shall be sent as soon as practicable following a release, but no later than 7 days from the date of the release.
- (c) The following reporting form (with instructions), the 'Emergency Release Follow-up Notice Reporting Form,' shall be used for filing the written emergency release follow-up notice required by subsection (a) of this section.

EMERGENCY RELEASE FOLLOW - UP NOTICE REPORTING FORM

A	BUSINESS NAME	FACILITY EMERGENCY CONTACT & PHONE NUMBER () -	
B	INCIDENT MO DAY YR DATE	TIME OES NOTIFIED (use 24 hr time)	OES CONTROL NO.
C	INCIDENT ADDRESS LOCATION	CITY / COMMUNITY	COUNTY ZIP
D	CHEMICAL OR TRADE NAME (print or type)		CAS Number
	CHECK IF CHEMICAL IS LISTED IN 40 CFR 355, APPENDIX A <input type="checkbox"/>	CHECK IF RELEASE REQUIRES NOTIFICATION UNDER 42 U.S.C. Section 9603 (a) <input type="checkbox"/>	
	PHYSICAL STATE CONTAINED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	PHYSICAL STATE RELEASED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	QUANTITY RELEASED
	ENVIRONMENTAL CONTAMINATION <input type="checkbox"/> AIR <input type="checkbox"/> WATER <input type="checkbox"/> GROUND <input type="checkbox"/> OTHER	TIME OF RELEASE	DURATION OF RELEASE ___DAYS ___HOURS ___MINUTES
E	ACTIONS TAKEN		
F	KNOWN OR ANTICIPATED HEALTH EFFECTS (Use the comments section for addition information)		
	<input type="checkbox"/> ACUTE OR IMMEDIATE (explain) _____		
	<input type="checkbox"/> CHRONIC OR DELAYED (explain) _____		
	<input type="checkbox"/> NOTKNOWN (explain) _____		
G	ADVICE REGARDING MEDICAL ATTENTION NECESSARY FOR EXPOSED INDIVIDUALS		
H	COMMENTS (INDICATE SECTION (A - G) AND ITEM WITH COMMENTS OR ADDITIONAL INFORMATION)		
I	CERTIFICATION: I certify under penalty of law that I have personally examined and I am familiar with the information submitted and believe the submitted information is true, accurate, and complete.		
	REPORTING FACILITY REPRESENTATIVE (print or type) _____		
	SIGNATURE OF REPORTING FACILITY REPRESENTATIVE _____ DATE: _____		

EMERGENCY RELEASE FOLLOW-UP NOTICE
REPORTING FORM INSTRUCTIONS

(This form may be reproduced, as needed)

GENERAL INFORMATION:

Chapter 6.95 of Division 20 of the California Health and Safety Code requires that written emergency release follow-up notices prepared pursuant to 42 U.S.C. § 11004, be submitted using this reporting form. Non-permitted releases of reportable quantities of Extremely Hazardous Substances (listed in 40 CFR 355, appendix A) or of chemicals that require release reporting under section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 [42 U.S.C. § 9603(a)] must be reported on the form, as soon as practicable, but no later than 7 days, following a release. The written follow-up report is required in addition to the verbal notification.

BASIC INSTRUCTIONS:

- The form, when filled out, reports follow-up information required by 42 U.S.C § 11004. Ensure that all information requested by the form is provided as completely as possible.
- If the incident involves reportable releases of more than one chemical, prepare one report form for each chemical released.
- If the incident involves a series of separate releases of chemical(s) at different times, the releases should be reported on separate reporting forms.

SPECIFIC INSTRUCTIONS:

Block A: Enter the name of the business and the name and phone number of a contact person who can provide detailed facility information concerning the release.

Block B: Enter the date of the incident and the time that verbal notification was made to OES. The OES control number is provided to the caller by OES at the time verbal notification is made. Enter this control number in the space provided.

Block C: Provide information pertaining to the location where the release occurred. Include the street address, the city or community, the county and the zip code.

Block D: Provide information concerning the specific chemical that was released. Include the chemical or trade name and the Chemical Abstract Service (CAS) number. Check all categories that apply. Provide best available information on quantity, time and duration of the release.

Block E: Indicate all actions taken to respond to and contain the release as specified in 42 U.S.C. § 11004(c).

Block F: Check the categories that apply to the health effects that occurred or could result from the release. Provide an explanation or description of the effects in the space provided. Use Block H for additional comments/information if necessary to meet requirements specified in 42 U.S.C. § 11004(c).

Block G: Include information on the type of medical attention required for exposure to the chemical released. Indicate when and how this information was made available to individuals exposed and to medical personnel, if appropriate for the incident, as specified in 42 U.S.C. § 11004(c).

Block H: List any additional pertinent information.

Block I: Print or type the name of the facility representative submitting the report. Include the official signature and the date that the form was prepared.

MAIL THE COMPLETED REPORT TO:

**Chemical Emergency Planning and Response Commission (CEPRC) /
Local Emergency Planning Committee (LEPC)
Attn: Section 304 Reports
3650 Schriever Avenue,
Mather, CA 95655**

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Attachment 3

Aquatic Invasive Species Management Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



AQUATIC INVASIVE SPECIES MANAGEMENT PLAN November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources

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Appendix A Forest Service Manual 2900, Invasive Species Management

COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

AIS	aquatic invasive species
APAP	Aquatic Pesticide Application Plan
Application for New License	DWR's Application for a New License for Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
DNA	deoxyribonucleic acid
DPR	California Department of Parks and Recreation
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
MIB	2-Methylisoborneol
MWD	Metropolitan Water District
NFS	National Forest System
O&M	operations and maintenance
Plan	Aquatic Invasive Species Management Plan
PM&E measures	Protection, Mitigation, and Enhancement measures, are operation and management activities to: (1) protect resources against impacts from continued operations and maintenance of the Project; (2) mitigate any impacts from continued operations and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operations and maintenance
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
Project boundary	The area to which DWR requires access for normal Project operations and maintenance; the boundary is shown in Exhibit G of DWR's Application for New License
Project vicinity	The area within and surrounding the FERC Project boundary on the order of a USGS 1:24,000 quadrangle
RWQCB	Regional Water Quality Control Board
SBNF	San Bernardino National Forest
SRA	State Recreation Area
SWP	State Water Project

SWRCB	State Water Resources Control Board
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service

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1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project).

DWR included this Aquatic Invasive Species Management Plan (Plan) in its November 2019 Application for New License. For the purpose of this Plan, aquatic invasive species (AIS) include aquatic organisms that invade ecosystems beyond their natural, historic range and may harm native ecosystems or commercial, agricultural, or recreational activities; algal blooms that generate undesirable taste and odor compounds; and algal blooms that can create unhealthy conditions through the production of cyanotoxins. The list of AIS of concern for this Plan includes species known or with the potential to occur on the Project, as follows:

- Cyanobacteria
- Aquatic Plants
 - curly leaf pondweed (*Potamogeton crispus*)
 - Eurasian watermilfoil (*Myriophyllum spicatum*)
 - coontail (*Ceratophyllum demersum*)
 - sago pondweed (*Potamogeton pectinatus*)
 - hydrilla (*Hydrilla verticillata*)
 - water hyacinth (*Eichhornia crassipes*)
 - parrot’s feather milfoil (*Myriophyllum aquaticum*)
- Mollusks
 - New Zealand mudsnail (*Potamopyrgus antipodarum*)
 - Asian clam (*Corbicula fluminea*)
 - channeled apple snail (*Pomacea canaliculata*)
 - European ear snail (*Radix auricularia*)

- Crustaceans
 - Red swamp crayfish (*Procambarus clarkii*)
- Amphibians
 - American bullfrog (*Lithobates catesbeianus*)
 - African clawed frog (*Xenopus laevis*)
- Reptiles
 - red-eared slider (*Trachemys scripta elegans*)
- Fish
 - Shimofuri goby (*Tridentiger bifasciatus*)
 - Inland silverside (*Menidia beryllina*)

Of the above AIS, at this time, cyanobacteria, curly leaf pondweed, Eurasian watermilfoil, coontail, sago pondweed, Asian clam, channeled applesnail, red-eared slider, Shimofuri goby, and inland silverside are reported to occur in Silverwood Lake. The other AIS in the preceding list have a known risk of being introduced to Project impoundments. Additional AIS may be added to the above list in this Plan if they are reported to occur or if there is good reason to suspect that they occur or will occur in Project impoundments.

In addition to the above AIS, the following 11 species of non-native fish are reported to occur in Silverwood Lake: (1) largemouth bass (*Micropterus salmoides*); (2) bluegill (*Lepomis macrochirus*); (3) black crappie (*Pomoxis nigromaculatus*); (4) striped bass (*Morone saxatilis*); (5) channel catfish (*Ictalurus punctatus*); (6) white catfish (*Ameiurus catus*); (7) American shad (*Alosa sapidissima*); (8) threadfin shad (*Dorosoma petenense*); (9) Sacramento blackfish (*Orthodon microlepidotus*); (10) hitch (*Lavinia exilicauda*); and (11) tule perch (*Hysterothorax traskii*). In addition, the California Department of Fish and Wildlife (CDFW) has stocked non-native rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) in the reservoir. DWR does not consider these non-native fish to be AIS for purposes of this Plan. Earlier in this section, we defined AIS as aquatic organisms that invade ecosystems beyond their natural, historic range, and that may harm native ecosystems or commercial, agricultural, or recreational activities. More details of these non-native fish in Silverwood Lake can be found in Section 5.3, Fish and Aquatic Resources, of Exhibit E in the Application for New License.

All elevation data in this exhibit are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Project Description

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. Project facilities range in elevation from 3,378 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel; Devil Canyon Powerplant Penstocks and Surge Chamber; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Devil Canyon Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation (DPR), on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., the Pacific Crest National Scenic Trail) traverse or are located in the Silverwood Lake SRA but are not Project facilities. The Project does not include any open water conduits or transmission lines. DWR operates the Project in a run-of-release mode using SWP water as the water is delivered to downstream SWP water users.

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). USFS administers the SBNF in conformance with the SBNF Land Management Plan (USFS 2005), as subsequently amended.

DWR will continue to operate the Project as it has been operated historically, with the addition of a number of Protection, Mitigation, and Enhancement (PM&E) measures, which are operation and management activities to: (1) protect resources against potential impacts from continued operations and maintenance (O&M) of the Project; (2) mitigate any impacts from continued O&M of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project O&M. This Plan is one of those PM&E measures.

Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including DWR's Project boundary.

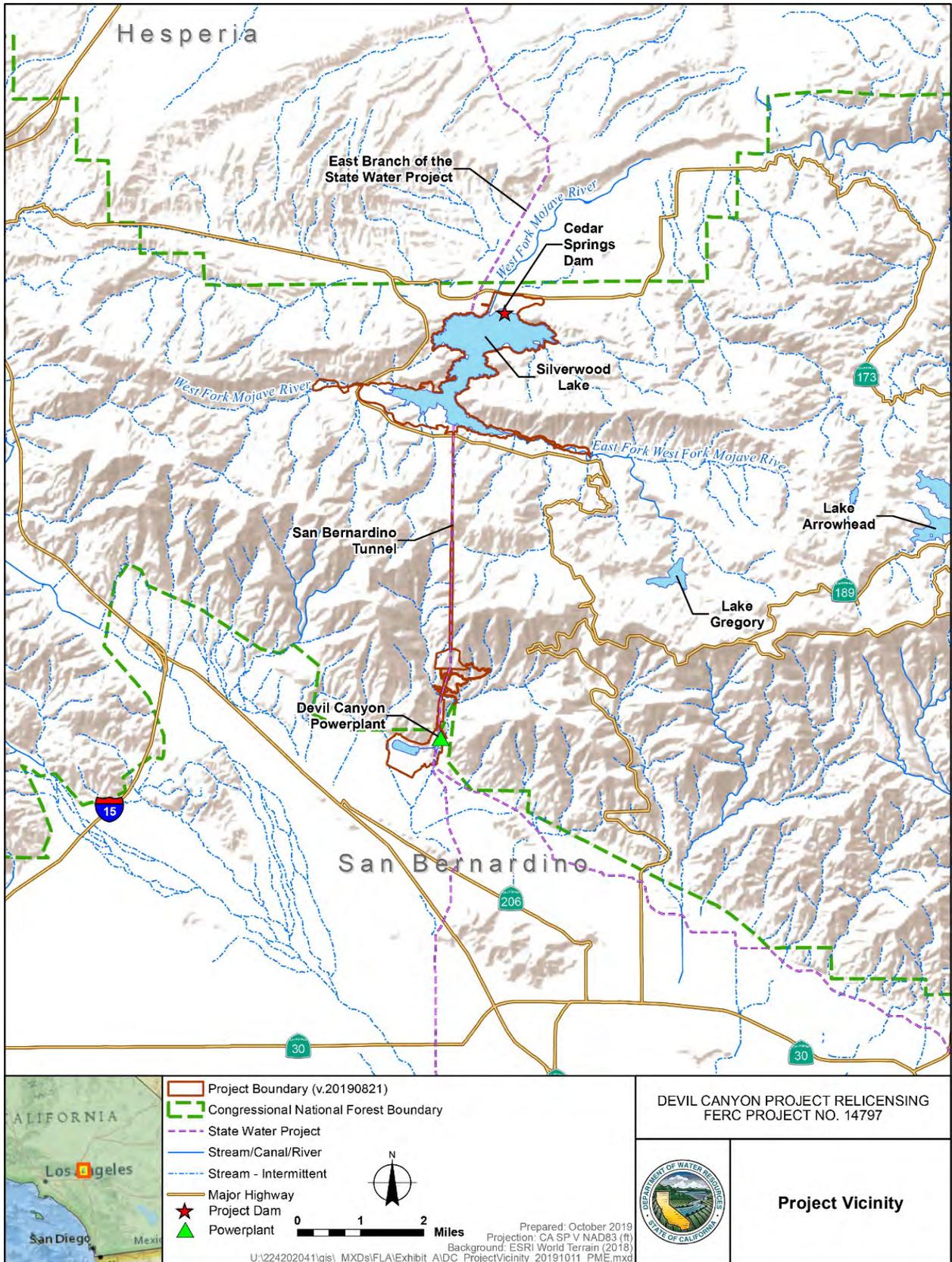


Figure 1.1-1. Devil Canyon Project Vicinity

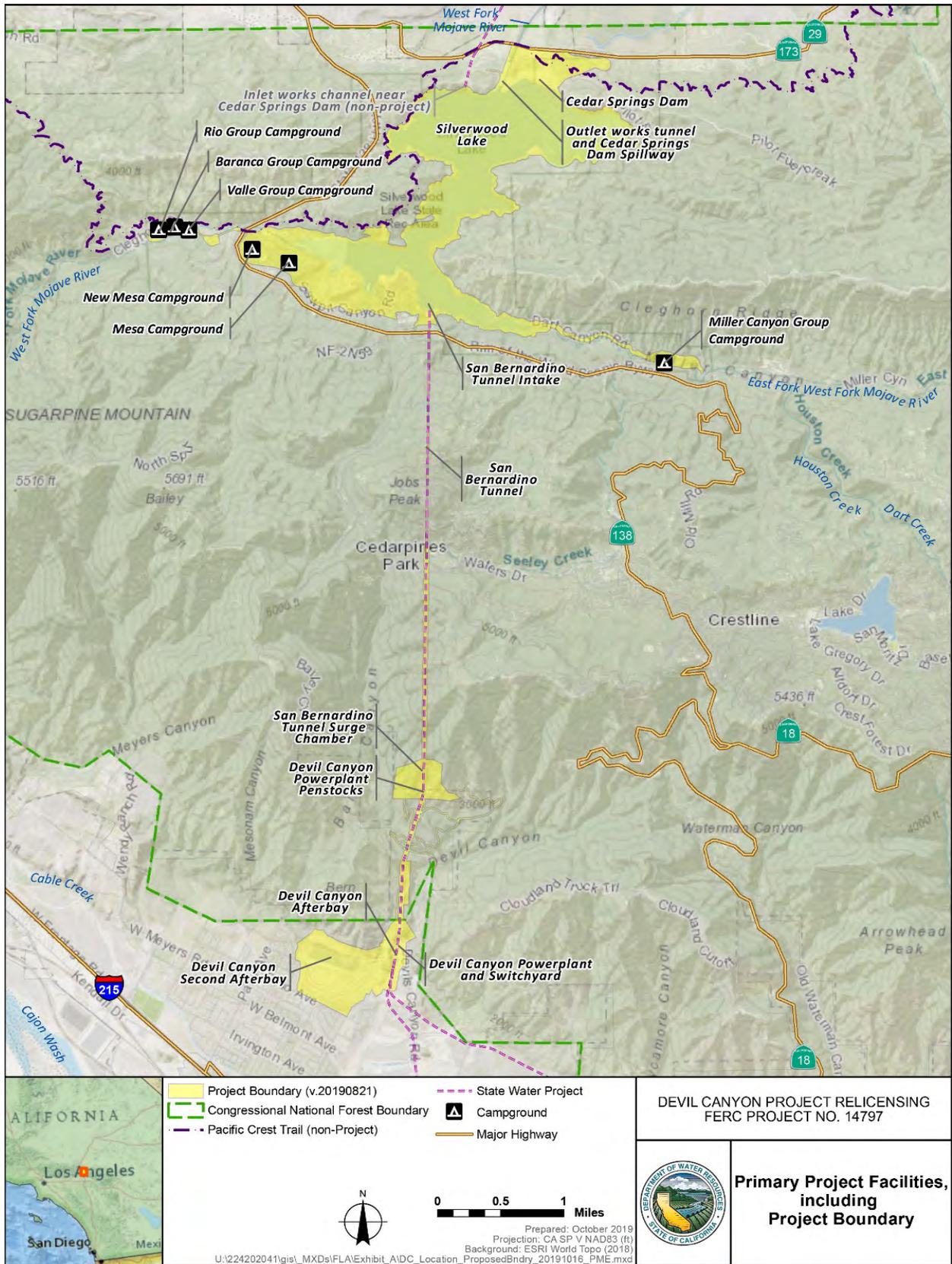


Figure 1.1-2. Devil Canyon Project Boundary

1.2 PURPOSE OF THE PLAN

The purpose of this Plan is to minimize the risk of introduction and spread of AIS due to Project O&M. To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The goal of this Plan is to provide guidance for managing AIS. The objectives of the Plan are to describe activities related to minimizing the risk of introduction and spread of AIS into and throughout Project-affected waters.

1.4 MANAGEMENT OF AIS SPECIES

1.4.1 Management Activities Performed by DWR

DWR actively monitors and manages for algal blooms that generate undesirable taste and odor compounds, and algal blooms that can create unhealthy conditions through the production of cyanotoxins.

DWR monitors and manages for the reduction of algae that produce taste and odor compounds and cyanobacteria that produce cyanotoxins through the application of aquatic algaecides, which is the most effective direct treatment. DWR plans to continue to manage for cyanobacteria through National Pollutant Discharge Elimination System permits for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications (SWRCB 2013).

1.4.2 Management Activities Not Performed by DWR

DWR does not manage for aquatic plants, Asian clam, channeled applesnail, American bullfrogs, African clawed frogs, or red-eared slider.

Management techniques for aquatic plants include mechanical removal, bottom barriers, dredging, water drawdown and some biological controls. Each of these techniques has drawbacks and are differentially successful, depending on species.

Currently, there are no effective treatments for long-term management of Asian clam. Mechanical dredging and barriers have had some success with short-term reduction in occurrences, but these methods are expensive, require intensive efforts and can harm native species and habitat. There is new experimentation with freezing Asian clam occurrences, but that is purely in a test phase at this time (Coughlan et. al 2018).

There are also currently no effective management techniques for channeled applesnail, especially for large occurrences. No chemical treatments have been identified for the species. Intensive hand removal and crushing and inundating of egg masses have been somewhat effective on reducing the size of small occurrences (University of Florida 2017).

Trapping, pesticide application, water drawdown and hunting/hand removal control methods have been moderately successful on small populations of American bullfrogs and African clawed frogs. However, no treatment methods for large populations or those in larger bodies of water have been developed.

Red-eared slider management is also time-consuming and difficult. The majority of effort is through hand capture or by trapping, primarily through fyke nets or baited cages. In some areas, sniffer dogs are being used to detect nesting red-eared sliders and eggs (CABI 2018). For smaller water bodies, water drawdown has also been used as a management tool (IUCN 2010).

1.5 CONTENTS OF THE PLAN

This Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including the purpose, goals, and objectives of the Plan.
- Section 2.0. Aquatic Invasive Species Management and Monitoring. This section includes a description of preventative and monitoring guidelines for AIS.
- Section 3.0. Consultation, Reporting, and Plan Revisions. This section describes consultation between DWR, CDFW, and SBNF; reporting; and Plan revisions.
- Section 4.0. References Cited. This section includes the resource documents cited in this Plan.

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2.0 AQUATIC INVASIVE SPECIES MANAGEMENT AND MONITORING

2.1 STANDARDS AND BEST PRACTICES

This Plan identifies feasible and relevant actions to reduce or prevent introduction, infestation, or spread of AIS into or within Silverwood Lake, the Project afterbays, and Project-affected stream reaches caused by Project activities. Some of these actions are currently performed by DWR or DPR.

2.1.1 Best Management Practices for Project Activities

DWR will develop and implement specific Best Management Practices (BMP) for future Project O&M and construction activities that have the potential to introduce AIS into Silverwood Lake, the Project afterbays, and Project-affected stream reaches. BMPs for such activities may include the following, as applicable:

- A list of AIS with the potential to be introduced or spread
- Measures to reduce the potential for introduction or spread of AIS
- Identification of critical control points for prevention of AIS
- Actions that will be taken if an introduction of AIS is found during the O&M activity

2.2 MONITORING

2.2.1 Species-specific Monitoring

2.2.1.1 *Cyanobacteria Blooms*

Cyanobacteria are distributed worldwide and are prevalent throughout California in many types of freshwater waterbodies (lakes, rivers, streams, wetlands, estuaries). Certain species of cyanobacteria can produce toxins that are potentially harmful to human health if present in high concentrations. While cyanobacteria are not introduced species, cyanobacteria can become nuisance species when present in high abundance and form harmful algal blooms.

DWR routinely monitors for cyanotoxins produced by cyanobacteria through microscopic examination and chemical analysis of water samples. Samples are collected in the lake on a monthly basis from spring through fall. When sampling results indicate that concentrations of cyanotoxins are at or reaching a level of concern, DWR water quality staff determine the location of the source (in-lake production versus upstream production) and feasibility of control. If the location of the algal source is identified and cyanotoxin levels threaten water supply safety, DWR staff develop a plan for applying aquatic herbicides to control the harmful algal bloom. The control plan would be in compliance with the Aquatic Pesticide Application Plan (APAP) for the

SWP, as approved by the Lahontan Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board (SWRCB).

2.2.1.2 Taste and Odor Algal Blooms

Algae can produce compounds that cause unpleasant taste and odors in finished drinking water. In cooperation with DWR, Metropolitan Water District of Southern California (MWD) routinely monitors taste and odor compounds (i.e., geosmin and 2-Methylisoborneol [MIB]) produced by algae through chemical analysis of water samples. When sampling results indicate that concentrations of taste and odor compounds exceed a pre-determined level, MWD determines the source and requests DWR to manage the algal bloom and prevent further production of geosmin and MIB compounds. If an algal source is identified, DWR staff develop a plan for applying aquatic herbicides to control the specific algae associated with elevated taste and odor compound concentrations. Control measures include the application of aquatic herbicides as approved by the Lahontan RWQCB and the SWRCB and as outlined in the APAP for the SWP.

2.2.2 Incidental Observations Monitoring

During aquatic monitoring specified by this Plan and other implementation plans that are required as part of the new license, DWR will record incidental observations of AIS on field data sheets. The purpose of this effort is to opportunistically gather additional data for AIS, not to expand the specific AIS monitoring required by the Plan or conduct a focused survey (i.e., no survey effort in addition to the specific field tasks identified for the specific monitoring). Field personnel performing the implementation plan monitoring will be trained in the identification of AIS, but they are not expected to be experts on those species.

3.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

3.1 CONSULTATION AND REPORTING

DWR will annually review AIS management activities on NFS lands that were completed in the previous calendar year, as well as any activities to be located on SBNF lands planned for the upcoming calendar year.

If DWR plans to apply aquatic herbicides in Silverwood Lake to control algae associated with elevated taste and odor compound concentrations or elevated cyanotoxin concentrations, DWR will notify DPR prior to application of the herbicide.

If any AIS that are not already known in the Project are detected by DWR anywhere within the Project boundary, DWR will notify the SBNF, CDFW, SWRCB and DPR.

If DWR identifies hydrilla within any waterbody in the Project boundary, DWR will notify California Department of Food and Agriculture by calling its Pest Hotline at 1-800-491-1899.

3.2 PLAN REVISIONS

DWR, in consultation with the SBNF (to the extent the Plan applies to NFS lands), CDFW, and SWRCB, will review, update, and/or revise this Plan, as needed (e.g., if new AIS are located in Silverwood Lake or if new, effective treatments/management techniques for known AIS are developed). Any updates to the Plan will be prepared in coordination and consultation with the SBNF (as updates apply to NFS lands), CDFW, and the SWRCB. DWR will allow 60 days for the SBNF, CDFW, and SWRCB to provide written comments and recommendations before filing the updated Plan with FERC for approval. DWR will include documentation of all relevant coordination and consultation associated with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation from SBNF, CDFW, or SWRCB, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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4.0 REFERENCES CITED

- CABI. 2018. Invasive Species Compendium- *Trachemys scripta elegans* (red-eared slider). Available online:
<https://www.cabi.org/isc/datasheet/61560#topreventionAndControl>. Accessed August 28, 2019. Last updated September 27, 2018.
- Coughlan, N.E., D.A. Walsh, J.M. Caffrey, Eithene Davis, F.E. Lucy, R.N. Cuthbert and J.T.A. Dick. 2018. Cold as Ice: a Novel Eradication and Control Method for Invasive Asian Clam, *Corbicula fluminea*, Using Pelleted Dry Ice. *Management of Biological Invasions*. Volume 9, Issue 4: 463-474.
- International Union for Conservation of Nature (IUCN), Invasive Species Specialist Group. 2010. *Trachemys scripta elegans* (Red-eared Slider) Management Information, Available online:
http://issg.org/database/species/reference_files/trascr/trascr_man.pdf. Accessed July 2, 2018.
- State Water Resources Control Board (SWRCB). Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications. SWRCB WQ Order No. 2103-0002-DWQ, General Permit No. CAG990005. Available online:
https://waterboards.ca.gov/board_decision/adopted_orders/water_quality/2013/wq2013_0002dwq. Accessed October 19, 2019. Last updated October 9, 2019. California Water Boards, State of California.
- University of Florida, Institute of Food and Agriculture. 2017. Applesnails of Florida. Available online:
https://entnemdept.ifas.ufl.edu/creatures/misc/gastro/apple_snails.htm. Accessed August 28, 2019. Last updated December 2017. University of Florida, Gainesville, FL.
- U.S. Department of Agriculture, Forest Service. 2005. San Bernardino National Forest Land and Resource Management Plan. Department of Agriculture. San Bernardino, California. Available online:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf. Accessed: June 25, 2018.

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Appendix A

Forest Service Manual 2900, Invasive Species Management

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**FOREST SERVICE MANUAL
NATIONAL HEADQUARTERS (WO)
WASHINGTON, DC**

FSM 2900 - INVASIVE SPECIES MANAGEMENT

CHAPTER - ZERO CODE

Amendment No.: 2900-2011-1

Effective Date: December 5, 2011

Duration: This amendment is effective until superseded or removed.

Approved: JAMES M. PEÑA
Associate Deputy Chief, NFS

Date Approved: 11/21/2011

Posting Instructions: Amendments are numbered consecutively by title and calendar year. Post by document; remove the entire document and replace it with this amendment. Retain this transmittal as the first page(s) of this document.

New Document	2900_zero_code	28 Pages
Superseded Document(s) by Issuance Number and Effective Date		

Digest:

2900_zero_code - Establishes code and a new manual, FSM 2900, Invasive Species Management, which sets forth National Forest System policy, responsibilities, and direction for the prevention, detection, control, and restoration of effects from aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens). This new chapter replaces FSM 2080 (noxious weed management).

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2901 - AUTHORITY

The Forest Service authority to manage aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens) on all areas of the National Forest System is derived from laws enacted by Congress that authorize the Secretary of Agriculture (Secretary) to administer the National Forest System and other resources and to issue necessary regulations. Many of these authorities have subsequently been delegated from the Secretary to the Chief of the Forest Service.

2901.01 - Laws

The principal statutes governing or supporting the management of aquatic and terrestrial invasive species on the National Forest System include but are not limited to, the following statutes. Except where specifically stated, these statutes apply to the entire National Forest System.

1. Organic Administration Act of 1897 (16 U.S.C. §§473 *et seq.*). Authorizes the Secretary to establish regulations governing the occupancy and use of national forests and to protect national forests from destruction.
2. Knutson-Vandenberg Act of June 9, 1930 (16 U.S.C. 576, 576a-576b). Section 3 of the Act, codified at 16 U.S.C. 576b. Provides that the Secretary may require any purchaser of national forest timber to make deposits of money in addition to the payments for the timber, to cover the cost to the United States of planting, sowing with tree seeds, and cutting, destroying or otherwise removing undesirable trees or other growth, on the national forest land cut over by the purchaser, in order to improve the future stand of timber, or protecting and improving the future productivity of the renewable resources of the forest land on such sale area.
3. Bankhead-Jones Farm Tenant Act of 1937 (7 U.S.C. §§1010 *et seq.*) Title III of the Act. Authorizes the Secretary to develop a program of land conservation and land utilization in order to correct maladjustments in land use. This statute applies only to national grasslands and land utilization projects.
4. Anderson-Mansfield Reforestation and Revegetation Act of October 11, 1949 (16 U.S.C. 581j (note), 581j, 581k). Requires the agency to accelerate and provide a continuing basis for the needed reforestation and re-vegetation of National Forest System lands and other lands under Forest Service administration or control.
5. Granger-Thye Act of 1950 (16 U.S.C. §§580h). Authorizes the Secretary to use a portion of grazing fees for range improvement projects on National Forest System lands. Specific projects mentioned are artificial re-vegetation, including the collection or purchase of necessary seed and eradication of poisonous plants and noxious weeds, in

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order to protect or improve the future productivity of the range. Section 11 of the Act authorizes the use of funds for rangeland improvement projects outside of National Forest System lands under certain circumstances.

6. Sikes Act (Fish and Wildlife Conservation) of September 15, 1960 (16 U.S.C. 670g-670l, 670o, P.L. 86-797), as amended. Section 201. Directs the Secretary of Agriculture to plan, develop, maintain, coordinate, and implement programs for the conservation and rehabilitation of wildlife, fish and game species, including specific habitat improvement or species management [including invasive species management] projects, on lands and waters under the Secretary's jurisdiction. The Act also provides for carrying out wildlife and fish conservation programs on Federal lands and waters including authority for cooperative State-Federal plans and authority to enter into agreements with States to collect fees to fund the programs identified in those plans.

7. Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. §§528 et seq.). Authorizes the Secretary to: administer National Forest System lands for outdoor recreation, range, timber, watershed, and wildlife and fish purposes; to develop the surface renewable resources for multiple use and sustained yield of several products and services to be obtained from these lands, without impairment of the productivity of the land; and, to cooperate with interested State and local governmental agencies and others in the development and management of the national forests. The Act also recognizes and clarifies Forest Service authority and responsibility to manage wildlife and fish on national forests.

8. The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§1531 et seq.). Provides for the conservation of threatened and endangered species of plants and animals. Section 7 of the Act requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of the species' critical habitat. This section also requires Federal agencies to consult with the U.S. Fish and Wildlife Service (for non-marine species) or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service whenever an agency action is likely to affect a threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

9. Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 as amended by the National Forest Management Act (NFMA) of 1976. Section 6 of the Act codified at 16 U.S.C. §§1600 et seq. Provides for the Secretary to promulgate regulations, under the principles of the Multiple-Use Sustained-Yield Act of 1960, specifying guidelines for land management plans developed to achieve the goals of the Program. The guidelines should provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.

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Further, within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan.

10. Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, 1201 (note), 1236, 1272, 1305). Section 515. Directs the establishment on the mined areas, and all other lands affected, of a diverse, effective and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation on the area; except that introduced species may be used in the re-vegetation process where desirable and necessary to achieve the approved post mining land use plan.

11. Cooperative Forestry Assistance Act of 1978 (16 U.S.C. 2101 (note), 2101-2103, 2103a, 2103b, 2104-2105). Section 3 (16 U.S.C. 2102). Details the assistance that may be given to State foresters or equivalent State officials and State extension directors, in the form of financial, technical, educational, and related assistance. Section 8 (16 U. S. C. 2104) details actions that may be taken directly on the National Forest System, in cooperation with other Federal departments on other Federal lands, and in cooperation with State foresters, or equivalent State officials, subdivisions of States, agencies, institutions, organizations, or individuals on non-federal lands to: enhance the growth and maintenance of trees and forests; promote the stability of forest related industries and employment associated therewith through the protection of forest resources; aid in forest fire prevention and control; conserve forest cover on watersheds, shelterbelts, and windbreaks; protect outdoor recreation opportunities and other forest resources; and extend timber supplies by protecting wood products, stored wood, and wood in use.

12. The North American Wetland Conservation Act 1989 (16 U.S.C. 4401 (note), 4401-4413, 16 U.S.C. 669b (note)). Section 9 (U.S.C. 4408). directs Federal agencies to cooperate with the Director of the U.S. Fish and Wildlife Service to restore, protect, and enhance the wetland ecosystems and other habitats for migratory birds, fish and wildlife within the lands and waters of each agency to the extent consistent with the mission of such agency and existing statutory authorities.

13. Consolidated Appropriations Resolution, 2003. Section 323 of the Act, codified at 16 U.S.C. 2104. Provides authority to the Forest Service to enter into stewardship contracts with public or private entities or persons to perform services to achieve land management goals for the National Forest System lands that meet local and rural community needs. Stewardship agreements may be entered into for other land management goals such as the following: removal of vegetation or other activities to

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promote healthy forest stands, reduction of fire hazards; watershed restoration and maintenance; restoration and maintenance of wildlife and fish habitat; prevention and control of invasive species; and reestablishing native plant species.

14. Healthy Forests Restoration Act of 2003 (H.R. 1904), (16 U.S.C. 6501-6502, 6511-18, 6541-42, 6571-78). Provides improved statutory processes for hazardous fuel reduction projects on certain types of at-risk National Forest System and Bureau of Land Management lands and also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.

15. The National Historic Preservation Act of 1966 (16 U.S.C. §§470 et seq.). Requires agency heads to assume responsibility for the preservation of historic properties owned or controlled by the agency and to develop a preservation program for the identification, evaluation, and nomination of historic properties to the National Register. Management activities to protect and preserve historic properties and cultural sites may include actions to prevent and control invasive species threatening or impacting those areas. The Act requires agency heads to evaluate the effects of an undertaking on property that is included or eligible for inclusion in the National Register and to afford the Advisory Council a reasonable opportunity to comment on the undertaking. Defines undertaking to include permitting activities or Federal financial assistance under the jurisdiction of an agency.

16. The Plant Protection Act of 2000 (7 U.S.C. 7701 et seq) as amended by the Noxious Weed Control and Eradication Act of 2004 (P.L. 108-412). Among other provisions, the Plant Protection Act authorizes the Secretary of Agriculture to prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any plant, plant product, biological control organism, noxious weed, article, or means of conveyance, if the Secretary determines that the prohibition or restriction is necessary to prevent the introduction into the United States or the dissemination of a plant pest or noxious weed within the United States. The Act defines the term “Noxious Weed”.

17. Wyden Amendment (P.L. 109-54, Section 434). Authorizes the Forest Service to enter into cooperative agreements to benefit resources within watersheds on National Forest System lands. Agreements may be with willing Federal, Tribal, State, and local governments, private and non-government entities, and landowners to conduct activities on public or private lands. Under this authority, the Forest Service may enter into agreements to support or conduct invasive species management activities on aquatic and terrestrial areas owned by local and State governments, Tribes, other Federal agencies, and private individuals or organizations, to benefit and protect the National Forest System and other resources within a watershed at risk from invasive species.

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18. Clean Water Act of 1977 (33 U.S.C. 1251, 1254, 1323, 1324, 1329, 1342, 1344; 91 Stat. 1566). This act amends the Federal Water Pollution Control Act of 1972. Section 313 is strengthened to stress Federal agency compliance with Federal, State and local substantive and procedural requirements related to the control and abatement of pollution to the same extent as required of nongovernmental entities. Invasive species management to improve watershed condition supports the Act's charge to maintain the ecological integrity of our nation's waters, including the physical, chemical and biological components.
19. National Environmental Policy Act of 1969 (16 U.S.C. 4321). Requires agencies to analyze the physical, social, and economic effects associated with proposed plans and decisions, to consider alternatives to the action proposed, and to document the results of the analysis. The provisions of NEPA and the Council on Environmental Quality implementing regulations apply to invasive species management (FSM 1950; FSH 1909.15).
20. Wilderness Act of 1964 (16 U.S.C. §§1131 et seq.). Authorizes the Secretary to administer certain congressionally designated National Forest System lands as wilderness. Directs the protection and preservation of these wilderness areas in their natural state, primarily affected by nature and not man's actions. Integrated pest management actions [including aquatic and terrestrial invasive species] in Wilderness are authorized to meet provisions of the Act and consistent with Forest Service policy and guidance for Wilderness management.
21. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), (7 U.S.C. s/s 136 et seq.). Describes pesticide regulations and requirements related to hazardous material use and worker protection standards for employees in the planning and application of pesticides.

2901.02 - Regulations

The authority to manage for invasive species on National Forest System lands and other lands under Forest Service control is delegated from the Secretary of Agriculture to the Under Secretary for Natural Resources and Environment at Title 7, Code of Federal Regulations (CFR), section 2.20 (7 CFR 2.20). This authority has been delegated in turn from the Under Secretary for Natural Resources and Environment to the Chief of the Forest Service at Title 7, Code of Federal Regulations, section 2.60 (7 CFR 2.60). Title 36, Code of Federal Regulations (including Parts 221, 222, 228, 241, 251, 261, 290, 292, 293, 296, and 297) provides additional authorities to manage and regulate invasive species across the National Forest System, including establishing requirements and prohibitions to prevent and control aquatic and terrestrial invasive

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species. In addition, Forest Service regulations at 36 CFR 222.8 acknowledge the Agency's obligation to work cooperatively in identifying invasive species (including noxious weeds) problems and initiating control programs in aquatic and terrestrial areas of the National Forest System.

1. Policy on Noxious Weed Management. Departmental Regulation 9500-10 (DR 9500-10) (January 18, 1990)). Establishes U.S. Department of Agriculture (USDA) policy to manage and coordinate noxious weed activities among USDA agencies in order to improve the quality and ecological conditions of crop and rangeland in the United States.
2. Policy on the Management of Wildlife, Fish, and Plant Habitat. Departmental Regulation 9500-4 (DR 9500-4). Guides the management of Wildlife, Fish, and Plant Habitat on public lands.
3. Gypsy Moth Policy (USDA) of 1990. Departmental Regulation 5600-001 (DR 5600-001). This regulation establishes the Departmental Gypsy Moth Policy. It assigns responsibilities to USDA agencies and defines agency roles to avoid unnecessary duplication and to provide maximum coordination of USDA activities dealing with the gypsy moth. The Forest Service plays a significant role in the management of Gypsy Moths in the United States.
4. Departmental Regulation 9500-4. USDA policy on wildlife, fish, and plant habitat management on National Forest System lands and waters. This regulation provides that the Department will promote the concept and use of integrated pest management practices in carrying out its responsibilities for pest control, and will seek to alleviate damage by plant and animal pests to farm crops, livestock, poultry, forage, forest and urban trees, wildlife, and their habitats. Departmental agencies, through management and research programs, will develop or assist in developing new techniques and methodologies for the prevention of damage to agricultural or forestry production. The agencies also will strive to reduce potential depredation through improved management of USDA programs. Pest control techniques and considerations will be incorporated into appropriate management and education programs.
5. Native Plant Materials Policy (FSM 2070). Forest Service manual direction on the use of native plant materials in re-vegetation, rehabilitation, and restoration of both aquatic and terrestrial ecosystems across the National Forest System.
6. Pesticide Use Management and Coordination Policy (FSM 2150). Provides agency policy and guidance on the use of pesticides as part of an integrated pest management approach. Additional guidance provided in the Pesticide Use Management Handbook (FSH 2109).

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2901.03 - Executive Orders

1. Executive Order 13112 issued February 3, 1999 (E.O. 13112). Directs Federal agencies to: (1) identify actions that may affect status of an invasive species; (2)(a) prevent introduction of such species; (b) detect and control such species; (c) monitor population of such species; (d) provide for restoration of native species; (e) conduct research on invasive species and develop technologies to prevent introduction of such species; (f) promote public education of such species; and (3) not authorize, fund, or carry out actions likely to cause the introduction or spread of invasive species in the United States or elsewhere unless the benefits of the action clearly outweigh the harm and the agencies take steps to minimize the harm.
2. Executive Order 10046 issued March 24, 1949 (E.O. 10046). Permanently withdrew all public domain lands within Land Utilization Projects (many in the West are now national grasslands) boundaries from all forms of appropriation under the public land laws, except the mining and mineral leasing laws, and reserved them for use, administration, and disposition by the U.S. Department of Agriculture in accordance with provisions of Title III of the Bankhead-Jones Farm Tenant Act.
3. Executive Order 11246 issued September 24, 1965 (E.O. 11246). Requires entities doing business on behalf of the Forest Service to comply with Title VI of the Civil Rights Act and applicable USDA regulations.

2902 - OBJECTIVES

Management activities for aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens) will be based upon an integrated pest management approach on all areas within the National Forest System, and on areas managed outside of the National Forest System under the authority of the Wyden Amendment (P.L. 109-54, Section 434), prioritizing prevention and early detection and rapid response actions as necessary. All National Forest System invasive species management activities will be conducted within the following strategic objectives:

1. Prevention. Take proactive approaches to manage all aquatic and terrestrial areas of the National Forest System in a manner to protect native species and ecosystems from the introduction, establishment, and spread of invasive species. Prevention can also include actions to design public-use facilities to reduce accidental spread of invasive species, and actions to educate and raise awareness with internal and external audiences about the invasive species threat and respective management solutions.
2. Early Detection and Rapid Response (EDRR). Inventory and survey susceptible aquatic and terrestrial areas of the National Forest System so as to quickly detect invasive species infestations, and subsequently implement immediate and specific actions to eradicate those infestations before they become established and/or spread. Coordinate

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detection and response activities with internal and external partners to achieve an effective EDRR approach across all aquatic and terrestrial areas of the National Forest System. EDRR actions are grouped into three main categories: early detection, rapid assessment, and rapid response. EDRR systems will be consistent with guidance from the National Invasive Species Council, such as the ‘Guidelines for Early Detection and Rapid Response’.

3. Control and Management. Conducting integrated invasive species management activities on priority aquatic and terrestrial areas of the National Forest System will be consistent with guidance from the National Invasive Species Council, such as the ‘Control and Management Guidelines’, to contain, reduce, and remove established infestations of aquatic and terrestrial invasive species, and to limit the adverse effects of those infestations on native species, human health, and other National Forest System resources.

4. Restoration. Pro-actively manage aquatic and terrestrial areas of the National Forest System to increase the ability of those areas to be self-sustaining and resistant (resilience) to the establishment of invasive species. Where necessary, implement restoration, rehabilitation, and/or revegetation activities following invasive species treatments to prevent or reduce the likelihood of the reoccurrence or spread of aquatic or terrestrial invasive species.

5. Organizational Collaboration. Cooperate with other Federal agencies, State agencies, local governments, tribes, academic institutions, and the private sector to increase public awareness of the invasive species threat, and promote a better understanding of integrated activities necessary to effectively manage aquatic and terrestrial invasive species throughout the National Forest System. Coordinate National Forest System invasive species management activities with other Forest Service programs and external partners to reduce, minimize, or eliminate the potential for introduction, establishment, spread, and impact of aquatic and terrestrial invasive species. Coordinate and integrate invasive species research and technical assistance activities conducted by Forest Service Research and Development, and State and Private Forestry programs with National Forest System programs to increase the management effectiveness against aquatic and terrestrial invasive species infestations impacting or threatening the National Forest System.

2903 - POLICY

The following describes Forest Service’s policy for the management of aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens), based on an integrated pest management approach, throughout the National Forest System:

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1. Initiate, coordinate, and sustain actions to prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the National Forest System using an integrated pest management approach, and collaborate with stakeholders to implement cooperative invasive species management activities in accordance with law and policy.
2. When applicable, invasive species management actions and standards should be incorporated into resource management plans at the forest level, and in programmatic environmental planning and assessment documents at the regional or national levels.
3. Determine the vectors, environmental factors, and pathways that favor the establishment and spread of invasive species in aquatic and terrestrial areas the National Forest System, and design management practices to reduce or mitigate the risk for introduction or spread of invasive species in those areas.
4. Determine the risk of introducing, establishing, or spreading invasive species associated with any proposed action, as an integral component of project planning and analysis, and where necessary provide for alternatives or mitigation measures to reduce or eliminate that risk prior to project approval.
5. Ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the National Forest System, or to adjacent areas. Integrate visitor use strategies with invasive species management activities on aquatic and terrestrial areas of the National Forest System. At no time are invasive species to be promoted or used in site restoration or re-vegetation work, watershed rehabilitation projects, planted for bio-fuels production, or other management activities on national forests and grasslands.
6. Use contract and permit clauses to require that the activities of contractors and permittees are conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species. For example, where determined to be appropriate, use agreement clauses to require contractors or permittees to meet Forest Service-approved vehicle and equipment cleaning requirements/standards prior to using the vehicle or equipment in the National Forest System.
7. Make every effort to prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials (including plants, wood, plant/wood products, water, soil, rock, sand, gravel, mulch, seeds, grain, hay, straw, or other materials).
 - a. Establish and implement standards and requirements for vehicle and equipment cleaning to prevent the accidental spread of aquatic and terrestrial invasive species on the National Forest System or to adjacent areas.

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- b. Make every effort to ensure that all materials used on the National Forest System are free of invasive species and/or noxious weeds (including free of reproductive/propagative material such as seeds, roots, stems, flowers, leaves, larva, eggs, veligers, and so forth).
8. Where States have legislative authority to certify materials as weed-free (or invasive-free) and have an active State program to make those State-certified materials available to the public, forest officers shall develop rules restricting the possession, use, and transport of those materials unless proof exists that they have been State-certified as weed-free (or invasive-free), as provided in 36 CFR 261 and Departmental Regulation 1512-1.
9. Monitor all management activities for potential spread or establishment of invasive species in aquatic and terrestrial areas of the National Forest System.
10. Manage invasive species in aquatic and terrestrial areas of the National Forest System using an integrated pest management approach to achieve the goals and objectives identified in Forest Land and Resource Management plans, and other Forest Service planning documents, and other plans developed in cooperation with external partners for the management of natural or cultural resources.
11. Integrate invasive species management funding broadly across a variety of National Forest System programs, while associating the funding with the specific aquatic or terrestrial invasive species that is being prioritized for management, as well as the purpose and need of the project or program objective.
12. Develop and utilize site-based and species-based risk assessments to prioritize the management of invasive species infestations in aquatic and terrestrial areas of the National Forest System. Where appropriate, use a structured decisionmaking process and adaptive management or similar strategies to help identify and prioritize invasive species management approaches and actions.
13. Comply with the Forest Service performance accountability system requirements for invasive species management to ensure efficient use of limited resources at all levels of the Agency and to provide information for adapting management actions to meet changing program needs and priorities. When appropriate, utilize a structured decisionmaking process to address invasive species management problems in changing conditions, uncertainty, or when information is limited.
14. Establish and maintain a national record keeping database system for the collection and reporting of information related to invasive species infestations and management activities, including invasive species management performance, associated with the

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National Forest System. Require all information associated with the National Forest System invasive species management (including inventories, surveys, and treatments) to be collected, recorded, and reported consistent with national program protocols, rules, and standards.

15. Where appropriate, integrate invasive species management activities, such as inventory, survey, treatment, prevention, monitoring, and so forth, into the National Forest System management programs. Use inventory and treatment information to help set priorities and select integrated management actions to address new or expanding invasive species infestations in aquatic and terrestrial areas of the National Forest System.

16. Assist and promote cooperative efforts with internal and external partners, including private, State, tribal, and local entities, research organizations, and international groups to collaboratively address priority invasive species issues affecting the National Forest System.

17. Coordinate as needed with Forest Service Research and Development and State and Private Forestry programs, other agencies included under the National Invasive Species Council, and external partners to identify priority/high-risk invasive species that threaten aquatic and terrestrial areas of the National Forest System. Encourage applied research to develop techniques and technology to reduce invasive species impacts to the National Forest System.

18. As appropriate, collaborate and coordinate with adjacent landowners and other stakeholders to improve invasive species management effectiveness across the landscape. Encourage cooperative partnerships to address invasive species threats within a broad geographical area.

2904 - RESPONSIBILITY

The Chief delegates the authority and responsibility for the overall administration of the National Forest System invasive species management program in conformance with applicable Federal law, regulation, and policy, to the Deputy Chief, National Forest System (NFS). This delegated authority is reserved to the Deputy Chief, NFS, except for the delegations to the Director of Rangeland Management, regional foresters, forest/grassland supervisors, and/or district rangers. National Forest System invasive species management responsibilities and activities are integrated and coordinated with parallel and overlapping invasive species program activities conducted under the policies of the Deputy Chief, State and Private Forestry (FSM 3000-3900) and the Deputy Chief, Research and Development (FSM 4000-4900).

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2904.01 - Chief

The responsibility of the Chief is to:

1. Retain overall authority over and responsibility for establishing national policy for the management of invasive species threatening aquatic and terrestrial areas of the National Forest System.
2. Promote cooperation and coordination between other Federal agencies, State agencies, Tribes, and local governments, and other public and private sector partners for the management of terrestrial and aquatic invasive species.
3. Provide coordination across all Forest Service program areas to ensure program activities are integrated and overall management effectiveness against aquatic and terrestrial invasive species is maximized.

2904.02 - Deputy Chief, National Forest System

The responsibility of the Deputy Chief for the National Forest System is to:

1. Ensure overall coordination and oversight of National Forest System invasive species management activities and associated program budget and performance integration, and coordination with the Deputy Chief, State and Private Forestry, and the Deputy Chief, Research and Development.
2. Issue national policy, direction, guidelines, protocols, and standards for the integrated management of invasive species on all aquatic and terrestrial areas of the National Forest System. Integrate invasive species management direction across programs within the National Forest System.
3. Promote coordination across all National Forest System program areas within the Deputy area to ensure program activities are integrated and overall management effectiveness against aquatic and terrestrial invasive species is maximized. Facilitate multi-disciplinary, cross-programmatic teams to coordinate National Forest System invasive species management activities with other Forest Service programs.
4. Represent the Chief on national committees, coalitions, teams, and ad hoc groups concerned with invasive species management and research relevant to, or affecting, the National Forest System, when necessary. Coordinate NFS participation and representation as needed with Deputy Chief, State and Private Forestry and the Deputy Chief, Research and Development.

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5. Ensure that invasive species management activities and funding are integrated broadly across all National Forest System programs to meet requirements in law, policy, strategic plan objectives, and to increase overall management effectiveness against terrestrial and aquatic invasive species threatening the National Forest System.
6. Promote the development and use of a national recordkeeping database system for the collection and reporting of National Forest System information related to invasive species infestations and management activities, and associated program performance and accountability. Ensure national standards, protocols, and program requirements for record keeping and reporting are met across the National Forest System.
7. Promote cooperation and coordination between the National Forest System invasive species management program and other Federal agencies, State agencies, tribes, local governments, and other public and private sector partners for the management of aquatic and terrestrial invasive species across the landscape.

2904.03 - Deputy Chief, State and Private Forestry

The responsibility of the Deputy Chief for State and Private Forestry is to:

1. Approve funding requests recommended by the Director of Forest Health Protection for eradication, prevention, suppression, and restoration projects related to invasive forest insects and pathogens on the National Forest System, in coordination with the Deputy Chief, National Forest System.
2. Promote coordination between programs within State and Private Forestry and other Forest Service programs to ensure program activities are integrated and overall effectiveness against aquatic and terrestrial invasive species is maximized across the National Forest System.
3. Facilitate participation by State and Private Forestry programs on multi-disciplinary, cross-programmatic teams at the local, regional, and national levels to improve invasive species research and management activities across the agency.

2904.04 - Washington Office, Director of Rangeland Management

The responsibility of the Washington Office, Director of Rangeland Management is to:

1. Establish and support a National Invasive Species Program Coordinator to oversee all National Forest System invasive species management activities, including: invasive species program budget and performance integration; oversight and development of policies and regulations; development and oversight of invasive species management program requirements and standards; interagency and interdepartmental coordination; development and expansion of partnerships; promoting collaboration with other Forest

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Service programs; reviewing invasive species management programs at the regional and field levels, providing technical and scientific support on invasive species issues; promoting and supporting technology development and research accomplished in the Forest Service State and Private Forestry and Research and Development programs, and sources outside the agency; and the development and review of plans, strategies, policies, and proposals relevant to the management of aquatic and terrestrial invasive species.

2. Coordinate national invasive species management activities across all programs and offices within the National Forest System, including but not limited to coordination with Washington Office staff directors, regional office staff directors, and other programs and offices across the National Forest System.
3. Collaborate with Forest Service State and Private Forestry programs, International programs, Research and Development, and other Forest Service programs conducting invasive species management activities and associated projects and partnerships.
4. Coordinate with other Federal agencies, the National Invasive Species Council, and national and international invasive species organizations, State government organizations, tribal government organizations, and other stakeholders in the establishment, application, and use of collaborative, proactive and integrated approaches for the management of invasive species affecting, or potentially affecting, the National Forest System.
5. Provide for National Forest System representation on internal interdisciplinary Forest Service teams, such as the Washington Office, National Invasive Species Issue Team (WO-ISIT), to facilitate cross-deputy area, cross-programmatic, and multi-disciplinary collaboration on invasive species management issues relevant to, or affecting the National Forest System.
6. Represent the Forest Service Chief or National Forest System Deputy Chief on external national committees, coalitions, teams, and ad hoc groups concerned with invasive species management and research relevant to, or affecting, the National Forest System, when necessary.
7. Coordinate with other Forest Service invasive species programs managed under the Deputy Chief, State and Private Forestry, International Programs, and the Deputy Chief, Research and Development to ensure the full spectrum of Forest Service invasive species management and research issues are represented on national or regional committees, coalitions, teams, and ad hoc groups.
8. Develop, review, establish, and implement national-level agreements or memorandums of understanding with other Federal agencies, national-level State organizations, national non-government organizations, tribal governments, and other partners concerning invasive species issues affecting the National Forest System.

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9. Ensure that invasive species management activities, funding, and performance are integrated across all National Forest System programs to meet requirements in law, policy, the objectives in strategic plans, and to increase overall management effectiveness against terrestrial and aquatic invasive species threatening the National Forest System.
10. Provide oversight and guidance on the development and use of a national record keeping database system for the collection and reporting of National Forest System information related to invasive species infestations and management activities, and associated program performance and accountability.
11. Develop and issue national standards, protocols, business rules, and related invasive species program record keeping and reporting requirements associated with National Forest System invasive species management.
12. Monitor compliance with applicable law, policy, and other program requirements and guidance associated with the management of aquatic and terrestrial invasive species across the National Forest System. When requested, compile, summarize, and report National Forest System invasive species management performance results, financial information, and other National Forest System invasive species program records.
13. Maintain contact with the Forest Service research organizations, and other external research and development organizations to review invasive species research programs, identify additional research needs, set priorities, and help coordinate research efforts for management of invasive species affecting national forests and grasslands.
14. Coordinate with Forest Service regions, forests, and other program areas to establish and issue nationwide standards and requirements for invasive species management training for Agency personnel, including but not limited to training associated with pesticide use, integrated pest management planning, record keeping, invasive species identification and ecology, and inventory and monitoring activities. Ensure that training is developed and implemented consistent with national program objectives, policy, and law.

2904.05 - Washington Office, Director of Forest Health Protection

The responsibility of the Director, Forest Health Protection for State and Private Forestry is to:

1. Administer the functions of section 8 of the Cooperative Forestry Assistance Act as amended, codified at 16 U.S.C. 2104, in support of the management of invasive forest insects and forest pathogens conducted on the National Forest System.

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2. Provide leadership, technical advice, and guidance to national forests and grasslands on the management of invasive forest insects and forest pathogens, including activities to survey and detect, evaluate, prevent, and suppress forest invasive insects and pathogens, and the restoration of lands damaged by those invasive species.
3. Provide leadership, technical advice, and guidance on the use of chemical and biological pesticides to prevent or control aquatic and terrestrial invasive species on national forests and grasslands.
4. Review and recommend to the Deputy Chief for State and Private Forestry all funding requests submitted by National Forests and Grasslands for eradication, prevention, suppression, and restoration projects related to invasive forest insects and forest pathogens, in accordance with FSM 3400 and other relevant guidance.

2904.06 - Regional Foresters

The responsibility of regional foresters is to:

1. Appoint at least one coordinator for all National Forest System invasive species management activities within the region and formally establish a multi-disciplinary regional Invasive Species Issue Team to collaborate on invasive species issues across Forest Service program areas within the region.
2. Provide National Forest System representation on the Regional Invasive Species Issue Team, and other agency or interagency committees, task forces, coalitions, teams, and ad hoc groups concerned with invasive species management relevant to, or affecting, the national forests or national grasslands within that region.
3. Ensure Forest Land and Resource Management plans, Regional Environmental Management System plans, and other regional resource and programmatic plans include objectives, desired conditions, guidelines, and specific elements and activities to address the management of aquatic and terrestrial invasive species, including but not limited to inventory, monitoring, prevention, and control of invasive vertebrates, invertebrates, plants, and pathogens.
4. Collect, maintain, and report regional information related to National Forest System invasive species management activities (including inventory, prevention, treatment, cost, needs assessments, and treatment efficacy information), and associated program performance and accountability information, in compliance with national protocols, rules, and requirements.

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5. Develop, establish, and implement regional-level agreements or memorandums of understanding with other Federal and State agencies, non-government organizations, tribal governments, and other partner organizations to address invasive species issues at a forest or regional level. Foster collaborative efforts such as “cooperative weed management areas”, “cooperative invasive species management zones”, and similar collaborative partnerships.
6. Collaborate with internal and external partners to develop and implement National Forest System invasive species management training, consistent with national requirements, including training programs associated with record keeping, integrated pest management techniques, restoration, and other invasive species program training.
7. Collaborate with internal and external partners to develop public information and education programs to improve awareness and understanding of invasive species, their biology, impacts, and management. Projects should utilize expertise from the broad array of Forest Service program areas as appropriate.
8. Cooperate with State governments and Tribes to implement and enforce applicable regulations, plans, and guidance on invasive species management on national forests and grasslands across the region, including but not limited to:
 - a. State regulations related to prevention and control of aquatic and terrestrial invasive species (and noxious weeds);
 - b. State regulations associated with utilizing, storing, transporting, or certifying invasive species-free (and/or noxious weed-free) straw, hay, mulch, gravel, forage, seed, or other materials; or
 - c. Statewide aquatic nuisance species management plans, fish and wildlife management plans, early detection and rapid response plans, or other statewide or regionwide invasive species management plans within the respective Forest Service region.
9. Issue orders, rules, or other regulations under the authority of 36 CFR (Parts 221, 222, 228, 241, 251, 261, 290, 292, 293, 296, and 297), Departmental Regulation 1512-1, and consistent with national or regional Forest Service policy, to prevent and control the introduction and spread of aquatic and terrestrial invasive species (including noxious weeds) on the National Forest System, when necessary.

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2904.07 - Forest and Grassland Supervisors

The responsibility of forest and grassland supervisors is to:

1. Appoint forest staff to coordinate the forest or grassland invasive species management program in accordance with law and policy, and other national and regional requirements.
2. Develop and implement a forest or grassland invasive species management program that is consistent with this chapter, annual program requirements, and the objectives, desired conditions, and guidelines identified in Forest Land and Resource Management plans, Environmental Management System plans, and the Forest Service and Departmental strategic plans.
3. Ensure all Forest Land and Resource Management plans, Forest Environmental Management System plans, and other resource and project-level plans are updated to include objectives, desired conditions, guidelines, specific elements and activities to manage aquatic and terrestrial invasive species, including but not limited to prevention, control, inventory and monitoring of invasive vertebrates, invertebrates, plants, and pathogens.
4. Establish agreements and memorandums of understanding with other Federal and State agencies, non-government organizations, tribal governments, and other partner organizations to address invasive species issues as appropriate. Foster collaborative efforts such as “cooperative weed management areas”, “cooperative invasive species management zones”, and similar collaborative partnerships to address invasive species.
5. Collect, maintain, and report information related to invasive species infestations, impacts, and management activities (including inventories, surveys, assessments, treatments, and treatment efficacy) occurring on the national forest or grassland and associated program performance and accountability information, in compliance with national invasive species program protocols, criteria, rules, and requirements.
6. Identify and record the spatial extent of site-specific invasive species treatment activities, and monitoring invasive species treatments to determine efficacy and evaluate impacts to effected resources. Collect and maintain treatment records and associated spatial information in the national database of record in compliance with national invasive species program protocols, rules, and requirements.
7. Provide opportunities for staff training for invasive species identification and management, consistent with national and regional requirements, including training associated with invasive species record keeping, integrated pest management techniques, invasive species inventory and treatment monitoring, and other invasive species program training.

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8. Collaborate with internal and external partners to develop public information and educational materials/ programs to increase the awareness and understanding of aquatic and terrestrial invasive species, their biology, impacts, and management.
9. Cooperate with State governments and Tribes to implement and enforce applicable regulations, plans, and guidance on invasive species management across the national forest or grassland, including but not limited to:
 - a. State regulations related to prevention and control of aquatic and terrestrial invasive species (and noxious weeds);
 - b. State regulations associated with utilizing, storing, transporting, or certifying invasive species-free (and/or noxious weed-free) straw, hay, mulch, gravel, forage, seed, or other materials;
 - c. Statewide aquatic nuisance species management plans, fish and wildlife management plans, early detection and rapid response plans, or other statewide or regionwide invasive species management plans affecting the respective Forest or Grassland.
10. Issue orders, rules, or other regulations under the authority of 36 CFR (Parts 221, 222, 228, 241, 251, 261, 290, 292, 293, 296, and 297), Departmental Regulation 1512-1, and consistent with national and regional policy, to prevent and control the introduction and spread of aquatic and terrestrial invasive species (including noxious weeds) on the forest or grassland, when necessary.
11. Coordinate and cooperate with State and county agencies, Tribes, non-government organizations, and adjacent landowners in invasive species prevention, early detection and rapid response, control and containment, restoration and rehabilitation, and inventory and monitoring activities.
12. Ensure that contracts and permits contain clauses and specifications requiring the implementation of measures to prevent, control, and/or contain aquatic or terrestrial invasive species (including noxious weeds). Oversee contract and permit administration to ensure compliance with the provisions.

2904.08 - District Rangers

The responsibility of district rangers is to:

1. Appoint staff to coordinate invasive species management activities in accordance with law and policy.

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2. Maintain working relationships with the State or local invasive species or noxious weed management committees, districts or boards, and other invasive species stakeholder organizations.
3. Establish, as appropriate, agreements and memorandums of understanding with other Federal and State agencies, non-government organizations, Tribes, and other partner organizations to address invasive species issues. Foster collaborative efforts such as “cooperative weed management areas”, “cooperative invasive species management areas”, and similar collaborative partnerships to address invasive species across the landscape.
4. Prevent the introduction and establishment, as well as providing for the containment and suppression, of aquatic and terrestrial invasive species, and coordinating with State and local agencies, Tribes, and landowners in the prevention, control, and restoration efforts associated with the management of invasive species. Outbreaks and newly detected infestations should be reported promptly.
5. Collect, maintain, and report information related to invasive species infestations, impacts, and management activities (including inventories, surveys, assessments, treatments, and treatment efficacy) occurring on the national forest or grassland and associated program performance and accountability information, in compliance with national invasive species program protocols, criteria, rules, and requirements.
6. Identify and record the spatial extent of site-specific invasive species treatment activities, and monitoring invasive species treatments to determine efficacy and evaluate impacts to effected resources. Collect and maintain treatment records and associated spatial information in the national database of record in compliance with national invasive species program protocols, rules, and requirements.
7. Implement the elements, activities, and measures associated with invasive species management in Forest Land and Resource Management plans, Forest Environmental Management System plans, and other resource management and project-level plans.
8. Determine the risk of invasive species introduction or spread as part of the project planning and analysis process for proposed actions, especially for ground disturbing and site altering activities, and public use activities.
9. Ensure that staff are properly trained on invasive species management consistent with national and regional, and State requirements, including training programs associated with invasive species record keeping, integrated pest management techniques, invasive species inventory and treatment monitoring, and other invasive species related training.

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10. Collaborate with internal and external partners to develop public information and educational materials/ programs to increase the awareness and understanding of aquatic and terrestrial invasive species, their biology, impacts, and management.
11. Cooperate with State governments and Tribes to implement and enforce applicable regulations, plans, and guidance on invasive species management across the forest or grassland, including but not limited to:
 - a. State regulations related to prevention and control of aquatic and terrestrial invasive species (and noxious weeds);
 - b. State regulations associated with utilizing, storing, transporting, or certifying invasive species-free (and/or noxious weed-free) straw, hay, mulch, gravel, forage, seed, or other materials;
 - c. Statewide aquatic nuisance species management plans, fish and wildlife management plans, early detection and rapid response plans, or other statewide or regionwide invasive species management plans affecting the respective forest or grassland.
12. Issue orders, rules, or other regulations under the authority of 36 CFR (Parts 221, 222, 228, 241, 251, 261, 290, 292, 293, 296, and 297), Departmental Regulation 1512-1, and consistent with national or regional policy, to prevent and control the introduction and spread of aquatic and terrestrial invasive species (including noxious weeds), when necessary.
13. Coordinate and cooperate with State and county agencies, Tribes, non-government organizations, and adjacent landowners in invasive species prevention, early detection and rapid response, control and containment, restoration and rehabilitation, and inventory and monitoring activities.
14. Ensure that contracts and permits contain clauses and specifications requiring the implementation of measures to prevent, control, and/or contain aquatic or terrestrial invasive species (including noxious weeds) and restoration measures to offset associated impacts. Oversee contract and permit administration to ensure compliance with the invasive species provisions.

2905 - DEFINITIONS

Adaptive Management. A system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure that those outcomes are met or reevaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain.

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Control. With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), control is defined as any activity or action taken to reduce the population, contain, limit the spread, or reduce the effects of an invasive species. Control activities are generally directed at established free-living infestations, and may not necessarily be intended to eradicate the targeted infestation in all cases.

Early Detection. The process of finding, identifying, and quantifying new, small, or previously unknown infestations of aquatic or terrestrial invasive species prior to (or in the initial stages of) its establishment as free-living expanding population. Early detection of an invasive species is typically coupled with integrated activities to rapidly assess and respond with quick and immediate actions to eradicate, control, or contain it.

Eradication. With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), eradication is defined as the removal or elimination of the last remaining individual invasive species in the target infestation on a given site. It is determined to be complete when the target species is absent from the site for a continuous time period (that is, several years after the last individual was observed). Eradication of an infestation of invasive species is relative to the time-frame provided for the treatment procedures. Considering the need for multiple treatments over time, certain populations can be eradicated using proper integrated management techniques.

Integrated Pest Management (IPM). A pest (in this context an invasive species) control strategy based on the determination of an economic, human health, or environmental threshold that indicates when a pest population is approaching the level at which control measures are necessary to prevent a decline in the desired conditions (economic or environmental factors). In principle, IPM is an ecologically-based holistic strategy that relies on natural mortality factors, such as natural enemies, weather, and environmental management, and seeks control tactics that disrupt these factors as little as possible. Integrated pest management techniques are defined within four broad categories: 1) Biological, 2) Cultural, 3) Mechanical/Physical, and 4) Chemical techniques.

Invasive Species. Executive Order 13112 defines an invasive species as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The Forest Service relies on Executive Order 13112 to provide the basis for labeling certain organisms as invasive. Based on this definition, the labeling of a species as “invasive” requires closely examining both the origin and effects of the species. The key is that the species must cause, or be likely to cause, harm and be exotic to the ecosystem it has infested before we can consider labeling it as “invasive”. Thus, native pests are not considered “invasive”, even though they may cause harm. Invasive species infest both aquatic and terrestrial areas and can be identified within any of the following four taxonomic categories: Plants, Vertebrates, Invertebrates, and Pathogens. Additional information on this definition can be found in Executive Order 13112.

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Invasive Species Management. Activities to prevent, control, contain, eradicate, survey, detect, identify, inventory, and monitor invasive species; includes rehabilitation and restoration of affected sites and educational activities related to invasive species. Management actions are based upon species-specific or site-specific plans (including forest plans, IPM plans, watershed restoration plans, and so forth), and support the accomplishment of plan goals and objectives and achieve successful restoration or protection of priority areas identified in the respective plan(s).

Inventory. Invasive species inventories are generally defined as the observance and collection of information related to the occurrence, population or infestation of the detected species across the landscape or with respect to a more narrowly-defined area or site. Inventory attributes and purposes will vary, but are typically designed to meet specific management objectives which need information about the extent of an invasive species infestation. Inventories are typically conducted to quantify the extent of, and other attributes related to, infestations identified during survey activities.

Memorandum of Understanding. A written agreement between the Forest Service and local, State, or Federal entities, or private organizations, entered into when there is no exchange of funds from one organization to another.

Monitoring. For the purposes of invasive species program performance and accountability, the term “monitoring” refers to the observance and recording of information related to the responses to treating an invasive species infestation, and reported as treatment efficacy. By monitoring the treatment results over time, a measure of overall programmatic treatment efficacy can be determined and an adaptive management process can be used in subsequent treatment activities.

Noxious Weed. The term “Noxious Weed” is defined for the Federal Government in the Plant Protection Act of 2000 and in some individual State statutes. For purposes of this chapter, the term has the same meaning as found in the Plant Protection Act of 2000 as follows: The term “noxious weed” means any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment. The term typically describes species of plants that have been determined to be undesirable or injurious in some capacity. Federal noxious weeds are regulated by USDA-Animal and Plant Health Inspection Service under the Plant Protection Act of 2000, which superseded the Federal Noxious Weed Act of 1974. State statutes for noxious weeds vary widely, with some States lacking any laws defining or regulating noxious weeds. Depending on the individual State law, some plants listed by a State statute as “noxious” may be native plants which that State has determined to be undesirable. When the species are native, they are not considered invasive species by the Federal Government. However, in most cases, State noxious weed lists include only exotic (non-native) species.

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Prevention. Prevention measures for invasive species management programs include a wide range of actions and activities to reduce or eliminate the chance of an invasive species entering or becoming established in a particular area. Preventative activities can include projects for education and awareness as well as more traditional prevention activities such as vehicle/equipment cleaning, boat inspections, or native plant restoration plantings. Restoration activities typically prevent invasive species infestations by improving site resilience, and reducing or eliminating the conditions on a site that may facilitate or promote invasive species establishment.

Priority Area Treated. Program or project plans (primarily at the district or forest level) will identify priority areas on which to focus integrated management actions to directly prevent, control, or eradicate a priority/high-risk aquatic or terrestrial invasive species. Priority areas identified for invasive species treatments may include any specifically-delineated project area. Examples include, but are not limited to: a fuels treatment area, a developed recreation area, a transportation corridor, a facility, a sensitive habitat for rare species, a wetland, a river, a lake, a stream, an irrigation ditch, a grazing allotment, a stock pond, a fire camp, wildlife winter range, a burned area, a fire-break, a timber sale area, a wilderness area, a Research Natural Area, an energy transmission right of way, and so forth). The size of the priority area treated will typically be measured in acres. For linear features (such as a stream/river, trail, roadway, power-line, ditch, and so forth) the area size can be calculated from the length and average width. In some cases, a smaller portion of a delineated project area infested by invasive species may be prioritized for treatment over the larger infestation. Guidance on determining and establishing priorities for invasive species management is provided in the Forest Service Invasive Species Management Handbook (FSH 2900).

Rapid Response. With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), rapid responses are defined as the quick and immediate actions taken to eradicate, control, or contain infestations that must be completed within a relatively short time to maximize the biological and economic effectiveness against the targeted invasive species. Depending on the risk of the targeted invasive species, rapid response actions may be supported by an emergency situation determination and emergency considerations would include the geographic extent of the infestation, distance from other known infestations, mobility and rate of spread of the invasive species, threat level and potential impacts, and available treatments.

Restored. With respect to performance specifically, the invasive species program is driven by an outcome-based performance measure centered on 'restoration'. An area treated (see "treatment" definition) against invasive species has been 'restored' when the targeted invasive species defined in the project plan was controlled or eradicated directly as a result of the treatment activity. In some instances, actions taken across particular areas to prevent the establishment and spread of specific invasive species are also included in this treatment definition. 'Restored' acres are a subset of 'treated' acres,

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which are tracked annually to determine the effectiveness of treatments. Preventing, controlling, or eradicating invasive species assists in the recovery of the area's resilience and the capacity of a system to adapt to change if the environment where the system exists has been degraded, damaged, or destroyed (in this case by invasive species); and helps to reestablish ecosystem functions by modifying or managing composition and processes necessary to make terrestrial and aquatic ecosystems sustainable, and resilient, under current and future conditions (as described in FSM 2020). In most cases, this is a performance measure defined in the project plan, and project managers have the flexibility to set the parameters for determining when the treated areas have been restored. Absence of an individual invasive species organism, whether through eradication or prevention efforts, is most often the criteria used to determine when acres have been restored. Monitoring treatment efficacy is critical to reporting invasive species management performance.

Resilience. The capacity of an ecosystem to absorb disturbance and reorganize while undergoing change, so as to still retain essentially the same function, structure, identity, and feedbacks. By working toward the goals of diverse native ecosystems that are connected and can absorb disturbance, it is expected that over time, management would create ecological conditions that support the abundance and distribution of native species within a geographic area to provide for native plant and animal diversity.

State Agency. A State Department of Agriculture, State Department of Natural Resources, other State agency, or subdivision thereof, responsible for the administration or implementation of State laws pertaining to invasive species, noxious weeds, exotic species, or other pest/undesirable species.

Structured Decision Making (SDM). A general term for carefully-organized analysis of problems in order to reach decisions that are focused clearly on achieving fundamental objectives. Based in decision theory and risk analysis, SDM encompasses a simple set of concepts and helpful steps, rather than a rigidly-prescribed approach for problem solving. Key SDM concepts include making decisions based on clearly articulated fundamental objectives, dealing explicitly with uncertainty, and responding transparently to legal mandates and public preferences or values in decision making; thus, SDM integrates science and policy explicitly. Every decision consists of several primary elements, management objectives, decision options, and predictions of decision outcomes. By analyzing each component separately and thoughtfully within a comprehensive decision framework, it is possible to improve the quality of decision making. The core SDM concepts and steps to better decision making are useful across all types of decisions: from individuals making minor decisions to complex public sector decisions involving multiple decision makers, scientists and other stakeholders.

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Survey. An invasive species survey is a process of systematically searching a geographic area for a particular (targeted) invasive species, or a group of invasive species, to determine if the species exists in that area. It is important to know where and when surveys have occurred, even if the object of the survey (target species) was not located. Information on the absence of an invasive species can be as valuable as information on the presence of the species, and can be used as a foundation to an early detection system. Unlike inventories, surveys typically do not collect additional detailed attributes of the infestation or the associated site.

Targeted Invasive Species. An individual invasive species or population of invasive species, which has been prioritized at the project-level for management action based upon risk assessments, project objectives, economic considerations, and other priority-setting decision support tools.

Treatment. Any activity or action taken to directly prevent, control, or eradicate a targeted invasive species. Treatment of an invasive species infestation may not necessarily result in the elimination of the infestation, and multiple treatments on the same site or population are sometimes required to affect a change in the status of the infestation. Treatment activities typically fall within any of the four general categories of integrated management techniques: Biological treatments, Cultural treatments, Mechanical treatments, or Chemical treatments. For example, the use of domestic goats to control invasive plants would be considered a biological treatment; the use of a pesticide to control invasive fishes would be characterized as a chemical treatment; planting of native seeds used to prevent invasive species infestations and restore a degraded site would be considered a cultural treatment technique; developing an aquatic species barrier to prevent invasive species from spreading throughout a watershed would be considered a physical treatment; cleaning, scraping, or otherwise removing invasive species attached to equipment, structures, or vehicles would be considered a mechanical treatment designed to directly control and prevent the spread of those species.

Attachment 4

Integrated Vegetation Management Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



INTEGRATED VEGETATION MANAGEMENT PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
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COMMONLY USED TERMS, ACRONYMS & ABBREVIATIONS

BMP	Best Management Practices
Cal-IPC	California Invasive Plant Council
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNPS	California Native Plant Society
DPR	California Department of Parks and Recreation
DWR	California Department of Water Resources
ESA	Endangered Species Act of 1973, as amended
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
GPS	Global Positioning System
IVMP	Integrated Vegetation Management Plan
NEPA	National Environmental Policy Act
NFS	National Forest System
NNIP	non-native invasive plant
O&M	operations and maintenance
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
SBNF	San Bernardino National Forest
SWP	State Water Project
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service

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1.0 INTRODUCTION

1.1 OVERVIEW

This is an Integrated Vegetation Management Plan (IVMP) for the management of terrestrial vegetation within the Federal Energy Regulatory Commission (FERC) Project boundary¹ of the California Department of Water Resources' (DWR) Devil Canyon Project Relicensing, FERC Project Number 14797 (Project), which includes hydroelectric facilities, access roads, staging areas, Project recreation areas, rights-of-way, and other appurtenant facilities as described in Exhibit A of the license application. This plan has been prepared in coordination with the San Bernardino National Forest (SBNF), the California Department of Parks and Recreation (DPR), and the California Department of Fish and Wildlife (CDFW). The IVMP addresses management of vegetation within the Project boundary, and there are specific requirements that are referenced in the plan for those parts of the Project on National Forest System (NFS) lands as well as on State lands which DPR manages as part of the Silverwood Lake State Recreation Area (SRA). Any specific SBNF and DPR requirements apply only to the lands under the management of each respective agency. This plan is not intended to replace or change those agencies' applicable requirements with regard to land and resource management, but rather, assumes that implementation of the IVMP on those lands are consistent with applicable SBNF and DPR requirements.

1.2 PROJECT LOCATION AND DESCRIPTION

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including an affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits. The Project is a power recovery project that operates on the southern end of the East Branch of the SWP in the County of San Bernardino, California, between the Cities of Hesperia and San Bernardino (Figure 1.2-1).

Project facilities include Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel intake, San Bernardino Tunnel and Penstocks, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities, and appurtenant facilities (Figure 1.2-2). The Project area consists of all lands within the Project boundary that were included in the new license.

¹ For the purposes of this plan, the Project boundary is as defined in DWR's Application for New License (see Exhibit G of the license application).

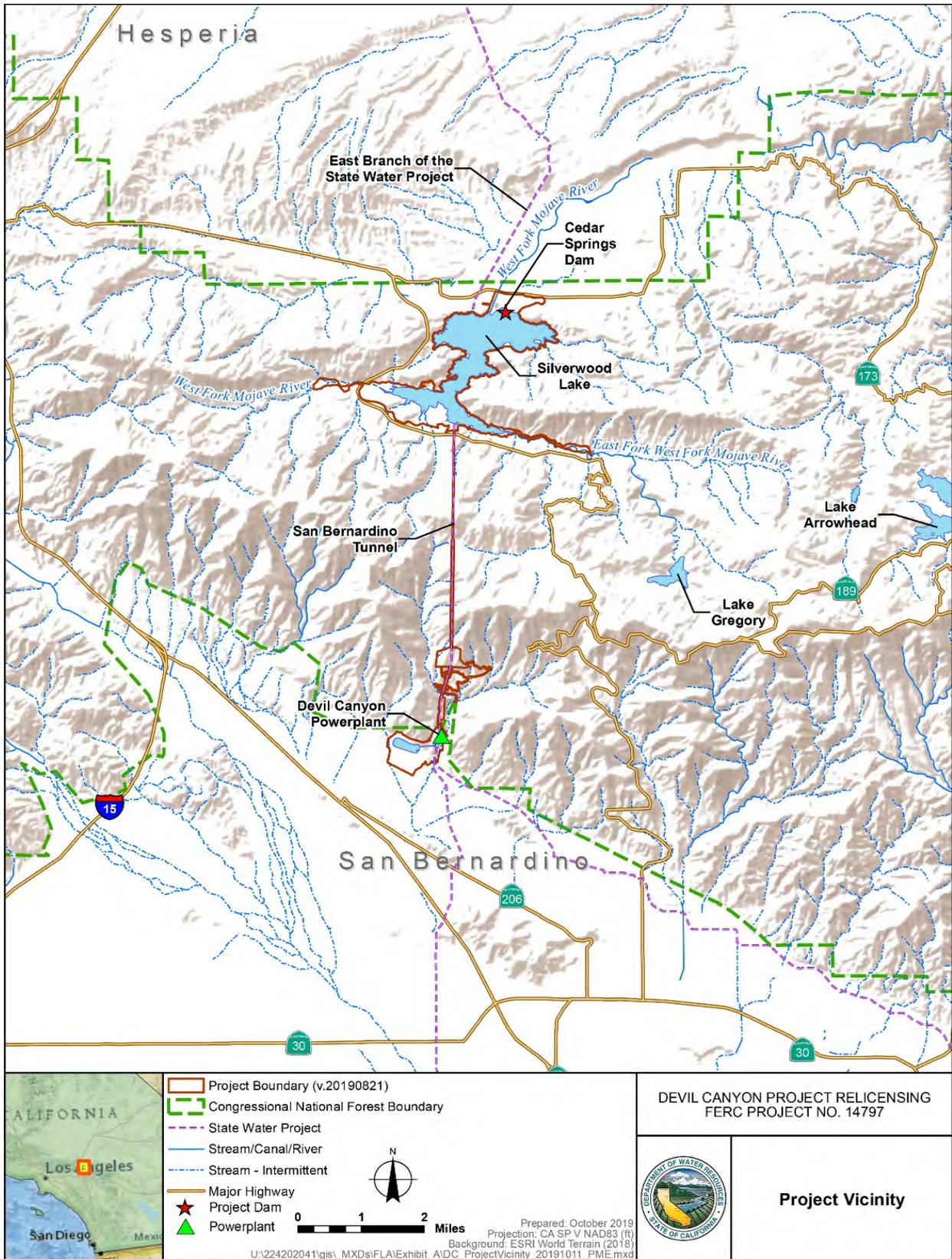


Figure 1.2-1. Devil Canyon Project Vicinity

1.3 PURPOSE OF THE INTEGRATED VEGETATION MANAGEMENT PLAN

This plan provides guidance for the management of terrestrial vegetation within the Project boundary, which includes the implementation of protection measures for special-status plant populations and sensitive natural communities, as well as guidance for vegetation management related to Project O&M activities within the Project boundary. The plan area consists of lands within the Project boundary that are reasonably accessible.

This plan is to be used in conjunction with other resource management plans pertaining to Project resources, as coordinated by DWR. These plans will consider the need to avoid or minimize disturbance to sensitive areas. Sensitive areas, as defined for the purpose of this IVMP, include areas of known special-status plants and wildlife, areas of known sensitive natural communities (including riparian zones and wetlands), and other predetermined areas with significant resources (i.e., cultural and tribal resources, culturally sensitive plant species).

More specifically, the purpose of this IVMP is to facilitate the integrated management of vegetation with several factors related to operation of the Project, including:

- Facility reliability, including powerline safety and reliability regulations
- O&M demands
- Staff and public safety
- Federal regulations governing special-status species protection
- Recreation management
- Vegetation fuels management
- Non-native invasive plant (NNIP) management
- Herbicide Best Management Practices (BMP)

1.4 GOAL AND OBJECTIVES OF THE INTEGRATED VEGETATION MANAGEMENT PLAN

The goal of this plan is to provide a terrestrial vegetation management framework that includes identifying, assessing, monitoring, and controlling NNIP within the Project boundary for the duration of the license. The following six objectives are critical to the success of reaching this goal:

1. Manage NNIP through prevention of the introduction, establishment, and spread of new NNIP, and the control of known infestations.

2. Provide guidance to protect known special-status plants and sensitive natural communities that could be affected by future Project O&M and other activities.
3. Provide guidance for vegetation management related to future Project O&M.
4. Revegetate natural landscapes disturbed by Project O&M activities, conserve native vegetation resources, reduce soil erosion, and monitor these efforts.
5. Apply herbicide using BMPs.
6. Provide guidance for protection of sensitive areas from the effects of vegetation management activities.

With the varying ownership there can be different regulatory requirements regarding vegetation management that would apply. Refer to Figure 1.2-2 for land ownership in the Project boundary. For example, on NFS lands, approvals for NNIP control efforts will follow all U.S. Department of Agriculture, Forest Service (USFS) guidance, in addition to the relevant federal, State, and local regulations relating to herbicide applications that are applicable to all other lands.

1.5 PROTOCOLS

Baseline botanical surveys conducted for the Project relicensing followed protocols detailed in the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (U.S. Fish and Wildlife Service [USFWS] 1996 or most current) and *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW 2009, 2018c). Surveys included data collection on NFS lands that required completing CDFW's California Natural Diversity Database forms and USFS' Threatened, Endangered, and Sensitive Plant Occurrence forms. These forms include information regarding relative abundance, phenology, habitat description, habitat condition, and the presence of any NNIP.

Documentation of surveys on NFS lands included completion of USFS data forms for any USFS Sensitive Species, as specified in the USFS Threatened, Endangered, and Sensitive Plants Survey Field Guide (USFS 2005a), and the Threatened, Endangered and Sensitive Plants Element Occurrence Protocol Field Guide (USFS 2005b). Special-status plants and natural communities identified during the 2017 baseline botanical surveys were documented using a Global Positioning System (GPS) unit. All data collected was reviewed in a Geographic Information System (GIS) database.

Protocols for any future botanical surveys would utilize the most up to date methods from CDFW, USFWS, and/or USFS, where applicable. In order to maintain a complete dataset, data from new methods or protocols will remain compatible with data previously collected under this plan.

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2.0 NON-NATIVE INVASIVE PLANT MANAGEMENT

2.1 NON-NATIVE INVASIVE PLANTS WITHIN PROJECT BOUNDARY

Surveys for target NNIP were completed in 2017, along with a comprehensive and systematic botanical inventory, within the Project boundary (where accessible) in support of the Project relicensing. A total of 177 occurrences of 13 target NNIP species were observed during field surveys. These occurrences are summarized in Appendix A, as presented in Table A.1-1 and Table A.1-2, and depicted on Figures A.1-1 through A.1-5. For occurrences that extended beyond the Project boundary, attributes of the entire occurrence, including estimated numbers of individuals and acreage, were recorded.

2.2 PLANS FOR PREVENTION AND CONTROL OF NON-NATIVE INVASIVE PLANTS

While NNIP are widespread in the area and throughout California in general, there are species that are of certain concern to various regulators and advisors throughout the State. A list of species was compiled by looking at the various species that the California Department of Food and Agriculture (CDFA), California Invasive Plant Council (Cal-IPC), and USFS have recorded in the local area. This list will be concurrently updated with revisions from the previously listed agencies prior to survey activities during the term of the new license. Target species are outlined in Appendix A, Table A.1-2.

Target NNIP for treatment within the Project boundary are CDFA A-, B-, C-, and Q-rated weeds; Cal-IPC high- or moderate-ranked weeds; and those designated by USFS, where they occur on NFS lands. CDFA keeps track of NNIP for their invasiveness and potential to spread explosively in agricultural settings such as rangelands, row crop farms, and orchards. Cal-IPC maintains a separate list from CDFA for “Exotic Pest Plants of Greatest Ecological Concern in California.” Rather than focus on agricultural pests, Cal-IPC is concerned about NNIP species that have the potential for serious impacts to wildlands and native ecosystems. Additionally, USFS compiled a list of NNIP known, or suspected, to occur in its National Forest.

This plan complies with the direction contained within USFS Manual, Section 2900, Invasive Species Management (USFS 2011 or most current). That direction includes initiating, coordinating, and sustaining actions to prevent and control priority infestations of invasive species in terrestrial areas of the NFS that are affected by Project O&M activities using an integrated pest management approach. The plan for control of NNIP within the Project boundary is based on four principal elements:

1. BMPs
2. Surveying and documentation
3. Control of existing infestations

4. Long-term monitoring

2.2.1 Best Management Practices

The following BMPs will be utilized with the objective of minimizing the potential for the introduction and spread of NNIP by Project O&M activities. They will coincide with information, measures and guidelines outlined in local USFS biological opinions and National Environmental Policy Act (NEPA) documents where applicable. Specifically, the BMPs will be used by DWR and its contractors working within the Project boundary. Note that exceptions may occur in unusual or time-sensitive circumstances (i.e., emergency maintenance and repairs). BMPs used in other circumstances (i.e., construction, stormwater) may differ from those identified in this plan. The use of BMPs is dynamic and may change or be modified depending on the circumstances, present knowledge, and current technology.

1. Minimize ground disturbance, especially during routine O&M activities. When soil must be moved or stockpiled, DWR will grade the soil to match local contours if the soil is not just being stockpiled temporarily and mulch and/or reseed the disturbed areas with certified weed-free and/or plant materials native to the region.
2. Where possible, restrict travel to established roads, previously disturbed bare areas, and motorized trails, and avoid traveling through areas with known NNIP occurrences. When possible, staging and laydown areas will be in areas known to be weed-free. If travel or staging within an NNIP infestation area cannot be avoided, to the extent feasible, conduct work in NNIP-free area(s) first and clean equipment (e.g., brush tires and/or undercarriages of off-road equipment) after working in infestation areas.
3. Construction equipment that has been used offsite or off road at another site will be cleaned to the extent practical before entering the Project boundary. This is to minimize the risk of establishment by new NNIP through dispersal of seeds and plant fragments.
4. Certified weed-free straw/mulch will be used for all construction, erosion control, or restoration needs, and gravel and sand from weed-free sources (as directed by USFS on NFS lands) will be used where possible.
5. When feasible, DWR will not leave stockpiles from proposed ground disturbance activities of soil uncovered for longer than one month. In general, stockpiles left in place longer than one month will be covered with tarps and plastic to prevent plant growth. DWR will seed topsoil stockpiles when the stockpiles will remain in place for longer than two months to maintain soil microbe health and to help prevent the establishment of NNIP. All topsoil stockpiles will be seeded with commercially available native plant seeds local to the area.
6. DWR will consult with appropriate land management agency specialists and follow applicable procedures, as appropriate, at least one month prior to the

Agency Consultation Meeting (see Section 6.2, Agency Consultation) to determine the appropriate plant material that complies with current guidelines. For areas where fill is required, DWR will use fill material collected onsite where available and revegetated with locally collected plant material if feasible or a commercially available local native seed mix reflective of the affected habitat type.

7. In general, a draft of site-specific revegetation activities will be developed before ground-disturbing actions larger than 0.25 acres. If the ground-disturbing actions occur on NFS lands, DWR will work with USFS to develop a revegetation plan if a revegetation plan has not been provided by USFS. Revegetation and seeding of disturbed areas, including topsoil piles and berms, will commence within 30 to 60 days following completion of construction or ground-disturbing activities related to Project O&M, or as soon as possible during the appropriate season, unless otherwise agreed to by USFS in the Agency Consultation Meeting. In some situations, seeding in the fall may be preferred due to timing of rainfall and the type of plant species involved with revegetation activities.
8. Erosion control materials that do not pose an entanglement risk to wildlife will be used. All fiber rolls and/or erosion control mesh will be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread.
9. Erosion control BMPs will not pose a risk or barrier to wildlife movement and will be installed to allow for the safe passage of wildlife movement, particularly less agile species (such as small mammals and reptiles), out of the project area. Long, continuous lengths of silt-fencing or other erosion control BMP materials installed without gaps can create a barrier to wildlife movement, trapping animals within the project area. Areas of safe passage can be easily accommodated by leaving small gaps between parallel and overlapping lengths of erosion control BMPs.

2.2.1.1 USFS Recommended BMPs

In addition to the BMPs mentioned above, USFS recommended BMPs outlined in the *National Best Management Practices for Water Quality Management on National Forest System Lands* (USFS 2012) that may be applicable in certain situations on NFS lands. The names and objectives of these BMPs are described in Appendix B, with specifics for implementation of these BMPs found within the aforementioned document.

2.2.2 Surveying and Documentation

Current information on known locations of target NNIP within the Project boundary was developed from comprehensive botanical surveys in 2017 (Table 2.1-1). The NNIP surveys documented species' composition, location, and relative abundance. DWR will

use the results of the NNIP surveys as a baseline inventory of the existing target NNIP within the Project boundary.

2.2.3 Control Measures for Existing Populations

Where contiguous NNIP occurrences extend beyond the Project boundary by up to 50 feet (the visual limits of the 2017 botanical surveys), DWR, DPR, and USFS (when also on NFS lands) will coordinate to develop a schedule and identify the appropriate level of control measures for such populations. This is intended to manage existing populations of target NNIP populations that are in areas where there is a high potential for Project-related disturbance and/or dispersal to areas beyond the existing occurrence. This may include plans for DWR, DPR, and USFS to cooperatively manage existing known target NNIPs, as DWR would not have sufficient information about NNIP populations extending beyond the Project boundary. Control measures may include but are not limited to manual methods (manual pulling, hoeing), mechanical methods (such as mowing, grubbing), and chemical methods (herbicides). Results and methods of the plans will be tracked and analyzed to help determine which methods are most successful for each target species. DWR will assess the use and appropriateness of control methods on a case-by-case basis.

Target NNIP will be designated for active management efforts aimed at eradication of small occurrences and control of larger ones on lands within the Project boundary in those cases where the occurrence poses a threat to other resources, such as special-status wildlife species. In general, emphasis will be placed on the feasibility of successful control of a given NNIP species, and the threat posed by the occurrence. This will be done on a case-by-case basis. For instance, it is not possible to completely eliminate a widespread species such as yellow star-thistle, therefore control measures rather than elimination measures are the most feasible in this case. However, if yellow star thistle occurs next to a special-status plant species, elimination measures may be more feasible to prevent the yellow star-thistle from outcompeting the special-status plant for resources. NNIP populations that do not pose a threat to other resources will not be targeted for eradication. Control and containment of NNIP will be reviewed at the Agency Consultation Meeting. Site-specific circumstances may dictate deviations from these guidelines.

2.2.4 Long-Term Monitoring

As described in Sections 1.5 and 2.1 (above), comprehensive baseline botanical surveys were completed in 2017. NNIP occurrences posing a threat to sensitive resources and other resources, including Project facilities, and to public safety will be treated with appropriate control methods as discussed in Section 5.0. This will be conducted according to a schedule that treats and/or monitors NNIP occurrences in phases, with treatment priority given to NNIP occurrences that pose the greatest threat to sensitive resources and other resources and public safety, and/or are most likely to facilitate the spread of NNIP species into other areas within the Project boundary. Some low priority NNIP occurrences that do not pose a threat to sensitive resources and other resources or to public safety may only necessitate monitoring. This NNIP schedule and

phasing plan will be developed within two years of license issuance and will be discussed as part of the Agency Consultation Meeting (see Section 6.2). Following initial treatment, and if revegetation is determined necessary, occurrences will be monitored annually for three years, beginning with the first year of application of control treatments (generally within 30 days of treatment). In areas treated on NFS lands, any resulting weed record will need to be collected in a manner that is consistent with the USDA *National Resources Inventory* (USDA 2015) to allow for tracking of control efforts. Over time, during the three years, if monitoring results show declining or complete eradication of NNIP populations in the treatment area, the frequency of monitoring may be reduced or eliminated. Conversely, during the three years, if monitoring results show no change or an increase of NNIP populations in the treatment area, DWR will consult with the appropriate resource agencies during the Agency Consultation Meeting.

DWR will evaluate the need to update the inventory every 5 to 10 years based on available information at the time of the evaluation. If surveys are warranted, they will target NNIP populations in areas where there is a high chance for disturbance and/or dispersal, such as the recreation areas or areas that are disturbed by frequent Project O&M activities.

2.2.5 Adaptive Management

Weed management techniques will and could change over time in response to new data, techniques, and scientific research. New data from research and agency-developed methods should be incorporated into the decision-making process to identify the use and application of new techniques for this plan. Results from monitoring data (weed control measures) will be entered into a central database and used to inform future management decisions. Where available, new more efficient techniques will be incorporated into the adaptive management program.

This plan may be modified or amended as resources are added or removed from sensitive species lists, survey protocols are changed, or new survey technology emerges. In order to maintain a complete dataset, data from new methods or technology will be compatible with data previously collected under this plan. All data will be stored in a central DWR database.

2.3 VARIATIONS IN TREATMENT ON SAN BERNARDINO NATIONAL FOREST LANDS

NNIP will be controlled on NFS lands within the Project boundary where feasible. On NFS lands, approvals for control efforts will follow all USFS guidance (USFS 1994, 2013) including local USFS Biological Opinions and NEPA documents.

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3.0 SPECIAL-STATUS PLANTS, SENSITIVE NATURAL COMMUNITIES, AND CULTURALLY SENSITIVE PLANT MONITORING

3.1 SPECIAL-STATUS PLANTS, SENSITIVE NATURAL COMMUNITIES, AND CULTURALLY SENSITIVE PLANT SURVEYS

In 2017, DWR conducted comprehensive floristic surveys and mapped locations of special-status plant populations and sensitive natural communities within the Project boundary. The surveys included: (1) determining presence of any special-status plants or natural communities; and (2) revising previously documented special-status plants or natural communities. Results of the surveys are included in Appendix C.

Special-status plants are defined as the following:

- Listed as a USFS sensitive species and occurs on NFS lands;
- Listed under the California Endangered Species Act (CESA) as an endangered, threatened, or rare plant;
- State-listed rare or a State candidate for listing species under the Native Plant Protection Act of 1977 (CDFW 2018a);
- Listed by the California Native Plant Society (CNPS) on its Inventory of Rare and Endangered Plants, including species that are rated as CNPS 1A through 4B; or
- Listed as federally threatened or endangered under the federal Endangered Species Act (ESA), or as candidates or species proposed for listing under the ESA.

Sensitive natural communities are defined as: listed by CDFW as sensitive in the California Natural Community List (CDFW 2018b).

Culturally sensitive plants are defined as the following: a concentration of a specific plant species and/or plant gathering or collection areas as identified by a Native American tribe to be culturally significant. A list of species important to the San Manuel Band of Mission Indians was provided to the botanical group for survey purposes, but is not referenced due to the sensitive nature of the information, which is considered to be Privileged, and provided only to those on a need to know basis.

3.1.1 Survey Area

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are NFS lands managed by USFS as part of the SBNF. Most of these federal lands within the Project boundary are located in a small area at the top of the Devil Canyon Powerplant penstocks and include the surge chamber. Other NFS lands surrounding the Project boundary include the area on the west side of Silverwood Lake (west of State Highway 138), and the San Bernardino Tunnel. The survey area for the 2017 relicensing studies,

where a baseline inventory of NNIP and botanical resources were completed, occurred within the Project boundary, excluding the area above the San Bernardino Tunnel.

3.1.2 Survey Frequency

3.1.2.1 *Baseline Botanical Inventory Surveys*

Between April 4, 2017 and June 16, 2017, DWR conducted a comprehensive botanical inventory of the entire area within the Project boundary under the new license, excluding the area over the San Bernardino Tunnel, to identify locations of special-status and culturally sensitive plant species. See Exhibit E of the license application for details of methodology and results of the study. No Project O&M activities occur in the area over the San Bernardino Tunnel because the tunnel is underground. No federal ESA- or CESA-listed plant species were observed in surveyed areas.

3.1.2.2 *Future List Review and Surveys*

Beginning in the second calendar year after license issuance, a biennial desktop review of current USFWS, CDFW, CNPS, USFS, and San Manuel Band of Mission Indians (confidential) lists of special-status plants potentially occurring within the Project boundary will be conducted. In the event a species is newly listed by the USFWS, CDFW, CNPS, USFS, or San Manuel Band of Mission Indians, DWR will confer with the appropriate resource agency to determine if the species is likely to occur within the Project boundary. If a newly protected species is likely to occur within the Project boundary, DWR will assess the potential for the species to be affected by planned maintenance or other ground-disturbing activities, and implement appropriate surveys or resource protection measures, if necessary.

If incidental observations of special-status plants and sensitive natural communities occur during NNIP monitoring, DWR and contractor observations, or pre-construction/pre-disturbance surveys will be recorded to identify if any of these resources are within areas of potential disturbance. In the event that a newly identified special-status plant species is observed, the location (latitude and longitude), number of individuals, and percent cover will be recorded. If the observed species is not located within an area where routine O&M or Project-related recreational activities occur, the location will be noted in a central database and will be surveyed during inventory updates every 5 to 10 years. If the observation is within an area where regular O&M or Project-related recreation typically takes place, surveys will be conducted to determine the extent of the newly observed special-status plant species or sensitive natural community in the Project boundary.

3.2 SPECIAL-STATUS PLANTS, SENSITIVE NATURAL COMMUNITIES, AND CULTURALLY SENSITIVE PLANTS WITHIN PROJECT BOUNDARY

Forty-three occurrences of three different CNPS-listed species were observed during the 2017 baseline botanical surveys, as summarized in Table C.1-1, and depicted in Figures C.1-1 through C.1-3. None of the species is listed under the ESA, CESA, or USFS Special-Status Species lists. All have been assigned a California Rare Plant

Rank of 4.2, which denotes plants of limited distribution that are moderately threatened in California (defined by CNPS as “20 to 80 percent occurrences threatened, with a moderate degree and immediacy of threat”) (CNPS 2018). In addition, during other DWR relicensing studies, there were no incidental observations of special-status plants.

One occurrence of a sensitive natural community was observed during field surveys: valley foothill riparian, as depicted in Figures C.1-4 through C.1-5. This community is generally characterized by wetland trees and shrubs along or within water bodies. In general, this community is located in relatively isolated areas not likely to be affected by future Project O&M activities as discussed in the license application (see Exhibit E).

Although some plant species on the San Manuel Band of Mission Indians’ list were identified within the study area during the *Botanical Resources Study* survey, no locations specific to tribal collection were identified during the *Tribal Resources Study* (Lerch and Swope 2019) conducted as part of the relicensing. Therefore, no locations of culturally sensitive plants requiring avoidance or other management measures have been identified at this time. However, it is possible that plant gathering areas may be defined as such during the term of the new license by the San Manuel Band of Mission Indians or other Native American tribes. Should such plant gathering areas be identified by a participating tribe during the term of the new license, DWR will consult with the tribe and will coordinate with DPR where applicable, to determine the appropriate management measures for any location identified prior to implementing herbicide use or ground-disturbing activities as part of the IVMP.

Although this IVMP provides for protective measures of plants with a CNPS ranking of 1 or 2 and plants that fall within one or more of the other categories of special-status plants defined in Section 3.1 management of plants with a CNPS ranking of 3 or 4 will consist of biennial review during the special-status species list reviews described in Section 3.1.2.2 and monitoring. In the event that a species currently listed with a CNPS ranking of 3 or 4 is elevated to a ranking of 1 or 2, or one of the other categories of special-status plants defined in Section 3.1 of this IVMP, they will then be managed as such in the manner described in this IVMP.

3.3 DISTURBANCE MONITORING

3.3.1 Regular Disturbance Activities

As of the 2017 surveys, no special-status plants listed under the ESA, CESA, USFS, or sensitive natural communities have been documented in areas that would be disturbed by regular Project O&M activities. The three CNPS plants species ranked as 4.2 observed during surveys are not listed under the ESA, CESA, or USFS. Therefore, no effects are expected to occur to ESA, CESA, USFS special-status plants, or sensitive natural communities due to continued Project O&M activities.

3.3.2 Future Disturbance Activities

For future scheduled O&M activities (i.e., non-emergency, ground-disturbing construction activities) that will be conducted near documented special-status plant or

sensitive natural community occurrences, including riparian/wetland zones, a pre-construction assessment and construction monitoring will be conducted. The planned disturbance areas will be defined, mapped, and cross-referenced with the GIS database containing known sensitive resources. To avoid and minimize impacts to special-status plants and communities documented within the Project boundary, the following actions will be implemented:

- A protective buffer with flagging will be installed around sensitive plants and natural communities within the Project boundary and no vegetation removal activities will take place within the buffer. Buffer sizes for documented sensitive plants and natural communities include:
 - 10 feet for CNPS ranked plants 1A through 2B
 - 25 feet for upland sensitive natural communities
 - 100 feet for riparian, wetland, and wet meadow habitats

Although no ESA, CESA, or FSS species were identified during the 2017 surveys, in the event that a plant with these listings is incidentally identified or identified during a pre-construction assessment and is within an area that will be disturbed by O&M, a 25-foot buffer of protective flagging will be installed and no vegetation removal or disturbance activities will be performed within the buffer. In the event that CNPS 1A through 2B plant species are incidentally identified or identified during a pre-construction assessment and is within an area that will be disturbed by O&M, a 10-foot buffer of protective flagging will be installed and no vegetation removal or disturbance activities will be performed within the buffer. In the event that sensitive resources, including special-status wildlife² are known, observed, or expected to occur and could potentially be affected by a specific O&M activity, DWR will establish an exclusion buffer with flagging that is adequately sized to protect the species. Should DWR determine that the buffer size is not adequate to avoid sensitive resources impacts, DWR will consult with CDFW and USFWS to identify appropriate minimization measures. Note that should an O&M activity that was not considered under the relicensing ESA consultation result in the potential to adversely affect any federal ESA or CESA/FP species, DWR will consult with the appropriate resources agency. Disturbance areas near sensitive areas will be monitored during the activity to reduce the potential for the Project to impact special-status plant populations, sensitive natural communities, or riparian/wetland zones occurred as a result of the disturbance. Disturbance to a resource can include events such as eliminating special-status plant individuals, encroaching on wetland/riparian boundaries, and/or increasing the density of NNIP. Documentation of such events will

² Special-status wildlife discussed in this section meet at least one of the following criteria: (1) listed under federal ESA as threatened, endangered, or candidate, (2) listed under CESA as threatened, endangered, or candidate, (3) classified as Fully Protected (FP) by the State of California; (4) listed by the CDFW as a Species of Special Concern (SSC) (CDFW 2018a); (5) listed as FSS and occurring on NFS lands (USFS 2013); or (6) protected under the Bald and Golden Eagle Protection Act (16 United States Code 668-668c).

be included as part of the monitoring activities. Sites that warrant revegetation will begin revegetation efforts within 30 days, or as soon as feasible depending on weather, seasonality, or other considerations affecting the success of the effort. Post-construction revegetation monitoring will commence within 30 days of construction and will continue on a yearly basis for up to three years. The subsequent annual monitoring will take place during the time when the resource is identifiable (i.e. blooming period). Monitoring will occur at resource locations identified by qualified staff in the most recent comprehensive surveys that are within or adjacent to the disturbance activity. Post-construction revegetation monitoring may be coordinated with other surveys if they take place concurrently.

If the disturbance and associated revegetation monitoring coincides with the blooming period of the documented resource (or the area is re-assessed within one year to capture the appropriate time of year), recorded information will include:

- Subjective assessment of the population or vegetation community's health, viability, or changes from observations during previous comprehensive survey(s); and
- Measured changes in size of the population or vegetation community (geographic extent or number of individuals).

If the disturbance and associated monitoring is conducted outside of the blooming period of the documented resource (or at a time when the resource is either not identifiable or present above-ground), data collected will follow the same measures as much as feasible given the phenology. Should there be a disturbance within the exclusion area, the appropriate resource agency will be contacted to identify appropriate measures and at a minimum, data will be collected that includes the resource type and the amount of disturbance occurred within the flagged area.

If a previously unknown sensitive resource is observed during vegetation management planning or implementation, depending on the species involved and the land ownership, the appropriate agencies (e.g., USFS, CDFW) will be notified as soon as reasonably possible.

3.4 SPECIAL-STATUS PLANTS AND SENSITIVE NATURAL COMMUNITIES PROTECTION

Multiple measures will be used to protect special-status plants, sensitive natural communities, and riparian/wetland zones within the Project boundary during O&M activities, including vegetation management, and to avoid or minimize significant adverse effects. Specifically:

- CDFW, DPR (on land within the SRA), and USFS (on NFS lands) will be consulted in the development of specific usage plans for areas surrounding known occurrences of sensitive natural communities and sensitive resources

areas. This includes any impacts to the bed, bank, or channel of a lake or stream requiring CDFW notification and consultation.

- Employee training with appropriate staff (employees and contractors) will be conducted every two years and as appropriate, and will include information on recognition of special-status plant species and the location of existing occurrences of sensitive resources and areas to be avoided (including sensitive natural communities and riparian/wetland zones)
- Flagging will be installed to facilitate avoidance of sensitive areas within a site and resource-specific buffer prior to any vegetation management activities, including management for target NNIP
- Manual activities (e.g., utilizing hand tools) will be encouraged, where reasonable, in sensitive areas

Emergency work is exempt from the measures above. However, DWR will work with CDFW and/or USFS (if applicable) to ensure that routine vegetation management occurs with implementation of these protection measures. In addition, as soon as the emergency has been addressed, regular sensitive resource protection measures will resume. Where it is not possible to implement these measures during emergencies, any known sensitive botanical resource issues will be reported to the appropriate resource agencies with the initial notification by phone within 3 days, with detailed reporting and/or any applicable reports being submitted as soon as possible. Sensitive resource disturbances on NFS lands will also be reported to USFS. The reports will include the location and types of emergency activities that were conducted within sensitive resource areas. If disturbance occurs within a sensitive resource area, DWR will work with USFS on NFS lands and CDFW on State and private lands to determine any necessary mitigation measures (e.g., if substantial disturbance, a mitigation plan may be required; if minor disturbance, corrective actions may be discussed at the Agency Consultation Meeting).

Emergency work includes, but is not limited to, emergency repairs to Project facilities necessary to maintain service essential to the public health, safety, or welfare. Emergency repairs include those that require a reasonable amount of planning where delay of a project or activity would result in substantial safety or environmental impacts. Furthermore, emergency projects include specific actions necessary to prevent or mitigate an emergency. Emergency projects or activities do not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.

4.0 VEGETATION MANAGEMENT RELATED TO PROJECT OPERATIONS AND MAINTENANCE

4.1 REVEGETATION

Revegetation is the process of reestablishing vegetation cover in disturbed areas and is a standard component of Project O&M and other construction activities. Revegetation includes erosion control, site restoration, and replanting. The main functions of revegetation are to conserve native plant resources, reduce soil erosion, and restore wildlife habitat.

Certain Project areas such as the Cedar Springs Dam face must remain free of vegetation and will not undergo revegetation. Some public use areas and other developed areas that contain existing ornamental landscaping and hardscape will also not be revegetated with native plants. Sites that are subject to continual disturbance (e.g., berm roads) or where bare ground needs to be maintained (e.g., firebreak clearances around transmission poles) will not be subject to revegetation under this IVMP. Sites subject to disturbances that are not Project-related will also not be revegetated. Legacy sites – areas that are not deliberately kept unvegetated, but have not naturally revegetated prior to license issuance – will not be subject to revegetation.

Revegetation objectives include the following:

- Native vegetation cover is within 20 percent absolute cover when compared to similar sites on the adjacent undisturbed area. Revegetation within areas where NNIP are present will keep/reduce NNIP to low levels, with the following guidelines:
 - If the area adjacent (i.e. within 50 feet) to the revegetation site contains less than 25 percent cover of NNIP, revegetation will be considered acceptable when the cover of NNIP on the revegetation site is equal to or less than five percent
 - If the area adjacent to the revegetation site contains 25 to 50 percent cover of NNIP, revegetation will be considered acceptable when the cover of NNIP on the revegetation site does not exceed 10 percent
 - If the area adjacent to the revegetation site contains more than 50 percent cover of NNIP, revegetation will be considered acceptable when the cover of NNIP on the revegetation site does not exceed 25 percent
- Reduce potential for significant erosion and the delivery of sediment to channels; rills at the end of revegetation should be eliminated if feasible. If not feasible, BMP measures should be implemented to ensure the rills do not deliver sediment to nearby channels and/or water bodies
- Implement native vegetation that is vigorous, self-sustaining, and contains a diverse mixture of natives that is consistent with the adjacent undisturbed areas

4.1.1 Areas Subject to Revegetation

DWR will evaluate areas of ground disturbance within the Project boundary caused by Project O&M and construction activities on a site-by-site basis to determine if revegetation is necessary or appropriate. Areas subject to revegetation include, but are not limited to:

- Areas over one-quarter acre treated for NNIP that have resulted in bare ground or limited vegetation growth; and
- Areas over one-half acre subject to ground disturbance by Project O&M activities

For routine O&M not affecting sensitive resources, not involving target NNIP infestations, and lacking ground disturbance larger than one-half acre, DWR will follow the revegetation guidelines from Section 4.1.4 of this IVMP without further consultation.

Areas over one-quarter acre treated for NNIP require further revegetation, as NNIP removal often creates gaps or patches of bare soil and can promote further invasion by the same NNIP species or other undesirable plants. Passive revegetation (i.e., allowing revegetation to occur from the native vegetation already present at the site) may be appropriate if the bare patches are small. However, if the treatment site is severely degraded and native plants are absent or in low abundance, active revegetation efforts may be required to promote recovery of the native plant community. NNIP treatment sites requiring revegetation will be identified at the Agency Consultation Meeting following the site evaluations detailed in Section 6.2 of this IVMP.

4.1.2 Evaluating Sites for Revegetation

Prior to ground disturbance within the Project boundary and once DWR has determined a disturbed area may be subject to revegetation (post-disturbance activity), DWR will assess the area to determine size, percent vegetation cover of both native and non-native species, erosion potential, and adjacent plant community composition (i.e., reference site species composition). This will include the following information that will be utilized in Section 4.1.3, Revegetation Planning:

- General site conditions, including slope, terrain, soils, land use, access, and proximity to water
- Proximity to target NNIP occurrences/likelihood of new infestations
- Vegetation community specifics, including species composition, richness, and density
- Site complexity, including the variety of landforms

Once this assessment is completed, the following criteria will be used to determine if revegetation is necessary:

- Slow rate or low likelihood of propagation or spread of nearby native plant species;
- Little or no evidence of successful reproduction of nearby native plant species;
- Low composition or cover of native plant species in the area;
- High percentage of NNIP in the area (25 percent or greater relative cover);
- Adjacent sites within the Project boundary are disturbed as a result of Project O&M; or
- Soil compaction.

If one or more of the above criteria are met, then a plan will be developed for revegetating the site within the Project boundary. If none of the criteria are met, then revegetation at the site will be deemed unnecessary. If the site has not reached the objectives, DWR will consult with the appropriate resource agencies during the Agency Consultation Meeting to identify feasible adaptive management measures. If target native cover is unattainable, the site will be re-evaluated. CDFW (on State lands) and USFS (on NFS lands) will be informed of the adjustment to the success criteria for erosion control, rather than native plant success criteria, given site-specific circumstances.

For events that are considered outside of DWR's control, the criteria for active revegetation will be re-evaluated. The majority of these areas would no longer meet the criteria required for active revegetation. Other remedial actions will be developed, where applicable, including passive revegetation following a wildfire.

4.1.3 Revegetation Planning

Immediately after revegetation of a site has been deemed necessary, and prior to ground disturbance, a draft Revegetation Plan will be developed. Information collected in the initial site assessment (Section 4.1.2) will be used to develop this plan.

For non-routine sites (i.e., sites larger than one-half acre on NFS lands), a Revegetation Plan will be developed for USFS review, if such a plan has not already been provided by USFS. The plan will include site-specific desired conditions, species to be planted, methods for revegetation, site design, soil treatment, success criteria, monitoring plan, target NNIP management, schedule of activities, and remedial actions.³ USFS will have at least 30 days to review the plan and comment. Comments will be addressed and the final plan will be submitted to USFS for approval and then it will be implemented. If no

³ USFS currently has site-specific desired condition statements for NFS land, which will be followed in the Revegetation Plans.

response is received from USFS within 30 days, the Revegetation Plan will be implemented as written. When possible, the Revegetation Plan will be developed and submitted to USFS at least 10 days prior to the Agency Consultation Meeting, with the potential for a total of 30 to 60 days for review (i.e., 10 days for review prior to the Agency Consultation Meeting and between 20 to 50 days for review after the meeting). In these cases, comments will be discussed at the Agency Consultation Meeting and provided to DWR in writing for incorporation into the final Revegetation Plan. It should be noted that the timeframe specified above assumes that this timeline is feasible; shorter deadlines may be required and negotiated to complete FERC mandated repairs or maintenance, as dictated by the specific orders or mandates.

For sites smaller than one-half acre on NFS lands, DWR will develop a list of revegetation actions, including species to be planted, methods of revegetation and an implementation schedule. The list of actions will be submitted to USFS for approval within 30 days of any scheduled revegetation action, or within an agreed upon timeframe prior to any scheduled revegetation action. If approved, revegetation will proceed; otherwise, the actions will be revised and resubmitted for approval. If there is no response from USFS within 30 days, DWR will implement the revegetation actions.

4.1.4 Revegetation Methods

On NFS lands, revegetation will be consistent with USFS guidelines for revegetation (USFS 1994, 2013). On all lands, revegetation efforts will commence within 30 days of the completion of ground disturbance activities or as soon as feasible depending on weather, seasonality, or other considerations affecting the success of the effort. Revegetation will begin with site preparation, which, if necessary, may include breaking up soils to reduce compaction and ease seeding and planting. At sites where compaction may be a problem, topsoil (the upper 12 inches of soil, when present) may be removed and salvaged in such a manner as to keep it usable for replanting. If topsoil is to remain in place for longer than one month, it will be stored in a manner to maintain soil microbe health and prevent NNIP establishment. At some sites, amendments, such as compost or fertilizer, may be added to the soil. In sites that are being seeded, seeding will take place a few days after topsoil is replaced, or soon thereafter as reasonably practicable during the appropriate season (i.e., prior to the rainy season).

The selection of appropriate species for revegetation is dependent upon a number of different factors, including site-specific management objectives, physical characteristics of the site, seed availability and cost, genetic makeup, and species morphology and ecology. DWR will coordinate with DPR on the proposed plant pallets, and will use commercially available native seed mixes collected from the immediate vicinity of the site where feasible or from the regional area that will comprise the same species as those being disturbed by the project.

For sites over one-quarter acre and smaller than one-half acre on NFS lands, DWR will use a native seed mix that is commercially-available and composed of native seed only, which will be reviewed by USFS during the Agency Consultation Meeting. In general,

standard or customized commercially available seed mixes will be used on larger sites greater than one-half acre, as detailed in the site-specific Revegetation Plans or actions. A mixture of seeding techniques may be used and will be described in the individual Revegetation Plans or actions. Seeding rates will be determined based on pure live seed methods and in a mixture to improve seeding success. Seeds will be covered with not more than three times the thickness of the seed. Sites will be covered with mulch from onsite materials (e.g., chipped trees/slash) after seeding, with the intent of covering the surface through germination. If there is no onsite material or an insufficient amount, certified weed free mulch will be utilized.

Larger sites will typically be replanted, where consistent with existing habitat, with a mixture of native trees, shrubs, and forbs. For some sites, it may be feasible to use salvaged plants or seed and stock collected onsite ahead of time. Where salvage is not feasible, purchased native plants will be used. Specifics will be described in detail in the site actions or Revegetation Plans. All plant materials will be handled as little as reasonably possible and protective features for planted vegetation will be installed where necessary.

Seeding of all areas subject to revegetation, including topsoil piles and berms, will commence within 30 days following construction or ground-disturbing activities, or as soon as feasible depending on weather, seasonality, or other considerations affecting the success of the effort.

4.1.5 Revegetation Monitoring

Each revegetation site will be monitored annually for up to three years until criteria from developed actions or plans (per the Agency Consultation Meeting) are met. If, after three years, success criteria are not met, consultation with the appropriate resource agency will take place and remedial measures will be implemented, if determined necessary.

Monitoring of revegetation projects may include monitoring vegetation cover, species richness, survivorship, and native and invasive tree and shrub species counts. At the Agency Consultation Meeting, a revegetation monitoring update will be provided..

Based on past wildfire events, it is possible that a revegetation site may be burned from a local wildfire. In the event that a site in the process or designated for revegetation is burned from a wildfire, the revegetated areas will be re-evaluated and active revegetation activities may be abandoned.

4.2 ROUTINE VEGETATION MANAGEMENT

A variety of routine vegetation management activities will be conducted, often driven by regulatory requirements. These measures ensure safe and continued Project operations and include the continued implementation of ongoing fire protection measures to comply with applicable codes and safeguard Project assets. This includes, for example, creating a defensible space around Project structures, as discussed in the Fire Prevention Plan, Recreation Management Plan, Erosion and Sediment Control Plan, Hazardous Materials Plan, and Historic Properties Management Plan which are

provided in DWR's Application for New License. Routine vegetation management activities are enacted while protecting sensitive resources and preventing/minimizing the introduction, establishment, and/or spread of NNIP (see Section 2.0, Non-Native Invasive Plant Management, and Section 3.0, Special-Status Plants and Sensitive Natural Communities Monitoring). Examples of routine vegetation management include facility and transmission line management, road maintenance, hazard tree removal, and recreation site management.

4.2.1 Facility Management

Vegetation will be routinely controlled as required for safety and compliance in the immediate vicinity of Project facilities, including powerhouses, access roads, support facilities, access trails, tunnels, conduits, overchutes, transmission lines, diversions, gages, dam faces, and reservoirs. Activities typically include vegetation trimming or clearing, ditch cleaning, and spraying herbicides. To maintain vegetation control at Project facilities and adjacent areas, mechanical or chemical methods will be utilized. The necessary permissions will be obtained from USFS prior to applying herbicides on NFS lands. Any documented occurrences of special-status plants or sensitive natural communities will be protected from vegetation management at facilities (see Section 3.0, Special-Status Plants and Sensitive Natural Communities Monitoring).

4.2.2 Road Maintenance

Project O&M activities conducted along roads typically include landslide and debris removal, road grading, vegetation trimming and clearing, and culvert cleaning. As much as practical, the timing of these activities will be coordinated such that any scheduled surveys for NNIP or special-status plant species will be completed prior to vegetation clearing and NNIP treatments. Vegetation that occurs along roadsides frequently encroaches into those roads and requires trimming and/or mowing. DWR will take reasonable measures to prevent the potential for cross contamination of equipment used to manage roadside vegetation (free of target NNIP) and target NNIP. Equipment will be cleaned after cutting/mowing the target NNIP as soon as reasonably possible. When areas of dense shrubs are cut/mowed, they will be chipped onsite. However, no documented population of a target NNIP will be chipped.

When mulch is needed for erosion control during road maintenance activities, it is preferable to use mulch from onsite native materials (e.g., chipped trees/slash). Materials should not pose an entanglement risk to wildlife, and the placement should be such that it does not pose a barrier to wildlife movement. If mulch from onsite materials is unavailable, then a certified weed-free mulch will be obtained from other sources, if a weed-free product is commercially available. When mulch is needed to prevent weed establishment along roads, it will have high void spaces (long-fiber mulch), low water-holding capacity and be relatively deep (dependent on the type of weed, a depth of 2 to 4 inches). Material from right-of-way clearing (e.g., road-side brushing) can be shredded (to create long-fiber mulch), but woody NNIP species will not be shredded or used as mulch.

Any documented occurrences of special-status plants or sensitive natural communities will be protected from vegetation management during road maintenance activities (see Section 3.0, Special-Status Plants and Sensitive Natural Communities Monitoring).

4.2.3 Recreation Site Management

4.2.3.1 *Special-Status Plants or Sensitive Natural Communities*

Any documented occurrences of special-status plants or sensitive natural communities at Project recreation facilities will be protected from recreation site vegetation management activities (see Section 3.0, Special-Status Plants and Sensitive Natural Communities Monitoring).

4.2.3.2 *Hazardous Tree Removal*

At Project recreation sites, vegetation management activities include the removal of vegetation, hazardous branches, and hazard trees, as identified by DPR and DWR, to facilitate recreation activities, protect public safety, and reduce fire hazards. Hazardous trees will be surveyed for wildlife usage before removal, unless immediate removal is required to protect life and property.

When DWR identifies non-emergency hazard trees, those trees will be surveyed for the presence of bats or their habitat prior to their removal. Each tree will be assessed for their suitability as roosting habitat, using a scoring system of 0-3, with 0 being no suitability and 3 representing trees with signs of bats. Trees will be assessed based on the presence of bats and bat signs (e.g., guano, staining), cavities, sloughing bark, height and size. For trees with a score of 2, a bat emergence survey will be conducted following standard protocol no more than five days prior to tree removal. If bats or bat signs are located at a hazard tree, the tree will not be removed until surveys verify no bats are present. A biological monitor will check the hazard tree directly prior to removal to confirm no bats are present.

4.2.3.3 *Fuel Reduction Treatments*

Within and adjacent to all developed Project recreation sites on State lands, DPR and DWR will coordinate with fuels reduction treatments (removal of standing and downed dead fuels) at developed Project recreation facilities. Slash will be chipped and broadcast onsite, or piled at an agreed upon location for DPR to burn.

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5.0 HERBICIDE BEST MANAGEMENT PRACTICES

5.1 APPLICATION AND SCHEDULE

Treatment in areas that are required to be void of vegetation generally requires the use of herbicides, and is DWR's preferred safe and practical method to meet FERC-mandated conditions required for the protection and inspection of hydroelectric facilities. Although this is the preferred method, other reasonable and practicable methods for vegetation treatment will be evaluated prior to proposing herbicides.

The choice of methods will be based on an analysis of potential environmental impacts and anticipated effectiveness, along with site characteristics, security, safety and health, and economics. Site-specific measures will be identified and implemented to protect non-target plants and animals. Proposed vegetation management treatments on NFS lands will be part of the Agency Consultation Meeting (see Section 6.2, Agency Consultation) between DWR and USFS. Additionally:

- When feasible, manual methods of vegetation removal will be utilized. In addition, non-toxic herbicides (i.e., soap and vinegar-based herbicides) will be used where applicable and/or feasible.
- Any herbicides used on the Project will be limited to products registered with the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation.
- Herbicides will be applied according to label instructions and use restrictions by qualified pesticide applicators, under recommendation from a certified pesticide advisor.
- Any USFS conditions relating to herbicide use on NFS lands will be referenced during development of site-specific applications for herbicide use.

During the Agency Consultation Meeting, a request for approval of planned uses of herbicides on NFS lands for the upcoming year will be submitted. At a minimum, the following information will be discussed:

- Specific locations of use
- Specific herbicides proposed for use
- Application rates
- Dose and exposure rates
- Safety risk and timeframes for application
- Explanation of why herbicide applications are essential for use on NFS lands

Exceptions to this schedule may be allowed only when unexpected outbreaks of NNIP require control measures that were not anticipated at the time of the Agency Consultation Meeting. Schedule details will be developed with the application proposal to USFS for NFS lands, but generally spring and fall applications are most effective due to botanical physiological activity.

5.2 LOCATIONS FOR HERBICIDE APPLICATION

Specific locations for herbicide application are generally associated with Project facilities where bare ground is required. For the Project, these locations include but are not limited to: Project powerhouse, access roads, gaging stations, and land beneath overhead powerlines. Treatment in these areas generally requires the use of herbicides and is DWR's preferred safe and practical method to meet FERC-mandated conditions required for the protection and inspection of hydroelectric facilities. Most of these locations are not on NFS lands. Specific locations will be included when proposals for herbicide application on NFS lands are submitted to USFS.

Additional locations may be associated with invasive weed control. See Figures 2.1-1 through 2.1-5 for currently known locations of invasive weeds. In some cases, NNIP locations may be outside the Project boundary, but still have a high potential for dispersal into the Project boundary; these will be discussed during the Agency Consultation Meeting and will be managed in a coordinated effort by DWR, DPR, and USFS.

5.3 APPLICATION ON NATIONAL FOREST SYSTEM LANDS

When feasible, herbicide use and application on NFS lands should be avoided. During the Agency Consultation Meeting, a request for approval of planned uses of herbicides on NFS lands for the upcoming year will be submitted to USFS. If herbicide use is necessary on NFS lands, only USFS-approved herbicides, such as Glyphosate, Triclopyr, Imazapyr, or Sporax, will be used.

5.4 METHODS

Prior to each site-specific treatment, DWR's decision process for selecting one or more invasive weed control method will consider the following:

- Site access
- Physical size and characteristics of the area to be treated, including soils, general terrain, and slopes
- Extent of native vegetation and native plant communities to be avoided during treatment when feasible
- Availability and effectiveness of biological control methods
- Potential effects on special-status plants and animals, and how adverse effects will be avoided or minimized

- Seasonal conditions affecting plant growth, including temperature, wind, and precipitation
- Proximity to surface water bodies and potential for run-off
- Proximity to recreational use areas
- Economics
- Control goals

Only herbicides registered in California will be used within the Project boundary. If the application site is within the NFS and once permission is obtained from USFS, all USFS policies and practices relating to herbicide use will be followed.

Any herbicides used on the Project will be applied by licensed and certified herbicide applicators. Only herbicides registered for aquatic use by the California Department of Pesticide Regulation will be utilized within or adjacent to streams, reservoirs, riparian and wetland vegetation, and other aquatic habitats per label instructions and streamside management zone buffers. Label instructions will be followed in the preparation and application of herbicides and disposal of excess product and containers. Site-specific recommendations will be prepared by a licensed Pest Control Advisor for herbicide applications. All chemical application staff including DWR's contractors will be qualified, trained, and licensed, and will adhere to rules, regulations, and reporting requirements.

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6.0 TRAINING, CONSULTATION, AND PLAN REVISIONS

6.1 EMPLOYEE AND CONTRACTOR TRAINING

Biennial and as-needed environmental training for appropriate staff and contractors working within the Project boundary will be provided, as outlined in Section 3.4 above. The goal of the training will be to familiarize staff and contractors with special-status species, target and watch list NNIP, and sensitive areas known or suspected to occur within the Project boundary, and procedures to avoid adverse effects. The training will include information on the following:

- NNIP BMPs, with an emphasis on preventing spread of existing occurrences
- Recognition of any known special-status plants, sensitive natural communities, and special-status wildlife present within the Project boundary
- Recognition of high-priority terrestrial NNIP species (based on guidelines described above)
- Reporting procedures for special-status plants and NNIP

6.2 AGENCY CONSULTATION

DWR will annually review with SBNF the IVMP management activities on NFS lands for the previous calendar year as well as any activities planned for the upcoming calendar year.

The goals of this review are to share information, identify concerns regarding activities and their potential effects on sensitive resources, and determine measures required to avoid or mitigate potential effects. At each Agency Consultation Meeting, DWR will review with USFS, as appropriate, vegetation management activities (including treatment of target NNIP infestations, current BMPs and any updates to the current BMPs, and necessary revegetation planning or monitoring) planned for the upcoming calendar year on NFS lands, identify any IVMP revisions needed for these activities, and make adjustments to the IVMP or schedule for these activities, as deemed appropriate.

6.3 PLAN REVISIONS

DWR will evaluate the requirements of this IVMP during the life of the new license and may modify those requirements in consultation with USFS, DPR, and CDFW. DWR will allow 30 days for the SBNF, CDFW, and SWRCB to provide written comments and recommendations before filing the updated IVMP with FERC for approval. DWR will include documentation of all relevant coordination and consultation associated with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation, the filing will include DWR's reasons for not doing so. DWR will implement the IVMP as approved by FERC. The IVMP will not be considered revised until FERC issues its approval.

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7.0 REFERENCES CITED

- California Department of Fish and Wildlife (CDFW). 2018a. California Natural Diversity Database. Special Vascular Plants, Bryophytes, and Lichens List. August 2018. Quarterly publication. 126 pp. Available online: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline>. Accessed: August 28, 2018.
- _____. 2018b. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities. Sacramento, California.
- _____. 2018c. California Natural Communities List. January 24, 2018. Biogeographic Data Branch. Sacramento, California.
- _____. 2009. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities.
- California Native Plant Society (CNPS). 2018. Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Available online: <http://www.rareplants.cnps.org>. Accessed: July 6, 2018.
- Lerch, Michael K. and Karen K. Swope. 2019. Tribal Resources Study Report. Prepared by Statistical Research, Inc., Woodland. Prepared for Albion Environmental, Inc., Santa Cruz.
- U.S. Department of Agriculture, Conservation Service (USDA). 2015. National Resources Inventory, Revised September 2015. Accessed: September 2, 2019.
- U.S. Department of Agriculture, Forest Service (USFS). 2013. Forest Service National Strategic Framework for Invasive Species Management. Available online: <https://www.fs.usda.gov/main/r5/plants-animals>. Accessed: August 28, 2018.
- _____. 2012. National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide. Forest Service FS-990a. April 2012.
- _____. 2011. United States Department of Agriculture Forest Service Handbook 2509.22 – Soil and Water Conservation Practices Handbook. San Bernardino National Forest Supplement No. 2509.22-2011-1. Vallejo, California.
- _____. 2005a. United States Department of Agriculture Forest Service Threatened, Endangered, and Sensitive Plants Survey Protocol Field Guide. Rangeland Management Staff. Washington, D.C.
- _____. 2005b. United States Department of Agriculture Forest Service Threatened, Endangered and Sensitive Plants Element Occurrence Protocol Field Guide. Rangeland Management Staff. Washington, D.C.

_____. 1994. Forest Service Handbook 2109.14 – Pesticide-Use Management and Coordination Handbook. Effective December 6.

U.S. Fish and Wildlife Service. 1996. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. Available online:
<https://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf>.

Appendix A

Results of NNIP Surveys

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Table A.1-1. Target NNIP Species Surveyed Within the Project Boundary

Scientific Name ¹	Common Name	CDFA Rating ²	Cal-IPC Rating ³	NFS Invasive Non-Native Plant Species List ^{4,5}
* <i>Ageratina adenophora</i>	eupatory	--	Moderate	Y
** <i>Ailanthus altissima</i>	tree-of-heaven	C	Moderate	Y*
** <i>Arundo donax</i>	giant reed	B	High	Y*
* <i>Brassica nigra</i>	black mustard	--	Moderate	Y
* <i>Brassica tournefortii</i>	Sahara mustard	--	High	Y
* <i>Bromus diandrus</i>	ripgut brome	--	Moderate	Y
* <i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome	--	High	Y
* <i>Bromus tectorum</i>	cheatgrass	--	High	Y*
** <i>Centaurea melitensis</i>	toçalote	C	Moderate	Y
** <i>Centaurea solstitialis</i>	yellow star-thistle	C	High	Y*
** <i>Cirsium vulgare</i>	bull thistle	C	Moderate	Y
* <i>Cortaderia selloana</i>	Pampas grass	--	High	Y*
* <i>Eucalyptus globulus</i>	blue gum	--	Limited	Y
* <i>Festuca</i> (= <i>Schedonorus</i>) <i>arundinacea</i>	reed fescue	--	Moderate	Y
* <i>Ficus carica</i>	edible fig	--	Moderate	Y
* <i>Foeniculum vulgare</i>	fennel	--	Moderate	Y
* <i>Hedera helix</i> and <i>H. canariensis</i>	English Ivy, Algerian Ivy	--	High	A Y
* <i>Picris</i> (= <i>Helminthotheca</i>) <i>echioides</i>	bristly ox-tongue	--	Limited	Y
* <i>Holcus lanatus</i>	common velvet grass	--	Moderate	Y
* <i>Lolium perenne</i> ssp. <i>multiflorum</i>	Italian ryegrass	--	--	Y
* <i>Medicago polymorpha</i>	California burclover	--	Limited	A
* <i>Nicotiana glauca</i>	tree tobacco	--	Moderate	Y
* <i>Pennisetum setaceum</i>	crimson fountain grass	--	Moderate	A
* <i>Ricinus communis</i>	castor bean	--	Limited	Y
* <i>Robinia pseudoacacia</i>	black locust	--	Limited	Y
* <i>Rubus armeniacus</i> (= <i>discolor</i>)	Himalayan blackberry	--	High	Y
** <i>Salsola tragus</i>	Russian thistle	C	Limited	Y
** <i>Saponaria officinalis</i>	bouncing-bet	C	Limited	Y
* <i>Schinus molle</i>	Peruvian pepper tree	--	Limited	Y
* <i>Schismus arabicus</i> , <i>S. barbatus</i>	Mediterranean grass	--	Limited	Y
* <i>Silybum marianum</i>	milk thistle	--	Limited	A Y?

Table A.1-1. Target NNIP Species Surveyed Within the Project Boundary (continued)

Scientific Name ¹	Common Name	CDFA Rating ²	Cal-IPC Rating ³	NFS Invasive Nonnative Plant Species List ^{4,5}
** <i>Spartium junceum</i>	Spanish broom	C	High	Y*
** <i>Tamarix parviflora</i> , <i>T. ramosissima</i>	saltcedar	B	High	Y*
* <i>Verbascum thapsus</i>	woolly mullein	--	Limited	Y
* <i>Vinca major</i>	periwinkle	--	Moderate	Y
Subtotal of NNIP Species with CDFA and Cal-IPC Ratings		9	35	36 species are identified by USFS as occurring in or near SBNF
Total		36		

Notes:

*Full-datasets collected only on NFS land

**Occurrence mapped wherever found

¹For species that are not listed by CDFA (identified with one asterisk), data were collected in accordance with USFS protocols (United States Department of Agriculture, Forest Service. 2013. Forest Service National Strategic Framework for Invasive Species Management. Available online: <https://www.fs.usda.gov/main/r5/plants-animals>. Accessed: August 28, 2018.) only for occurrences on NFS lands. For species identified with two asterisks (species that have a CDFA Rating of A, B, or C), occurrence data were collected wherever they were observed.

²CDFA Ratings:

- B = Pest of known economic or environmental detriment and, if present in California, it is of limited distribution;
- C = Pest of known economic or environmental detriment and, if present in California, it is usually widespread.

³Cal-IPC Ratings (Cal-IPC ratings are provided for reference but were not a criterion in determining which species were target species):

- Limited = These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.
- Moderate = These species have substantial and apparent, but generally not severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- High = These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

⁴USFS Designation:

- A = adjacent or near Forest, reasonable to expect invasion on Forest lands within next five years (as cited in U.S. Department of Agriculture, Forest Service. 2005. Land Management Plan Part 1, Southern California National Forests. USFS Pacific Southwest Region. R5-MB-075. September 2005.)
- Y = present on Forest
- Y* = Forest is currently treating, in process of treating or has treated in past
- Y? = plants are adjacent or near and highly likely to be present but not documented

⁵U.S. Department of Agriculture, Forest Service. 2005. Land Management Plan Part 1, Southern California National Forests. USFS Pacific Southwest Region. R5-MB-075. September 2005.

Key:

Cal-IPC = California Invasive Plant Council
CDFA = California Department of Food and Agriculture
NFS = National Forest System
SBNF = San Bernardino National Forest
USFS = U.S. Department of Agriculture, Forest Service

Table A.1-2. NNIP Target Species Occurrences Within the Project Boundary

Scientific Name	Common Name	NFS Land Occurrence	Number of Occurrences in the Project Area
<i>Ailanthus altissima</i>	tree of heaven	No	3
<i>Brassica nigra</i>	black mustard	Yes	2
<i>Bromus diandrus</i>	ripgut brome	Yes	2
<i>Bromus madritensis ssp. rubens</i>	red brome	Yes	1
<i>Bromus tectorum</i>	cheat grass	Yes	1
<i>Centaurea melitensis</i>	totalote	Yes	29
<i>Cirsium vulgare</i>	bull thistle	No	61
<i>Robinia pseudoacacia</i>	black locust	Yes	1
<i>Salsola australis/tragus</i>	Russian thistle	No	4
<i>Saponaria officinalis</i>	bouncing bet	No	10
<i>Silybum marianum</i>	blessed milk thistle	Yes	1
<i>Spartium junceum</i>	Spanish broom	Yes	38
<i>Tamarix parviflora, T. ramosissima</i>	saltcedar	No	24
Total			177

Note: NNIP target species occurrences within the Project boundary were documented during DWR's 2017 field surveys. Excludes the area over the San Bernardino Tunnel.

Key:

NFS = National Forest System

NNIP = non-native invasive plant

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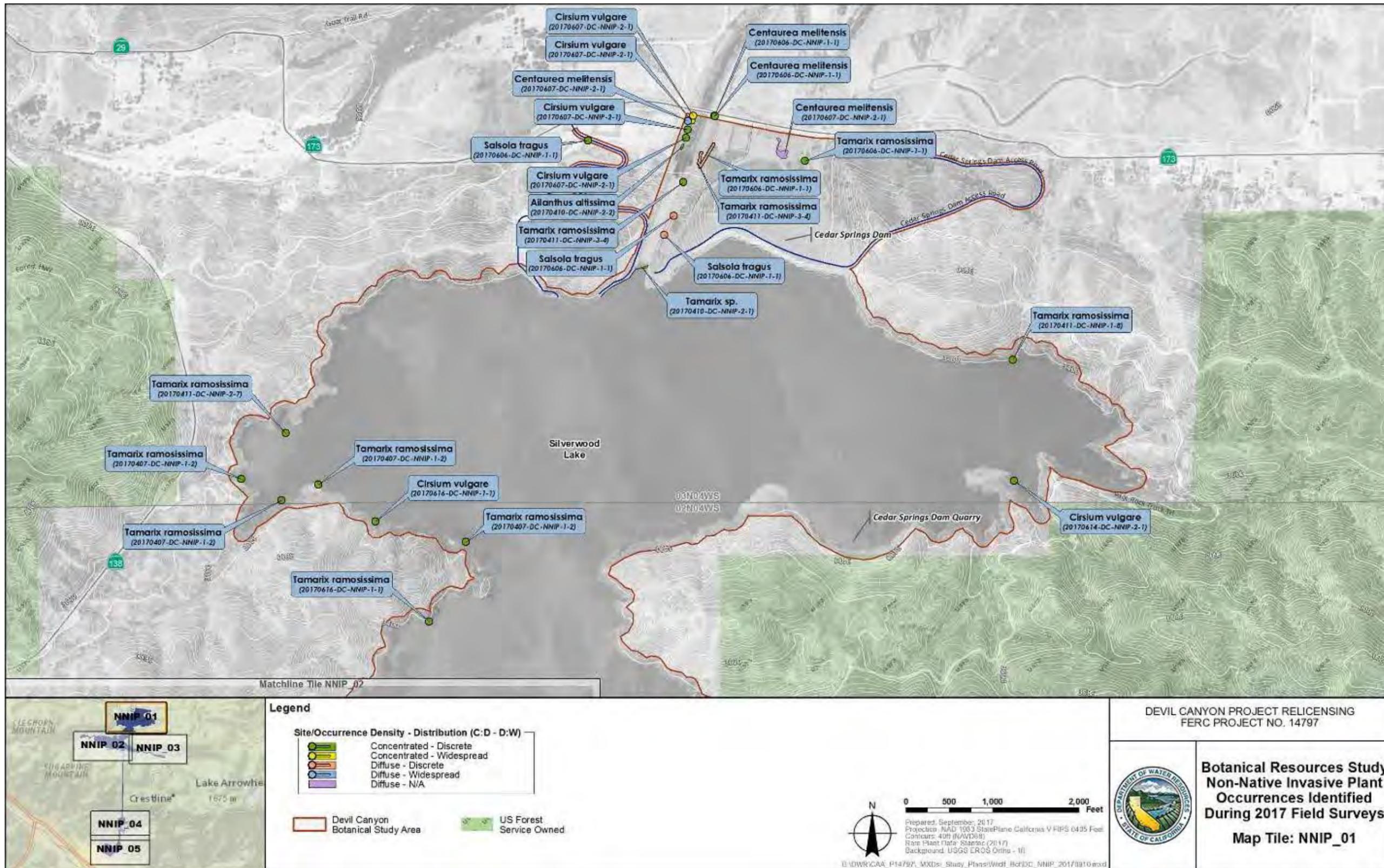


Figure A.1-1. Non-Native Invasive Plant Occurrences Identified During 2017 Field Surveys

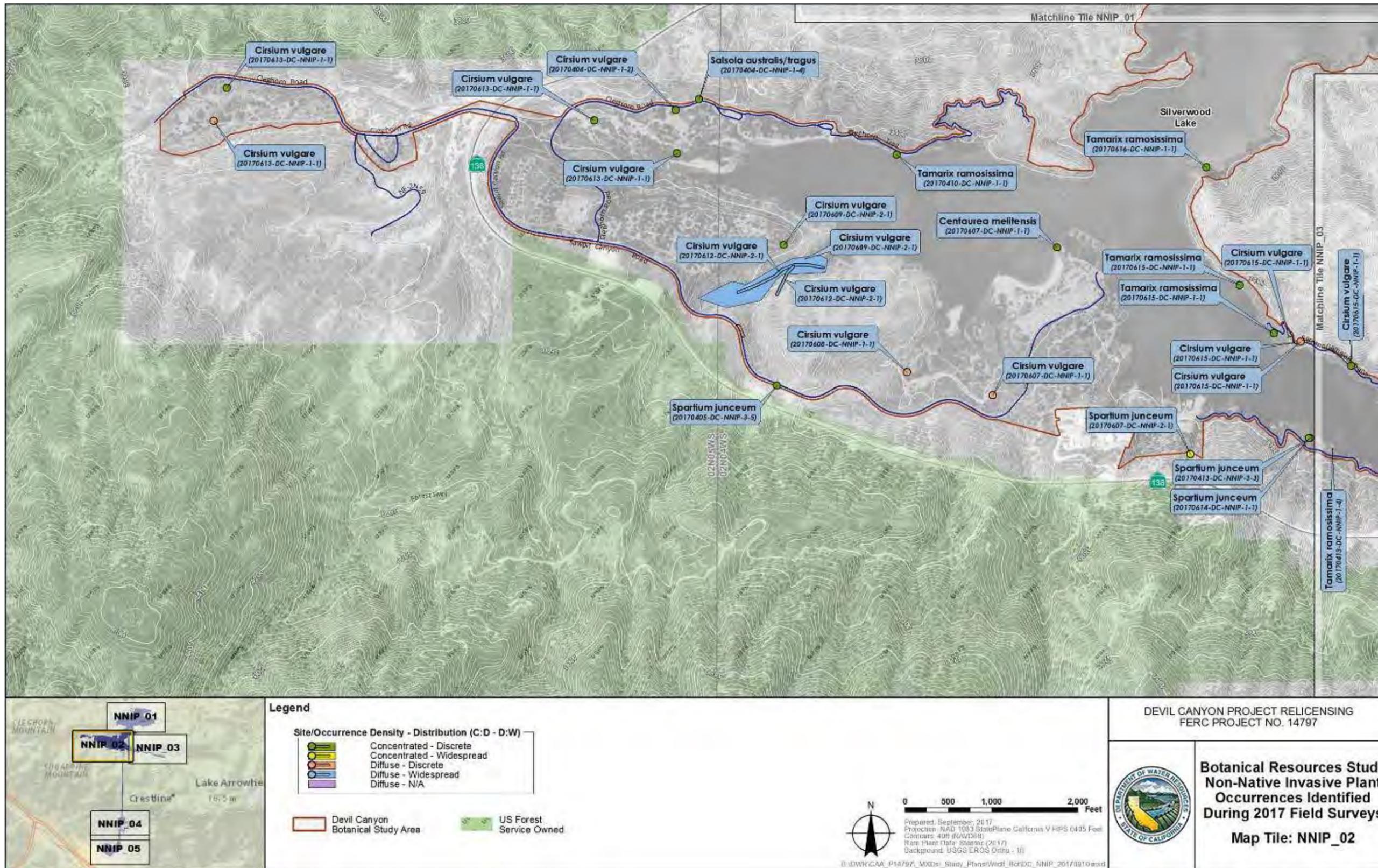


Figure A.1-2. Non-Native Invasive Plant Occurrences Identified During 2017 Field Surveys

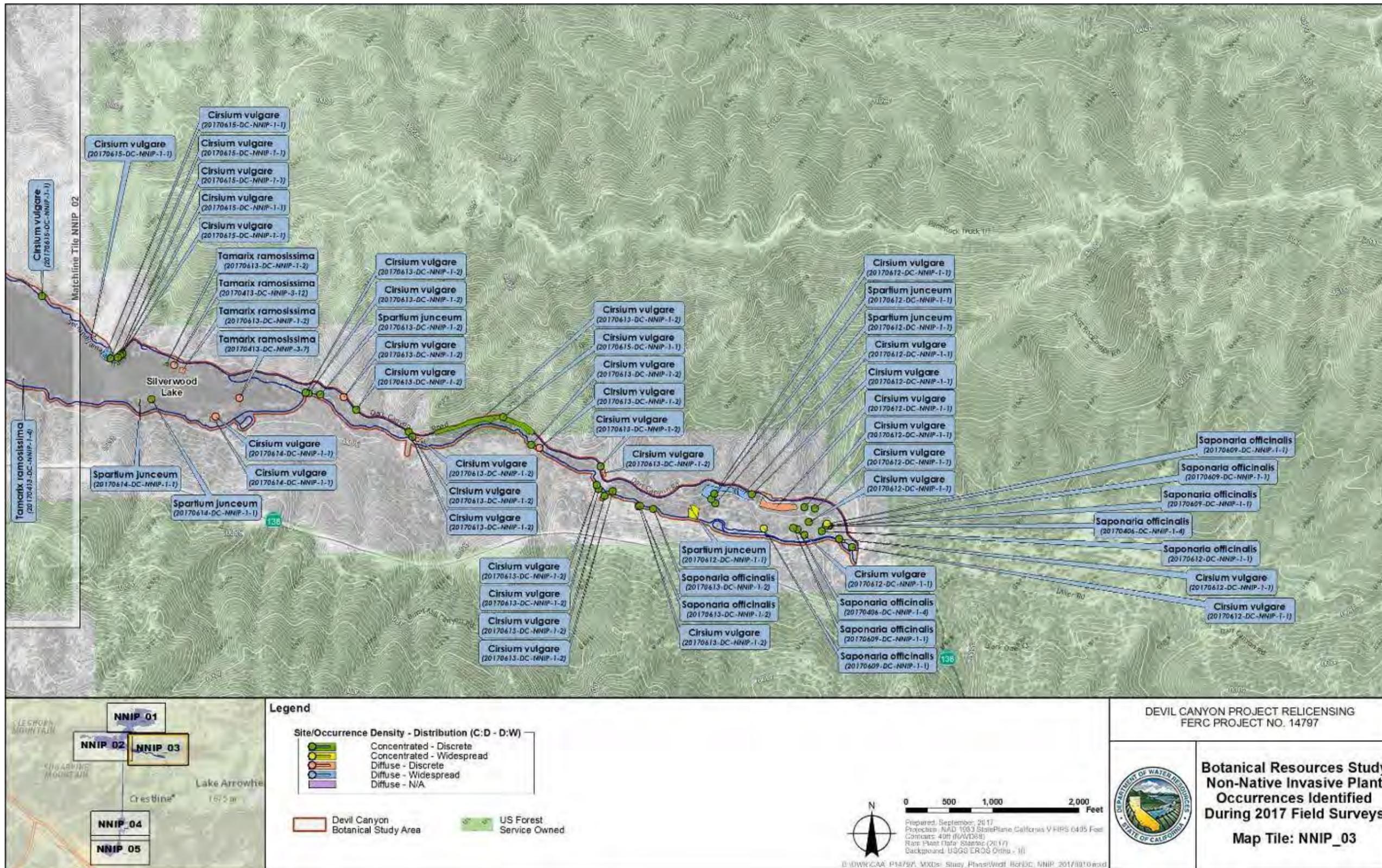


Figure A.1-3. Non-Native Invasive Plant Occurrences Identified During 2017 Field Surveys

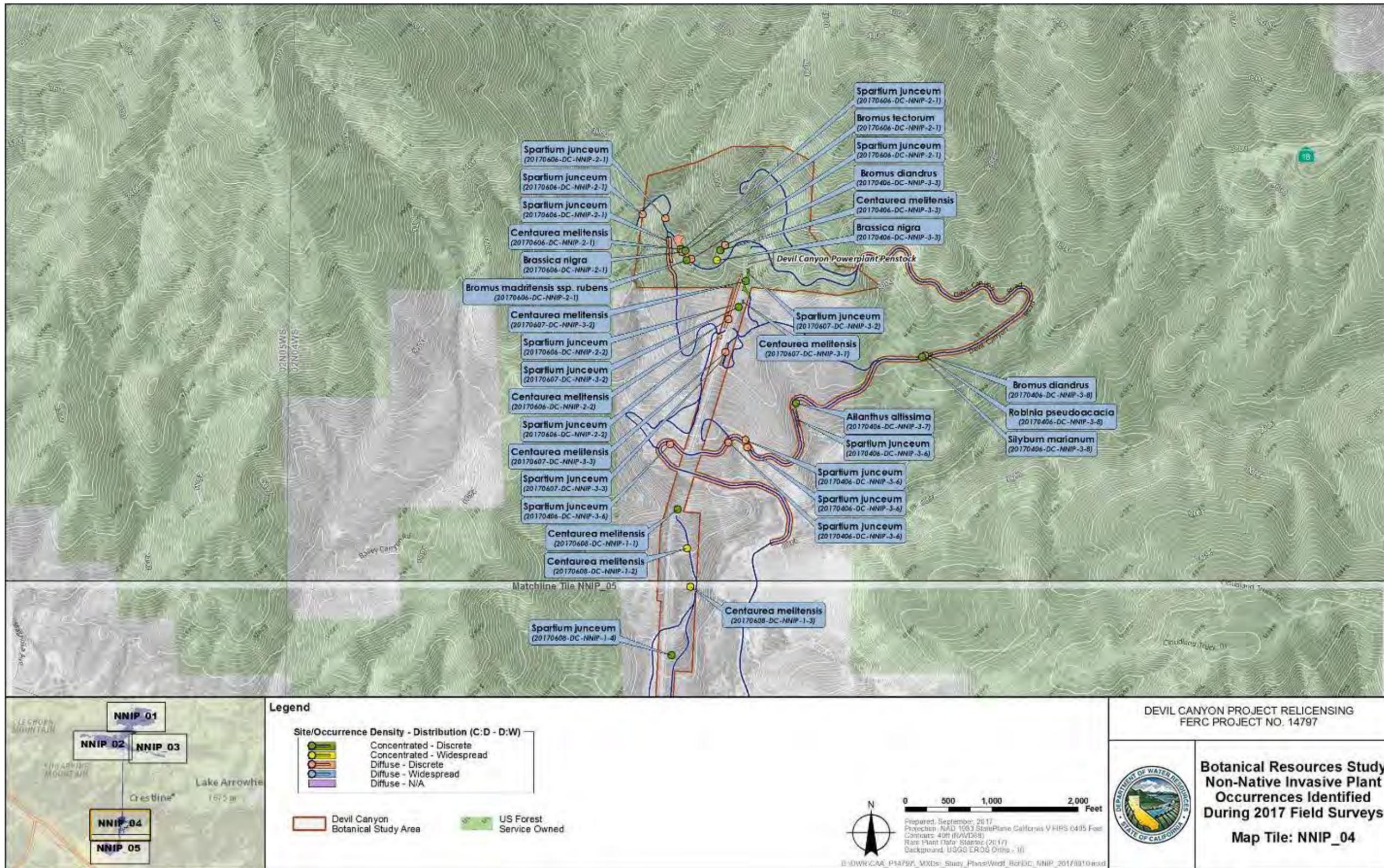


Figure A.1-4. Non-Native Invasive Plant Occurrences Identified During 2017 Field Surveys

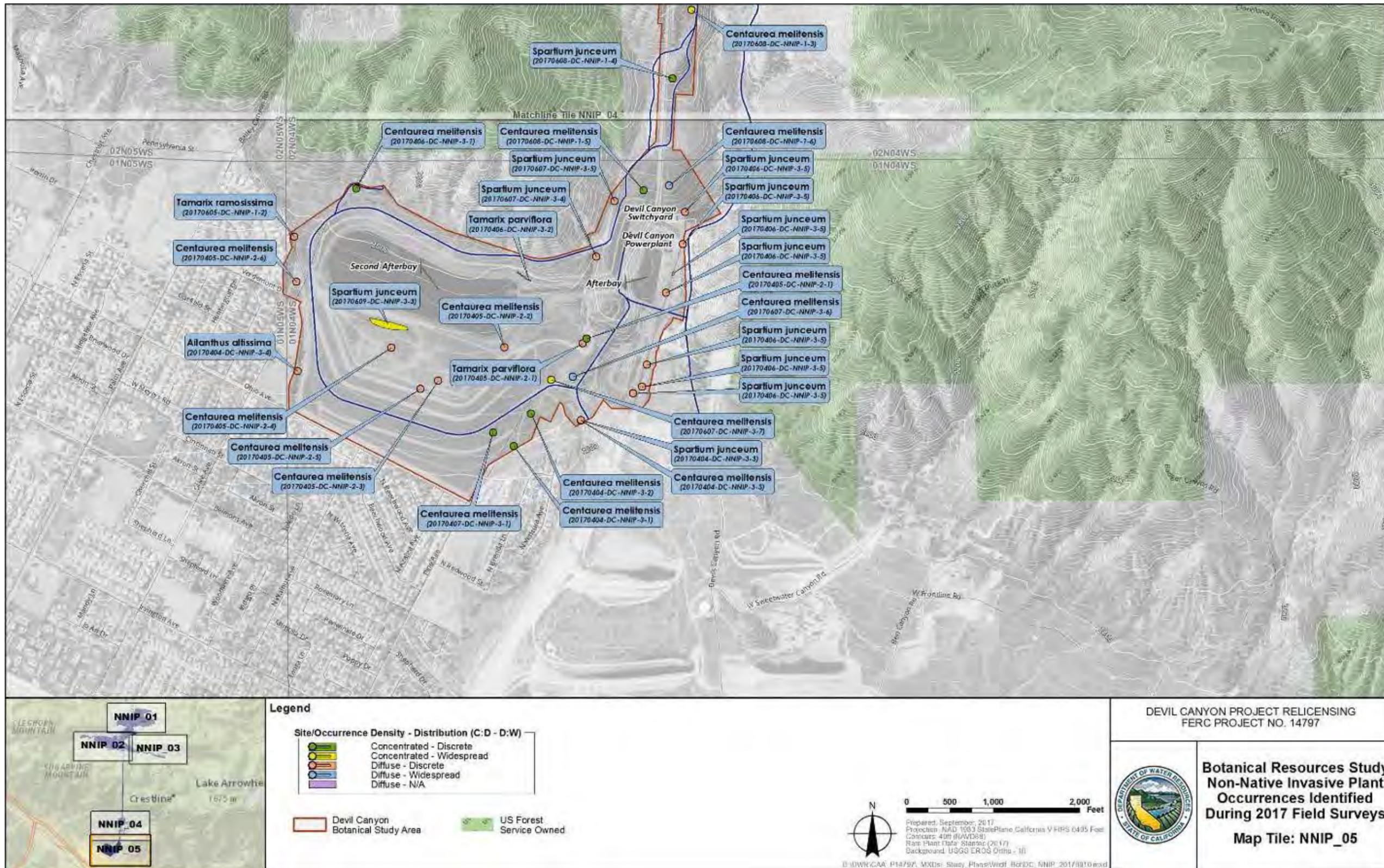


Figure A.1-5. Non-Native Invasive Plant Occurrences Identified During 2017 Field Survey

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Appendix B

USFS Recommended BMPs

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Road Management Activities BMPs

Road-4. Road Operations and Maintenance. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling road use and operations and providing adequate and appropriate maintenance to minimize sediment production and other pollutants during the useful life of the road.

Road-7. Stream Crossings. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing, reconstructing, or maintaining temporary and permanent waterbody crossings.

Road-9. Parking and Staging Areas. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing and maintaining parking and staging areas.

Road-11. Road Storm-Damage Surveys. Monitor road conditions following storm events to detect road failures; assess damage or potential damage to waterbodies, riparian resources, and watershed functions; determine the causes of the failures; and identify potential remedial actions at the damaged sites and preventative actions at similar sites.

Mechanical Vegetation Management Activities

Veg-1. Vegetation Management Planning. Use the applicable vegetation management planning processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during mechanical vegetation treatment activities.

Veg-2. Erosion Prevention and Control. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by implementing measures to control surface erosion, gully formation, mass slope failure, and resulting sediment movement before, during, and after mechanical vegetation treatments.

Veg-3. Aquatic Management Zones. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when conducting mechanical vegetation treatment activities around and adjacent to waterbodies.

Veg-8. Mechanical Site Treatment. Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling the introduction of sediment, nutrients, chemical, or other pollutants to waterbodies during mechanical site treatment.

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Appendix C

Special-Status Plant and Sensitive Natural Community Survey Results

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Table C.1-1. Special-Status Plant Occurrences Observed During 2017 Surveys

Scientific Name	Common Name	CNPS Ranking ²	Number of Occurrences	Location of Occurrences	Site Quality	Threats
<i>Calochortus plummerae</i>	Plummer's mariposa lily	4.2	20	Throughout the Project boundary (Figure 1.2-1); no occurrences were on NFS lands.	5 sites excellent, 10 sites good, 5 sites fair, 1 site poor	Recreation/human use; one occurrence on the west side of Silverwood Lake (feature 20170616-rp-sl-24-A) is threatened by erosion
<i>Juglans californica</i>	Southern California black walnut	4.2	21	Most occurrences are near Devil Canyon Powerplant. One occurrence is near the Silverwood Lake marina. Five occurrences were on NFS lands.	14 sites good, 21 sites fair, 1 site poor	Encroachment of NNIP, road and vehicle use, and human use; occurrences located within the powerplant area may potentially be affected by facilities maintenance
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	Ocellated Humboldt lily	4.2	2	East Fork of the West Fork Mojave River. No occurrences were found on NFS lands.	2 sites good	Recreation/human use
Total	3 Plant Species	4.2	43	--	--	--

Source: California Department of Fish and Wildlife. 2018. California Natural Diversity Database. Special Vascular Plants, Bryophytes, and Lichens List. August 2018. Quarterly publication. 126 pp. Available online: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline>. Accessed: August 28, 2018.

Notes:

¹CNPS Ranking: 4.2 = Plants of limited distribution that are moderately threatened in California (defined by CNPS as "20 to 80 percent occurrences threatened, with a moderate degree and immediacy of threat")

²An occurrence includes all plants of a given species mapped within 0.25-miles. Occurrences may include more than one "site" within 0.25-mile radius. Therefore, the number of sites may be greater than the number of occurrences.

Key:

CNPS = California Native Plant Society

NFS = National Forest System

NNIP = non-native invasive plant

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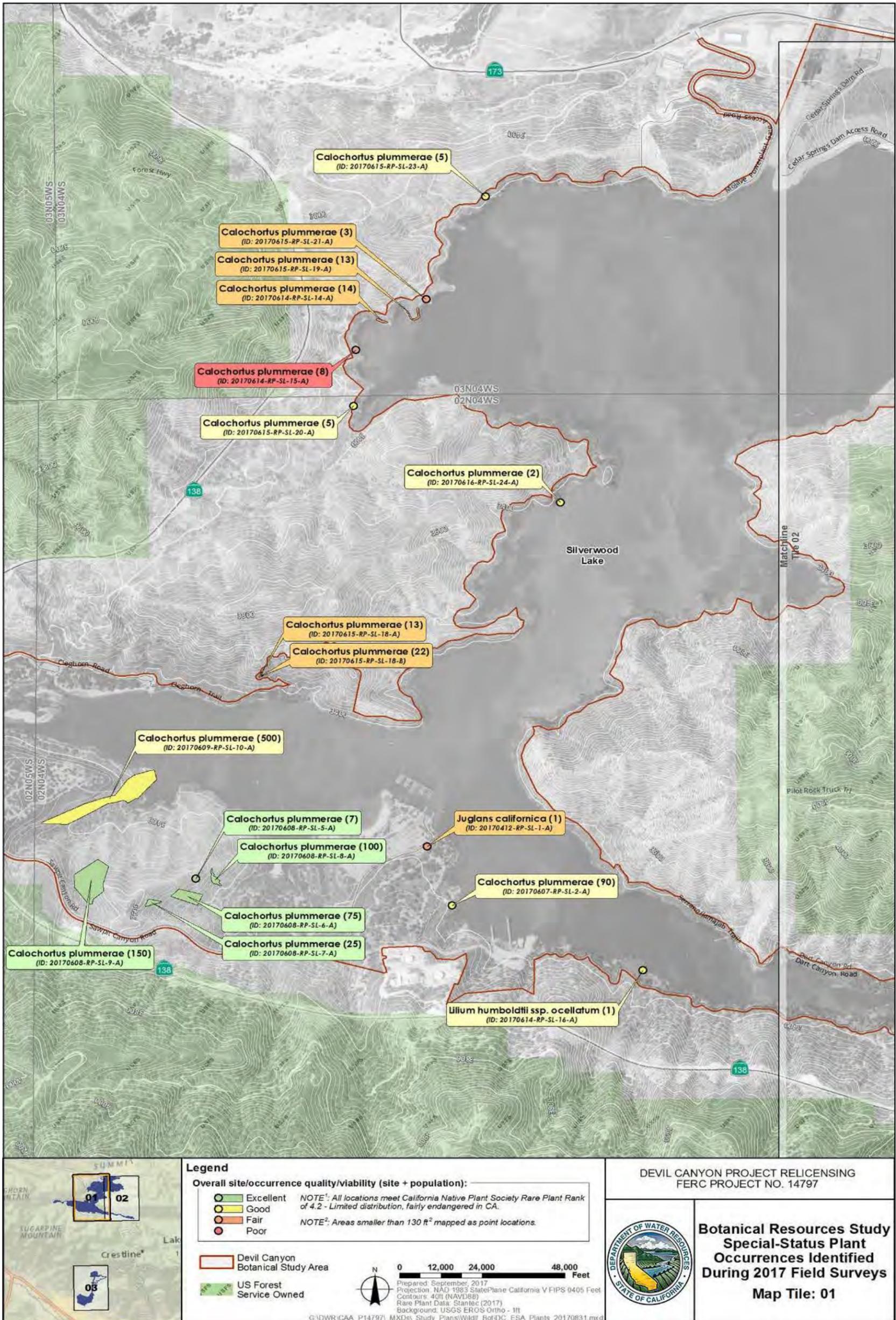


Figure C.1-1. Special-Status Plant Occurrences Identified During 2017 Field Surveys

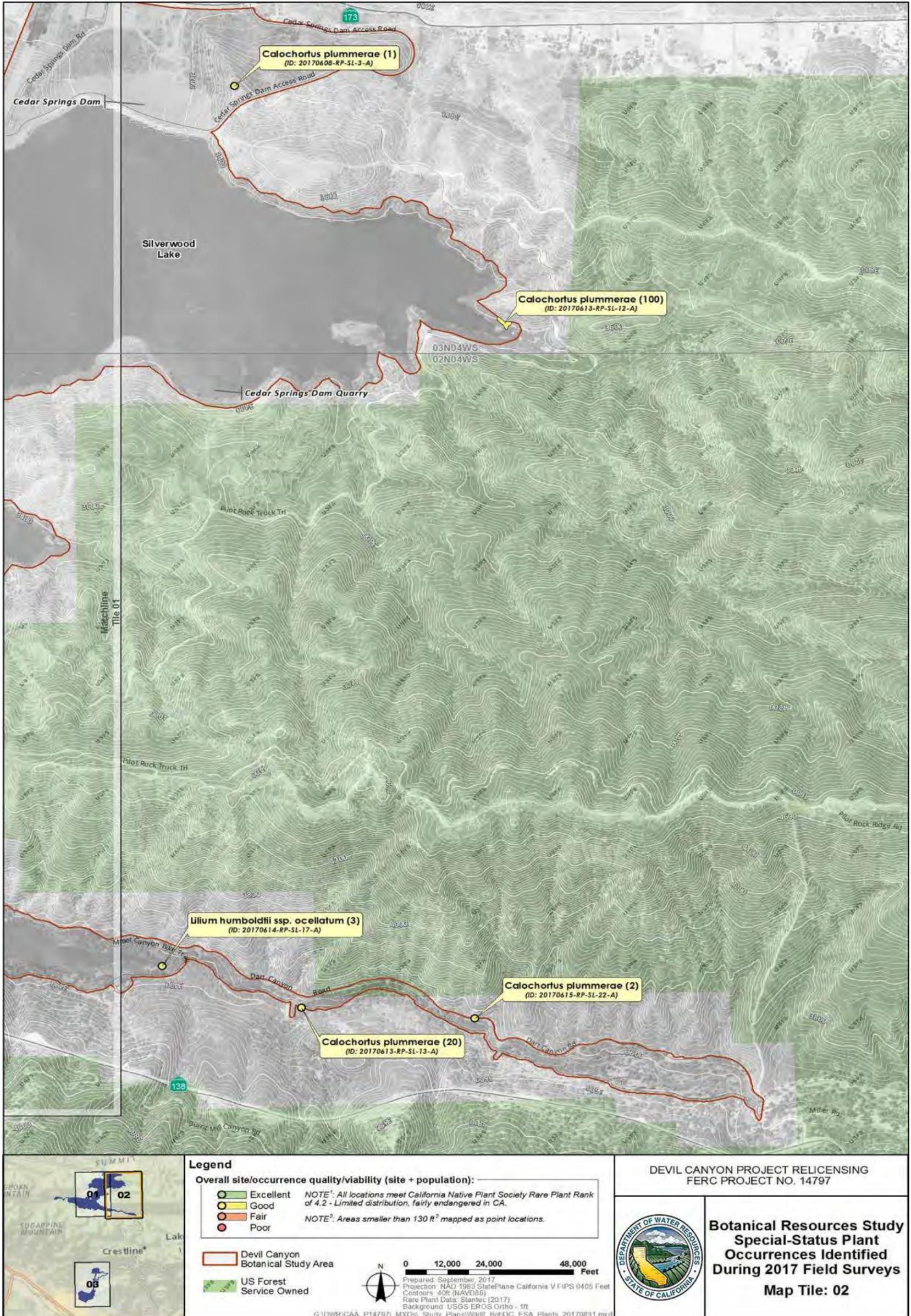


Figure C.1-2. Special-Status Plant Occurrences Identified During 2017 Field Surveys

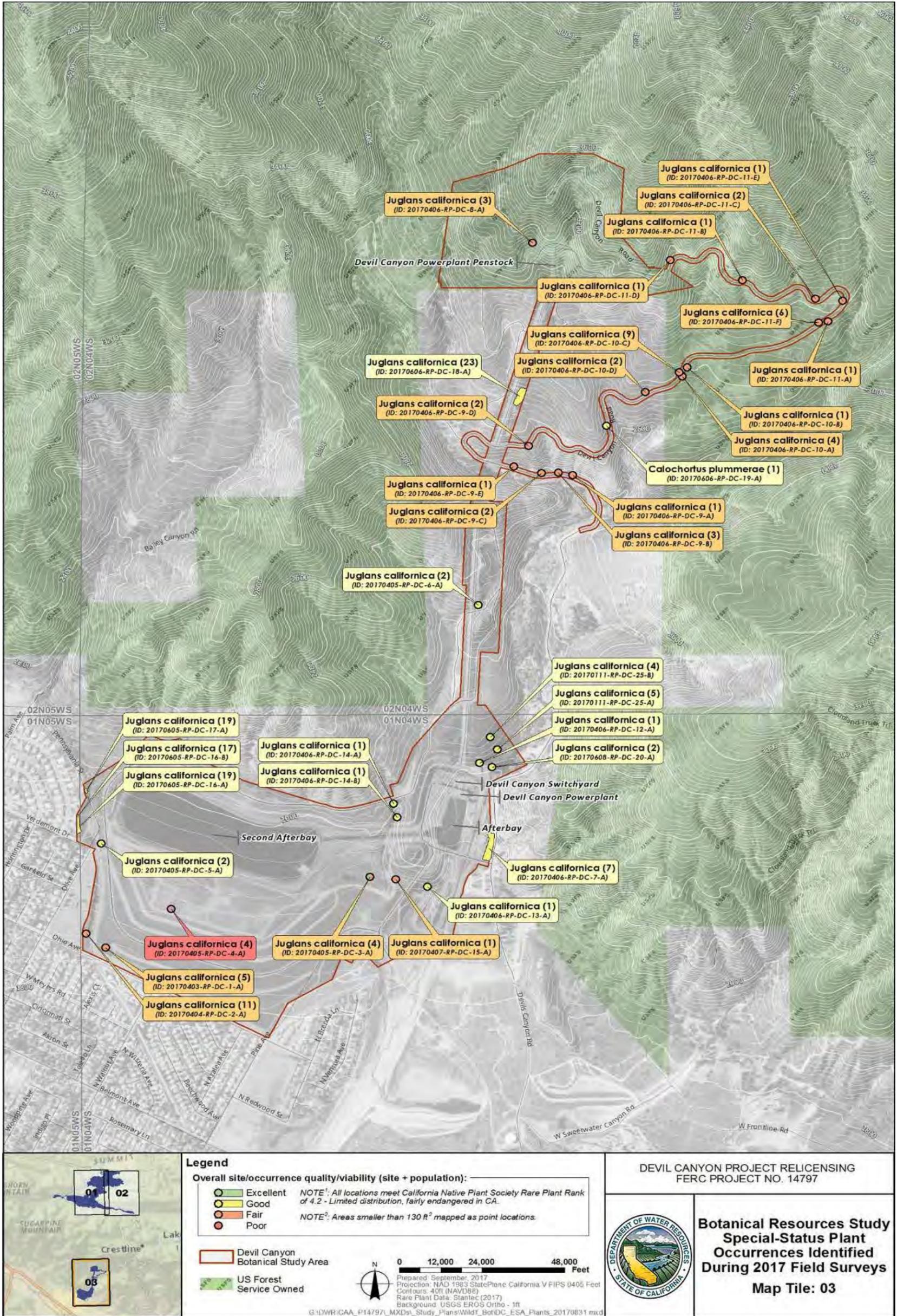


Figure C.1-3. Special-Status Plant Occurrences Identified During 2017 Field Surveys

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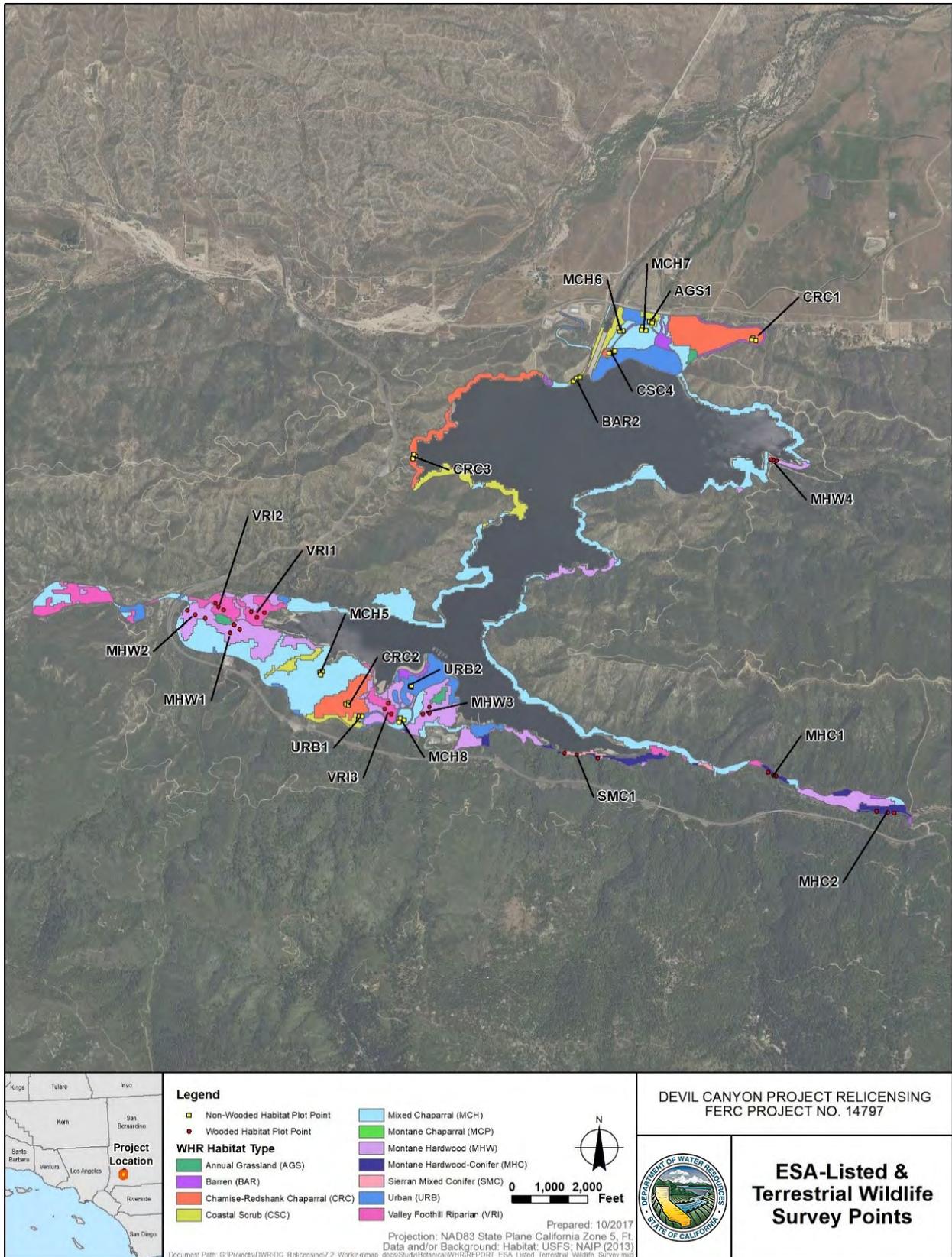


Figure C.1-4. Vegetation Communities Identified During 2017 Field Surveys

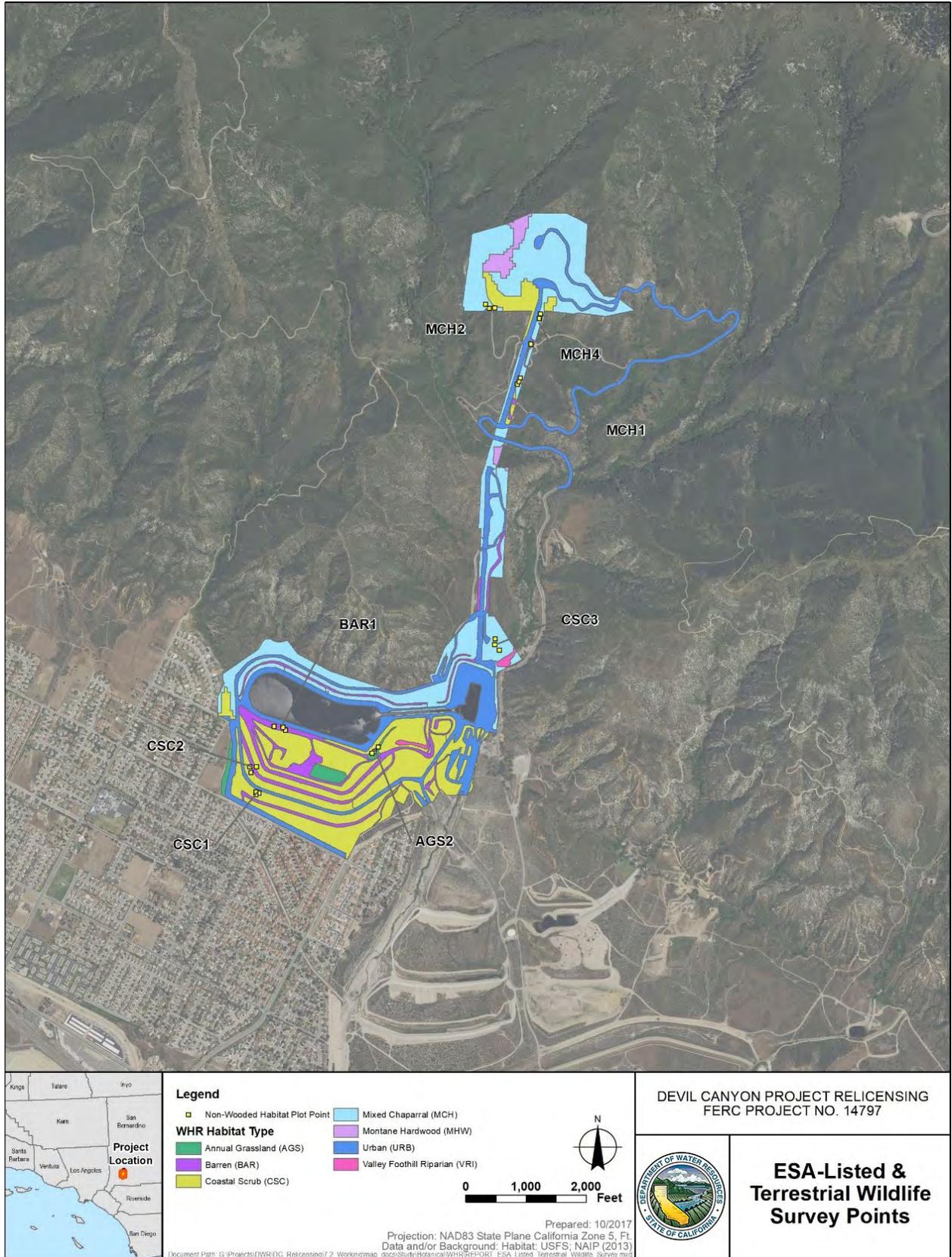


Figure C.1-5. Vegetation Communities Identified During 2017 Field Surveys

Attachment 5

Transportation System Management Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



TRANSPORTATION SYSTEM MANAGEMENT PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources



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Appendix A Primary Project Roads

COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

Application for New License	DWR's Application for a New License for Major Project – Existing Dam for the Devil Canyon Project Relicensing, Federal Energy Regulatory Commission Project Number 14797
CLAWA	Crestline-Lake Arrowhead Water Agency
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
general access road	A road, or segment of a road, used at times by agencies and members of the public to access Project facilities, but is not in the Project license, is not used exclusively to access the Project, and is not maintained exclusively by DWR
GIS	Geographic Information System
IVMP	DWR's Integrated Vegetation Management Plan included in its Application for New License
long-term maintenance	Repairs that are scheduled around specific events that impact the overall integrity of a given Primary Project Road, such as heavy-haul events or unusually heavy storm events; such events require repairs that are beyond the scope and budget of the short-term maintenance procedures. Long-term Primary Project Road repairs are undertaken in addition to short-term maintenance activities.
ML	Maintenance Level
MUTCD	U.S. Department of Transportation's Manual on Uniform Traffic Control Devices
NFS	National Forest System
O&M	operation and maintenance
OHV	off-highway vehicle
Plan	Transportation System Management Plan
PM&E measures	Protection, Mitigation, and Enhancement measures, which are operation and management activities to: (1) protect resources against potential impacts from continued operation and maintenance of the Project; (2) mitigate any impacts from continued operation and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operation and maintenance

Primary Project Road	A road, or segment of a road, that is identified in the Project's new license as a Project facility, is used almost exclusively to access the Project, is within the FERC Project boundary, and is operated and maintained exclusively by DWR as a Project feature
Primary Project Trail	A trail, or segment of a trail, that is identified in the Project's new license as a Project facility, is used almost exclusively to access the Project, is within the FERC Project boundary, and is operated and maintained exclusively by DWR as a Project feature
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
Project boundary	The area to which DWR requires access for normal Project operations and maintenance; the boundary is shown in Exhibit G of DWR's Application for New License
RMP	DWR's Recreation Management Plan included in its Application for New License
SBNF	San Bernardino National Forest
short-term maintenance	Routine or periodic repairs, inspections, and maintenance activities conducted annually, periodically, or seasonally to address normal wear and tear during road use under typical annual weather conditions
SRA	State Recreation Area
SWP	State Water Project
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service

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1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act, Part 4, Subpart F [Application for License for Major Project – Existing Dam] [Traditional Licensing Process]), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project).

DWR included this Transportation System Management Plan (Plan) in its November 2019 Application for New License. This Plan addresses Primary Project Roads and Primary Project Trails, which include any road or any trail, or segment of a road or trail, that is identified in the new license as a Project facility, is used almost exclusively to access the Project, is within the FERC Project boundary, and is operated and maintained exclusively by DWR as a Project feature.

This Plan does not address roads and trails associated with Project recreation; these roads and trails are part of Project recreation facilities and are addressed in DWR’s relicensing Recreation Management Plan (RMP). Recreation-associated roads include, among others: all roads that access Project recreation facilities, most of which are located within the Silverwood Lake State Recreation Area (SRA); the access road from State Highway 138 to the entrance station to the SRA; and Dart Canyon Road, which provides a parking area for the public and vehicle access for Silverwood Lake SRA maintenance staff to service recreation facilities on the Miller Canyon area of Silverwood Lake SRA.

In addition, this Plan does not address maintenance of general access roads and trails, which are roads and trails, or segments of roads and trails, used at times by agencies and members of the public to access Project facilities, but are not in the Project license, are not used exclusively to access the Project, and are not maintained exclusively by DWR.

All elevation data in this Plan are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Description of the Project

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. Project facilities range in elevation from 3,378 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel; Devil Canyon Powerplant Penstocks and Surge Chamber; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation, on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake SRA. Non-Project facilities (e.g., Crestline-Lake Arrowhead Water Agency [CLAWA] intake and the Pacific Crest National Scenic Trail) are located within or traverse the Project boundary, but are not Project facilities. The Project does not include any open water conduits, excluding the 1,000-foot-long Cross Channel that connects the Devil Canyon Afterbay and Devil Canyon Second Afterbay. The Project interconnects with the regional electric transmission system grid at the Devil Canyon Powerhouse and, therefore, does not include any transmission lines. DWR operates the Project in a run-of-release mode using SWP water as the water is delivered to downstream SWP water users.

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). USFS administers the SBNF in conformance with the SBNF Land Management Plan (USFS 2005a), as subsequently amended.

DWR will continue to operate the Project as it has been operated historically, with the addition of a number of Protection, Mitigation, and Enhancement (PM&E) measures, which are operation and management activities to: (1) protect resources against potential impacts from continued operation and maintenance (O&M) of the Project; (2) mitigate any impacts from continued O&M of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project O&M. This Plan is one of those PM&E measures.

Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including DWR's Project boundary.

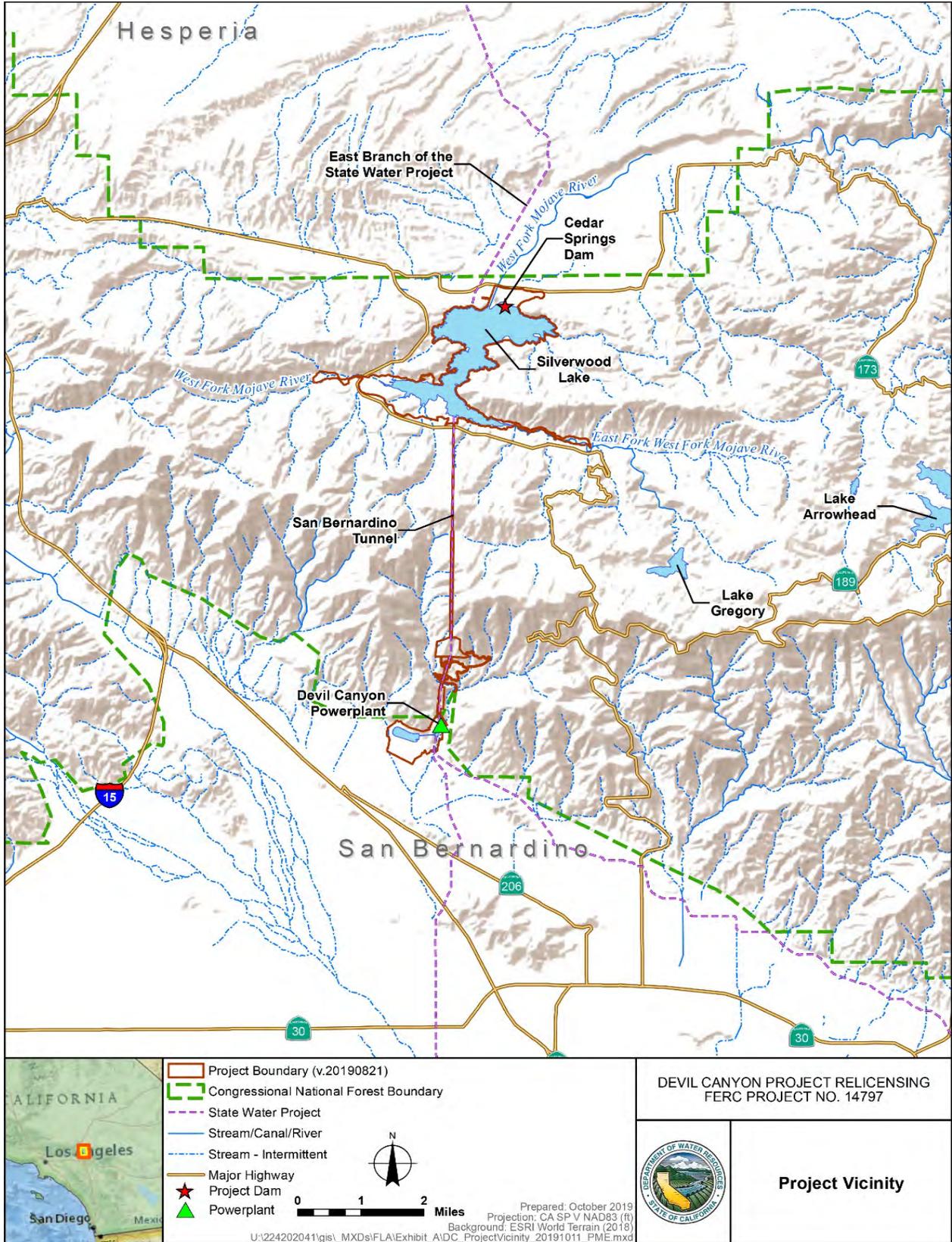


Figure 1.1-1. Devil Canyon Project Vicinity

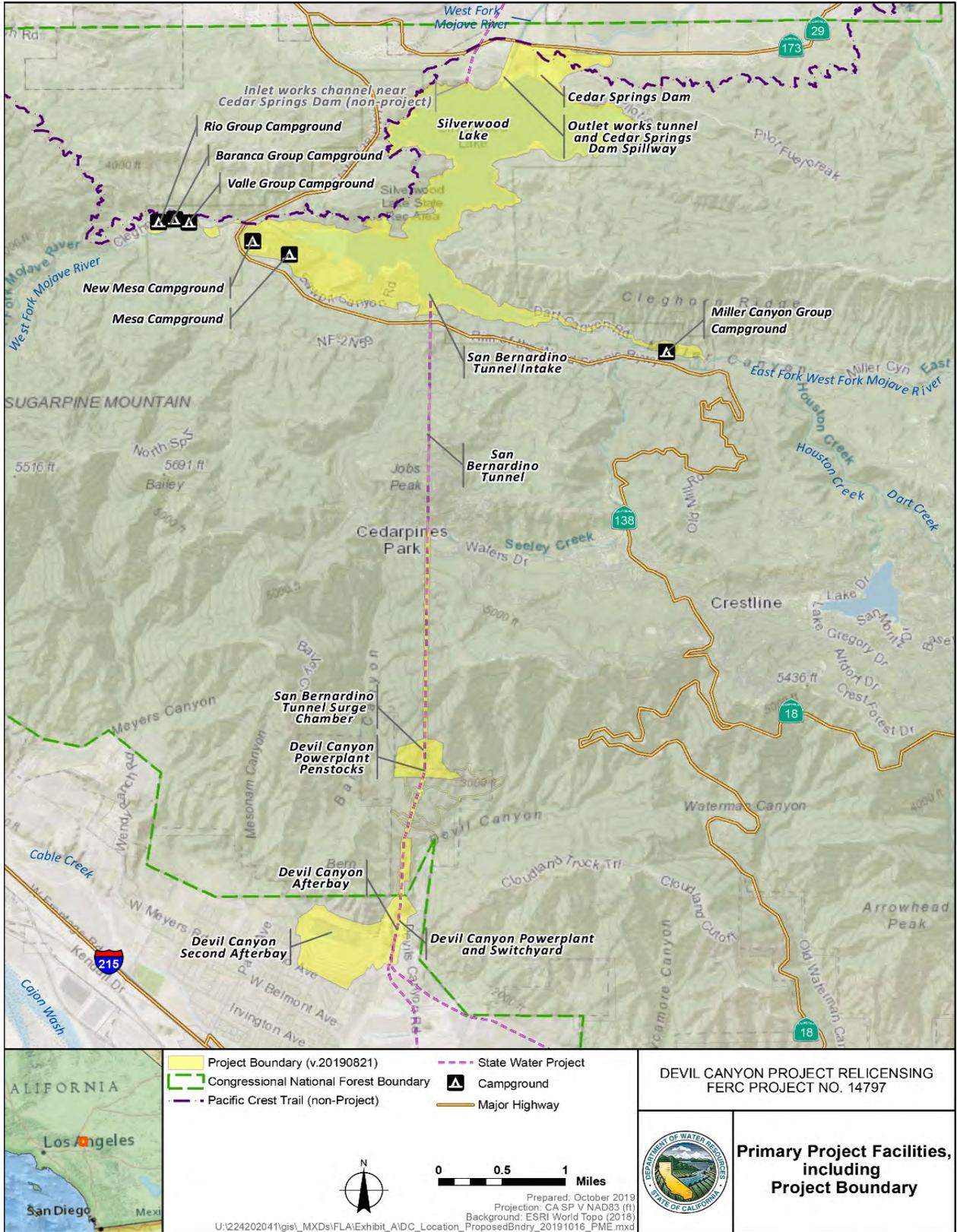


Figure 1.1-2. Devil Canyon Project Boundary

1.2 PURPOSE OF THE PLAN

This Plan is intended to provide guidance for the operation and maintenance of Primary Project Roads and Trails to minimize environmental effects from these roads and trails. To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The primary goals of this Plan are to list Primary Project Roads and Trails, and to describe the maintenance and scope of improvements known at this time, if any, for Primary Project Roads and Trails. The objective of the Plan is to describe the management of Primary Project Roads and Trails to meet the Plan's purpose and goals.

1.4 CONTENTS OF THE PLAN

The Plan includes the following:

- Section 1.0. Introduction. Includes introductory information, including the purpose and goals of the Plan.
- Section 2.0. Identification of Primary Project Roads and Trails. Describes the roads and trails used by DWR to access Project facilities, and identifies which of those roads and trails are Primary Project Roads and Trails, and why. In addition, this section provides detailed information regarding each Primary Project Road and Trail.
- Section 3.0. Maintenance of Primary Project Roads and Trails. Describes the manner in which DWR will maintain and operate Primary Project Roads and Trails, recognizing that requirements on NFS lands are different than those on non-NFS lands.
- Section 4.0. Consultation, Reporting, and Plan Revisions. Describes consultation and Plan review between DWR and USFS regarding Primary Project Roads and Trails on NFS lands.
- Section 5.0. References Cited. Includes the resource documents cited in this Plan.

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2.0 IDENTIFICATION OF PRIMARY PROJECT ROADS AND TRAILS

This section describes the roads and trails used by DWR to access Project facilities, and identifies which of those roads and trails are Primary Project Roads and Trails, and why. In addition, this section provides detailed information regarding each Primary Project Road and Trail.

2.1 ROADS AND TRAILS USED BY DWR TO ACCESS PROJECT FACILITIES

2.1.1 Vehicular Access

DWR staff access Project facilities via vehicle from the Project's Devil Canyon Powerplant complex, which is a fenced and gated area at 6900 Devils Canyon Road in San Bernardino, California. The fenced area includes the Devil Canyon Powerplant and Switchyard, the lower portion of the San Bernardino Penstocks, Devil Canyon Afterbay and Second Afterbay, and associated paved parking areas. The complex is closed to the public at the entrance gate. The route from the Devil Canyon Powerplant complex, or the nearest federal or State highway, that DWR Operations staff use to access each Project facility is described below. Road lengths provided below are rounded to the nearest tenth of a mile and are based on DWR's relicensing Geographic Information System (GIS) database. Road widths are in feet and are based on DWR's relicensing GIS database.

2.1.1.1 *San Bernardino Tunnel Outlet*

DWR Operations staff access the San Bernardino Tunnel Outlet by turning north onto Devils Canyon Road from Devil Canyon Powerhouse and driving to a locked gate. Devils Canyon Road to the gate is on City of San Bernardino lands, and is maintained by the County of San Bernardino. The gate is maintained by DWR. DWR Operations staff continue past the gate along two road segments, both of which are paved. The first segment is 1.4 miles long, intersects a portion of the San Bernardino Penstocks that is buried, and is located on City of San Bernardino lands and State of California lands. The second segment is 1.0 mile long, is on NFS lands, and extends from the end of the first segment to the San Bernardino Tunnel Outlet, where the tunnel transitions to the penstocks.

Devils Canyon Road to the locked gate is a general access road since it is used for multiple purposes, including access to private residences. The road from the gate, including the gate, to the outlet is a Primary Project Road, since it is maintained by DWR and is solely used by DWR to access the outlet. This Primary Project Road, which is entirely within the Project boundary, is referred to in this Plan as the "Tunnel Portal Access Road." Figure 1 in Appendix A is a map of the Tunnel Portal Access Road.

2.1.1.2 *San Bernardino Tunnel Surge Chamber*

DWR Operations staff access the San Bernardino Tunnel Surge Chamber from the Tunnel Portal Access Road described above by driving 0.5 miles along a paved road to the surge chamber. The access road is on NFS lands and is entirely within the Project

boundary. The access road is a Primary Project Road because it is maintained solely by DWR for Project purposes, and is referred to in this Plan as the “Surge Chamber Access Road.” Figure 2 in Appendix A is a map of the Surge Chamber Access Road.

2.1.1.3 Devil Canyon Powerplant Penstocks

DWR Operations staff access the Devil Canyon Powerplant Penstocks from four roads that occur on NFS, City of San Bernardino, and State of California lands.

Upper Penstocks

The upper penstocks are accessed by DWR Operations staff from three roads. The first road provides access to the west portion of the upper penstocks, has a native surface, and extends from the Tunnel Portal Access Road at the San Bernardino Tunnel Outlet for approximately 1.1 miles from the locked gate before reconnecting to the Tunnel Portal Access Road further to the south, near where the upper penstocks go underground. The road has three segments. The first segment is 0.4 miles long, is on NFS lands, and extends from the San Bernardino Tunnel Outlet to the intersection of NFS and DWR property boundaries. The second segment is 0.3 miles long, is on City of San Bernardino and State of California lands, and extends from the intersection of NFS and DWR property boundaries to the penstocks. The third segment is 0.5 miles long, is on City of San Bernardino lands, NFS lands, and State of California lands, and extends from the second segment to the intersection with the Tunnel Portal Access Road. The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Upper Penstocks (West) Access Road.” Figure 3 in Appendix A is a map of the Upper Penstocks (West) Access Road.

The second road provides access to the upper east portion of the upper penstocks, has a native surface, and extends from the Tunnel Portal Access Road to the penstocks. The road has two segments. The first segment is 0.4 miles long, is on City of San Bernardino and State of California lands, and extends from the Tunnel Portal Access Road to the upper portion of the penstocks. The second segment is 0.3 miles long, is on City of San Bernardino and State of California lands, and extends from the first segment to the penstocks. The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Upper Penstocks (Upper East) Access Road.” Figure 4 in Appendix A is a map of the Upper Penstocks (Upper East) Access Road.

The third road provides access to the lower east portion of the upper penstocks, and extends from the Tunnel Portal Access Road to the penstocks. The road has one segment that has a native surface, is 0.1 miles long, is on City of San Bernardino and State of California lands, and extends from the Tunnel Portal Access Road to the penstocks. The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Upper Penstocks (Lower East) Access Road.” Figure 5 in Appendix A is a map of the Upper Penstocks (Lower East) Access Road.

Lower Penstocks

The lower portion of the Devil Canyon Powerplant Penstocks is accessed by DWR Operations staff from one road that originates at the northern end of the Devil Canyon Powerplant complex. The road has three segments. The first segment is 0.5 miles long, crosses the penstocks from west to east, is on State of California lands, and extends from a locked gate at the complex along the east side of the penstocks. The second segment is less than 0.1 miles long, is on State of California lands, and extends from the first segment to the penstocks. The third segment is 0.3 miles long, is on City of San Bernardino lands and State of California lands, and extends from the complex along the west side of the penstocks and connects with the first segment. The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Lower Penstocks Access Road.” Figure 6 in Appendix A is a map of the Lower Penstocks Access Road.

2.1.1.4 Cedar Springs Dam and Cedar Springs Dam Spillway

The upper portion of Cedar Springs Dam is accessed by DWR Operations staff from one road, which also accesses the east side of the Cedar Springs Dam Spillway. The downstream face of the dam and west side of the spillway are accessed by different roads. Each of these roads is entirely on State of California lands and is described below.

Cedar Springs Dam and East Side of Cedar Springs Dam Spillway

From State Highway 173, DWR Operations staff turn onto a paved road at a locked gate maintained by DWR and located at the intersection with State Highway 173. The road beyond the locked gate has two segments. The first segment is approximately 0.9 miles long, and extends from a DWR locked gate off State Highway 173 to a DWR locked gate on Cedar Springs Dam Road on the other side of Cedar Springs Dam. The second segment is approximately 0.1 miles long and extends from the first road segment to the upstream end of the spillway.

Cedar Springs Dam Road is a general access road off State Highway 173 because it provides public access to a public parking area near the east side of the Cedar Springs Dam and is used by the NFS and NFS recreationists (off-highway vehicle [OHV] users) to access the Forest Road 2N33 and for other access purposes. In the past, DWR has used Cedar Springs Dam Road on rare occasions for heavy equipment deliveries to the east side of the dam since the road provides more clearance than the west side access. However, this was done for convenience and is not a necessity. The road between the locked gates is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Dam and Spillway Access Road.” Figure 7 in Appendix A is a map of the Dam and Spillway Access Road.

Downstream Face of Cedar Springs Dam

From the Dam and Spillway Access Road, DWR Operations staff turn onto a native surfaced road that provides access to the downstream face of Cedar Springs Dam. The road has two segments. The first segment is approximately 0.2 miles long, and extends along the foot of the dam from the Dam and Spillway Access Road to a locked gate. A portion of Segment 1 parallels the PCT.¹ DWR maintains a chain-link fence with slats along the uphill side of the road to prohibit public access to the dam face. In addition, the fence limits the view of the dam face to PCT hikers. The second segment extends from the locked gate to the downstream face of the dam (primarily accesses dam seepage monitors), is approximately 0.2 miles long, and has a native surface.

The road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Dam Downstream Face Access Road.” Figure 8 in Appendix A is a map of the Dam Downstream Face Access Road.

West Side of Cedar Springs Dam Spillway

DWR Operations staff exit State Highway 173 near the spillway, and turn onto an access road to the Mojave Power/Pumping Plant, a non-Project facility. The access road has two segments. The first segment begins approximately 0.4 miles from State Highway 173 along a road that provides access to the Mojave Power/Pumping Plant and is approximately 0.2 miles long, and extends to the western side of the spillway channel. The second segment is approximately 0.1 miles long and extends from the end of the first road segment down towards Silverwood Lake.

The road to the Mojave Power/Pumping Plant is a general access road because it provides access to both the Project and a non-Project facility. The access road is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the “Spillway Access Road.” Figure 9 in Appendix A is a map of the Spillway Access Road.

2.1.1.5 San Bernardino Tunnel Intake

From State Highway 138, DWR Operations staff turn onto a road that provides access to the CLAWA Water Treatment Plant, and use Silverwood Lake SRA roads to reach a DWR-maintained gate that prohibits vehicular access to the San Bernardino Tunnel Intake. The road from the gate to the intake is on State of California lands and is approximately 0.1 miles long. In addition, from the CLAWA Water Treatment Plant Road, DWR Operations Staff access a gated parking area for the San Bernardino Tunnel Access Shaft.

¹ On March 26, 1980, the State of California, acting through DWR, granted the United States, acting through USFS, non-exclusive agreements for use of certain State of California-owned parcels in San Bernardino County to locate, construct, use, maintain, relocate and repair the PCT. DWR reserved its right to use the area for its purposes.

The road to the CLAWA Water Treatment Plant is a general access road because it is used by both CLAWA and DWR Operations staff. The gated parking area for the San Bernardino Tunnel Access Shaft is not a Primary Project Road, but just a parking area. The road from the gate to the intake is a Primary Project Road because it is maintained solely by DWR for Project purposes. This Primary Project Road is referred to in this Plan as the "Intake Access Road." Figure 10 in Appendix A is a map of the Intake Access Road.

2.1.2 Foot or Off-Highway Vehicle Access

DWR does not maintain any trails for foot or OHV access to Project facilities, other than pedestrian and bicycle trails related to recreation. Those trails are addressed in DWR's relicensing RMP.

2.2 LIST OF PRIMARY PROJECT ROADS

The Project includes 10 Primary Project Roads with 19 road segments, for a total distance of 7.6 miles. Three of the 19 segments (1.9 miles in total length) are entirely on NFS lands; one segment (0.5 miles) is on a combination of NFS lands (i.e., less than 100 feet of the 0.5 miles), City of San Bernardino, and State of California lands; six segments (2.8 miles) are on a combination of City of San Bernardino and State of California lands; and the remaining nine segments (2.4 miles) are entirely on State of California lands (Table 2.2-1.) None of the Primary Project Road segments are open to public vehicular traffic; all have locked vehicle gates.

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Table 2.2-1. Primary Project Roads

Designation in This Plan (Figure in Appendix A)	Segment Number	Begins	Ends	Road Travel Surface	Road Width (feet)	Gated or Otherwise Restricted to Public	Land Ownership	USFS Maintenance Level, If on NFS Lands	Length (miles)	Project Use	Typical Number of DWR Operations Staff Roundtrips
PRIMARY PROJECT ROADS											
Tunnel Portal Access Road (Figure 1)	1	Locked gate on Devils Canyon Road	Intersection of private and NFS lands	Paved	35	Yes	City of San Bernardino and State of California ¹	--	1.4	Access to San Bernardino Tunnel Outlet	1-2 round trips per day
	2	Intersection of private and NFS lands	San Bernardino Tunnel Outlet	Paved	35		NFS	4 ³	1.0		
Surge Chamber Access Road (Figure 2)	1	Tunnel Outlet Access Road	San Bernardino Tunnel Surge Chamber	Paved	30	Restricted by locked gate on Tunnel Outlet Access Road	NFS	4 ³	0.5	Access to San Bernardino Tunnel Surge Chamber	1-2 round trips per day
Upper Penstocks (West) Access Road (Figure 3)	1	San Bernardino Tunnel Outlet	Intersection of private and NFS lands	Native	20	Restricted by locked gate on Tunnel Outlet Access Road	NFS	2	0.4	Access to west side of Upper Portion of Devil Canyon Penstocks	1-2 round trips per day
	2	Intersection of private and NFS lands	Devil Canyon Powerplant Penstocks	Native	25		City of San Bernardino and State of California	--	0.3		
	3	Segment 2	Tunnel Outlet Access Road	Native	20		City of San Bernardino, NFS lands ² , State of California	2	0.5		
Upper Penstocks (Upper East) Access Road (Figure 4)	1	Tunnel Outlet Access Road	Devil Canyon Powerplant Penstocks	Native	15	Restricted by locked gate on Tunnel Outlet Access Road	City of San Bernardino and State of California	--	0.4	Access to east side of Upper Portion of Devil Canyon Powerplant Penstocks	1-2 round trips per day
	2	Segment 1	Devil Canyon Powerplant Penstocks	Native	15		City of San Bernardino and State of California	--	0.3		
Upper Penstocks (Lower East) Access Road (Figure 5)	1	Tunnel Outlet Access Road	Devil Canyon Powerplant Penstocks	Native	15	Restricted by locked gate on Tunnel Outlet Access Road	City of San Bernardino and State of California	--	0.1	Access to east side of Upper Portion of Devil Canyon Powerplant Penstocks	1-2 round trips per day

Table 2.2-1. Primary Project Roads (continued)

Designation in This Plan	Segment Number	Begins	Ends	Road Travel Surface	Road Width (feet)	Gated or Otherwise Restricted to Public	Land Ownership, and USFS Road Designation, If on NFS Lands	USFS Maintenance Level, If on NFS Lands	Length (miles)	Project Use	Typical Number of DWR Operations Staff Roundtrips
Lower Penstocks Access Road (Figure 6)	1	Locked gate at Devil Canyon Powerplant Complex	Devil Canyon Powerplant Penstocks	Paved	25	Restricted by locked gate in Devil Canyon Powerplant complex	State of California	--	0.5	Access to Lower Portion of Devil Canyon Powerplant Penstocks	1-2 round trips per day
	2	Segment 1	Devil Canyon Powerplant Penstocks	Paved	40		State of California	--	<0.1		
	3	Locked gate at Devil Canyon Powerplant Complex	Devil Canyon Powerplant Penstocks	Paved	25		City of San Bernardino and State of California	--	0.3		
Dam and Spillway Access Road (Figure 7)	1	Locked gate at State Highway 173	Locked gate at Cedar Springs Dam Road	Paved	25	Yes	State of California	--	0.9	Access to Cedar Springs Dam and east side of Cedar Springs Dam Spillway	1-2 round trips per day
	2	Segment 2	Silverwood Lake	Native	25			--	0.1		
Dam Downstream Face Access Road (Figure 8)	1	Dam and Spillway Access Road	Locked gate	Native	30	Restricted by locked gates on Dam and Spillway Access Roads	State of California	--	0.2	Access to downstream face of Cedar Springs Dam	1-2 round trips per day
	2	Locked gate	Locked gate	Native	30		State of California	--	0.2		
Spillway Access Road (Figure 9)	1	Mojave Power/Pumping Plant Road	Cedar Springs Dam Spillway	Paved	20	Restricted by locked gate off State Highway 173	State of California	--	0.2	Access to west side of Cedar Springs Dam Spillway	1-2 round trips per day
	2	Upper end of Spillway	Silverwood Lake	Native	15			--	0.1		
Intake Access Road (Figure 10)	1	Locked gate	San Bernardino Tunnel Intake	Paved	30	Restricted by locked gate	State of California	--	0.1	Access to San Bernardino Tunnel Intake	1-2 round trips per day
Total	10 Primary Project Roads; 19 Segments (3 Segments entirely on NFS Lands)						7.6 Total Miles (1.9 Miles on NFS Lands)				

Notes:
¹State of California lands include any combination of California Department of Water Resources and California Department of Parks and Recreation lands.
²Less than 100 feet of the road segment is on NFS lands.
³The road segment is generally a Maintenance Level 2 road, but the SBNF considers it a Maintenance Level 4 road because it is paved.
 Key:
 NFS = National Forest System
 USFS = U.S. Department of Agriculture, Forest Service

3.0 MAINTENANCE OF PRIMARY PROJECT ROADS AND TRAILS

3.1 PRIMARY PROJECT ROADS

As shown in Table 2.1-1, Primary Project Roads are located on a combination of City of San Bernardino, State of California and NFS lands. With regard to Primary Project Roads on NFS lands, DWR maintains these roads in compliance with prescribed USFS Maintenance Levels (ML). Refer to Table 3.1-1, below, for USFS descriptions of the applicable MLs for each Primary Project Road.

Table 3.1-1. USFS Maintenance Levels

Parameters	Maintenance Level				
	1	2	3	4	5
Service Life	Intermittent Service-Closed Status	Constant Service or Intermittent Service-Open Status (Some uses may be restricted under 36 Code of Federal Regulations Section 261.50)			
Traffic Type	Open for non-motorized uses; Closed to motorized traffic.	Administrative, permitted, dispersed recreation specialized, commercial haul	All National Forest Traffic – General Use, Commercial Haul		
Vehicle Type	Closed - N/A	High clearance, pick-up, 4x4, log trucks, etc.	All types - passenger cars to large commercial vehicles		
Traffic Volume	Closed - N/A	Traffic volume increases with maintenance level			
Typical Surface	All types	None; Native, or Aggregate – may be dust abated	Aggregate – usually dust abated; paved		
Travel Speed	Closed - N/A	Travel speed increases with maintenance level			
User Comfort and Convenience	Closed - N/A	Not a consideration	Low priority	Moderate priority	High priority
Functional Classification	All types	Local collector	Local collector arterial	Local collector arterial	Local collector arterial
Level of Service	Closed - N/A	J	G, H, I - Traffic service level increases with maintenance level		
Management Strategy	Prohibit or eliminate	Discourage or prohibit cars. Accept or discourage high clearance vehicles	Encourage, accept	Encourage	Encourage

Source: USFS 2005b

Key:

J = Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Travel with low clearance vehicles is difficult. Single purpose facility.

G = Free flowing, mixed traffic; stable, smooth surface. Provides safe service to all traffic.

H = Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle.

I = Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.

N/A = Not applicable

With regard to Primary Project Roads on City of San Bernardino and State of California lands, DWR generally maintains these roads in compliance with current protocols. DWR's maintenance of Primary Project Roads, regardless of land ownership, as described below.

3.1.1 Short- and Long-Term Maintenance Program

In general, DWR's maintenance program has two components with regard to timing of Primary Project Road maintenance activities: short-term and long-term maintenance. Short-term Primary Project Road maintenance is defined as routine or periodic repairs, inspections, and maintenance activities conducted annually, periodically, or seasonally to address normal wear and tear during Primary Project Road use under typical annual weather conditions. Long-term maintenance is defined as repairs that are scheduled around specific events that impact the overall integrity of a given Primary Project Road, such as heavy-haul events or unusually heavy storm events; such events require repairs that are beyond the scope and budget of the short-term Primary Project Road maintenance procedures. Long-term Primary Project Road repairs are normally undertaken in addition to short-term Primary Project Road maintenance activities. Further details regarding components of the short- and long-term maintenance programs are described below.

3.1.1.1 Short-Term Maintenance of Primary Project Roads

Short-term maintenance of Primary Project Roads generally includes annual maintenance of the travel surface such as spot treatment of asphalt paving, blading dirt and aggregate surfaces, filling in pot holes, minor and major trimming of vegetation along the travel surface edge to maintain a line of sight for safety purposes and provide ample room for vehicle travel, and repairing/replacing signs and markers. Short-term maintenance may also include routine inspection and maintenance of Primary Project Road drainage features, such as periodically inspecting and clearing culverts and drainage ditches, rock fall cleanup, and landslide cleanup and repair, as needed, to mitigate erosion, stabilize hillslopes, and restore proper function of drainage features. In addition, work may include maintaining water bars for Primary Project Roads that are infrequently used, and maintaining gates. Primary Project Roads are normally inspected regularly throughout the year by DWR Operations staff as they travel the roads for operations of the Project, with increased attention paid to reporting/repairing Primary Project Road drainage and damage issues observed during periodic rainfall and runoff events.

Under short-term maintenance, repairs are typically completed as soon as possible after identification of a problem, often related to a periodic weather event. Depending upon the identified problem (e.g., plugged culvert and road obstruction), DWR usually prioritizes scheduling the needed repair with respect to safety and impacts and liabilities, and completes the needed repair as soon as possible. For other repairs, such as a damaged or missing sign, a replacement sign is usually ordered, which may take several weeks to receive, and is then installed.

DWR may also address hazard trees under short-term maintenance. For this Plan, a hazard tree is a tree along a Primary Project Road that is likely to fall under natural conditions within the foreseeable future and that will pose a risk to the Primary Project Road, members of the public using the Primary Project Road, or DWR Operations staff maintaining the Primary Project Road. Hazard trees may or may not be within the Project boundary. DWR typically handles hazard trees on a case-by-case basis and based on visual inspection by DWR Operations staff. Annually, and after a large event (e.g., fire or early/late snowfall or wind storm), Primary Project Roads are usually examined for hazard trees which may have been healthy but now represent a hazard. Specific measures for management of hazard trees are discussed in DWR's relicensing Integrated Vegetation Management Plan (IVMP).

Short-term maintenance procedures may also include annual development of a list of priority sites for Primary Project Road-related repairs for the upcoming year. Depending upon the magnitude of cost to repair a given location on the list, the actual repair at that location may fall under short- or long-term maintenance. Short-term maintenance is budgeted annually by DWR.

3.1.1.2 Long-Term Maintenance of Primary Project Roads

In general, long-term maintenance of Primary Project Roads is geared towards major repairs that occur infrequently and is usually related to road damage caused by a heavy haul project, a major flood event that caused washouts, and other road-related damage at a scale that is beyond the scope of the short-term maintenance budget. Long-term maintenance may also occur at the end of a road's expected life, such as repaving the entire road. For heavy haul-type projects, the costs of major Primary Project Road repairs are typically included in the overall funding of the Project. Long-term maintenance activities are normally completed in a timely manner where public safety or additional facilities/resource damage is a concern.

3.1.2 Primary Project Road Maintenance Measures

All traffic control devices (e.g., signs and road markings) on all Primary Project Roads, regardless of land ownership, are typically maintained according to the schedules outlined below in order to conform to the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD) (DOT 2012). Additionally, when signs are replaced or modified, they usually conform to the MUTCD and DWR's internally defined standards, as well as standards required by USFS if the sign occurs on a Primary Project Road on NFS lands. If DWR proposes a new Primary Project Road during the term of the new license, it will conform to current standards.

Road maintenance best management practices are used to guide the types of road treatments and the resource protection measures needed to mitigate the potential environmental impacts from road use. For Primary Project Roads on NFS lands, the designated USFS ML is usually used to identify the type, scope, frequency, and cost of road maintenance activities. DWR will maintain Segment 2 of the Tunnel Portal Access Road and the Surge Chamber Access Road (Table 2.1-1), which are on NFS lands, to

ML 2 standard, with the exception of the paved travelway, which will be managed to ML 4 standards. For Primary Project Roads not on NFS lands, the road surface type and ongoing level of use is usually used to define the road maintenance measures.

In general, Primary Project Roads on NFS lands have a paved or native surface designed for daily to weekly use by passenger trucks (Table 2.2-1). For Primary Project Roads with a paved surface travel way, road maintenance activities usually include: ditch grading and cleaning; culvert cleaning and repair; road drain cleaning and repair; road patching and re-surfacing; vegetation trimming along the travel surface edge to maintain a line of sight and provide ample room for vehicle travel; vehicle clearance for safety purposes; and erosion control and hillside stabilization to prevent landslides. For Primary Project Roads with a native surface travel way, road maintenance activities usually include: ditch grading and cleaning; culvert cleaning and repair; road drain cleaning and repair; road surface blading; minor and major vegetation trimming along the travel surface edge to maintain a line of sight and vehicle clearance for safety purposes and to provide ample room for vehicle travel; and erosion control and hillside stabilization to prevent landslides.

Normally, annual vegetation management along Primary Project Roads on NFS lands is performed by mastication, unless the SBNF explicitly agrees that DWR may use herbicides. Annual vegetation management along Primary Project Roads not on NFS lands is normally performed by mastication and herbicides applied by licensed herbicide applicators. Specific measures regarding vegetation management along Primary Project Roads are presented in DWR's relicensing IVMP.

Culvert replacements on Primary Project Roads on NFS lands are usually sized according to requirements in the SBNF Land Management Plan, as amended; other USFS directives; and in consultation with SBNF staff. Design of culvert replacements may vary based on location, but meet relevant guidelines for passage of wildlife and fish. Culvert replacements on Primary Project Roads not on NFS lands are usually designed to meet applicable standards.

3.1.3 Road Rehabilitation Measures

3.2 PRIMARY PROJECT TRAILS

DWR does not maintain any trails for foot or OHV access to Project facilities, other than those related to recreation. Those trails are addressed in DWR's relicensing RMP.

4.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

4.1 CONSULTATION AND REPORTING

DWR will annually review with the SBNF activities related to Primary Project Roads and Trails on NFS lands completed in the previous calendar year, as well as any activities planned for Primary Project Roads and Trails on NFS lands for the current calendar year. In addition, DWR will consult with the SBNF, as needed, regarding Primary Project Roads, and Primary Project Trails on NFS lands if any Primary Project Roads or Trails are added to or removed from the Project.

4.2 PLAN REVISIONS

DWR, in consultation with the SBNF, will review, update, and/or revise this Plan as it pertains to Primary Project Roads and Trails on NFS lands. Any updates to the Plan will be prepared in coordination and consultation with the SBNF if the update pertains to non-recreation Primary Project Roads or Trails on NFS lands. Sixty days will be allowed for the SBNF to provide written comment and recommendations before DWR files the updated Plan with FERC for FERC's approval. DWR will include documentation of all relevant coordination and consultation associated with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation by the SBNF, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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5.0 REFERENCES CITED

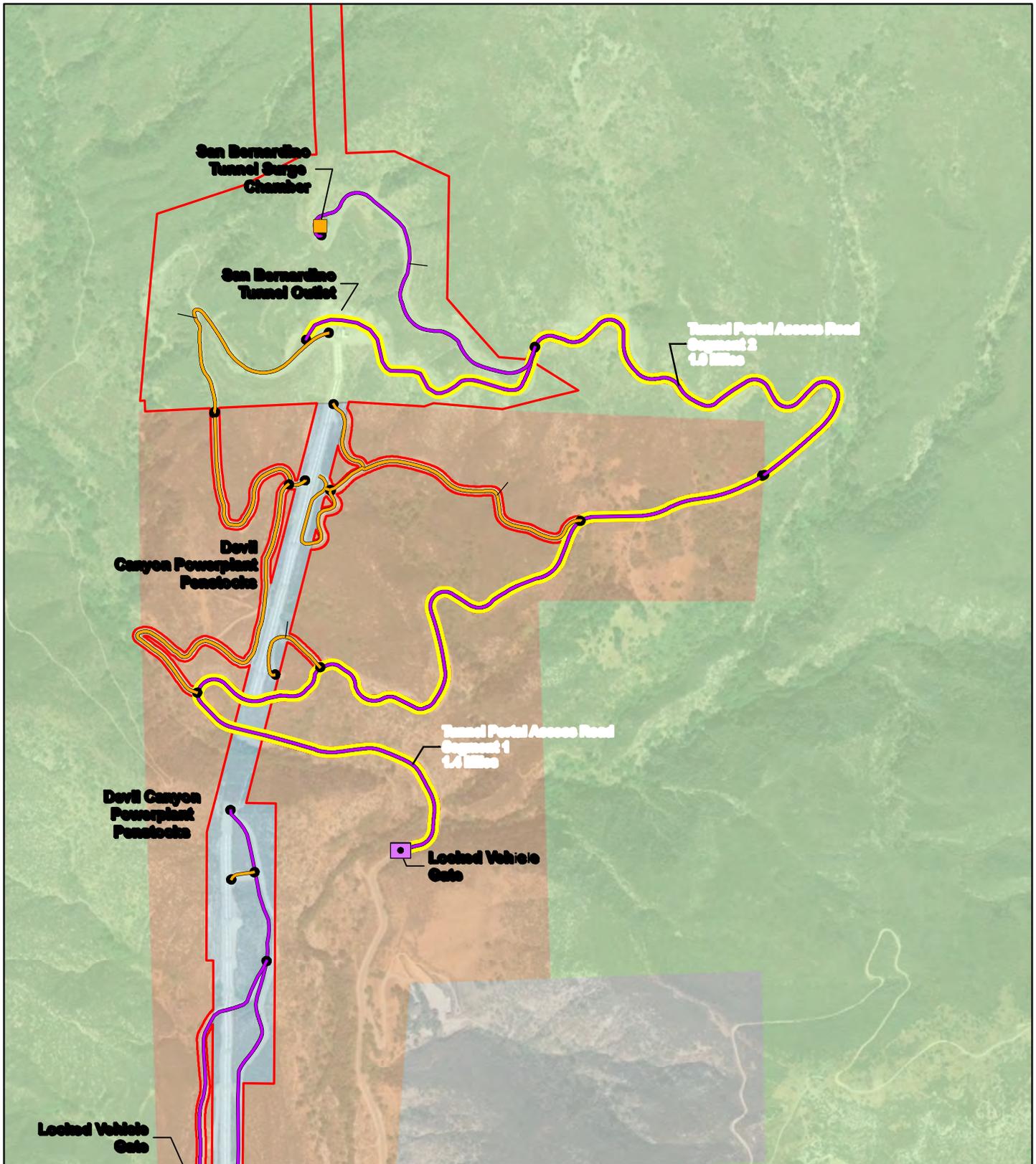
- U.S. Department of Agriculture, Forest Service (USFS). 2005a. Land Management Plan, Part 2 San Bernardino National Forest Strategy. September. Available online:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf
- _____. 2005b. National Inventory and Assessment Procedure. National Technology and Development Program, San Dimas, California. November. Available online:
<https://www.fs.fed.us/biology/nsaec/fishxing/publications/PDFs/NIAP.pdf>
- U.S. Department of Transportation (DOT). 2012. Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition, including Revisions 1 and 2. Prepared by Federal Highway Administration.

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Appendix A

Primary Project Roads

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Project Road Segment	 Project Boundary Devil Canyon
Surface	 Paved
	 Native
Land Ownership	 City of San Bernardino
	 US Forest Service
	 State of California
	 Private (or Other)

Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

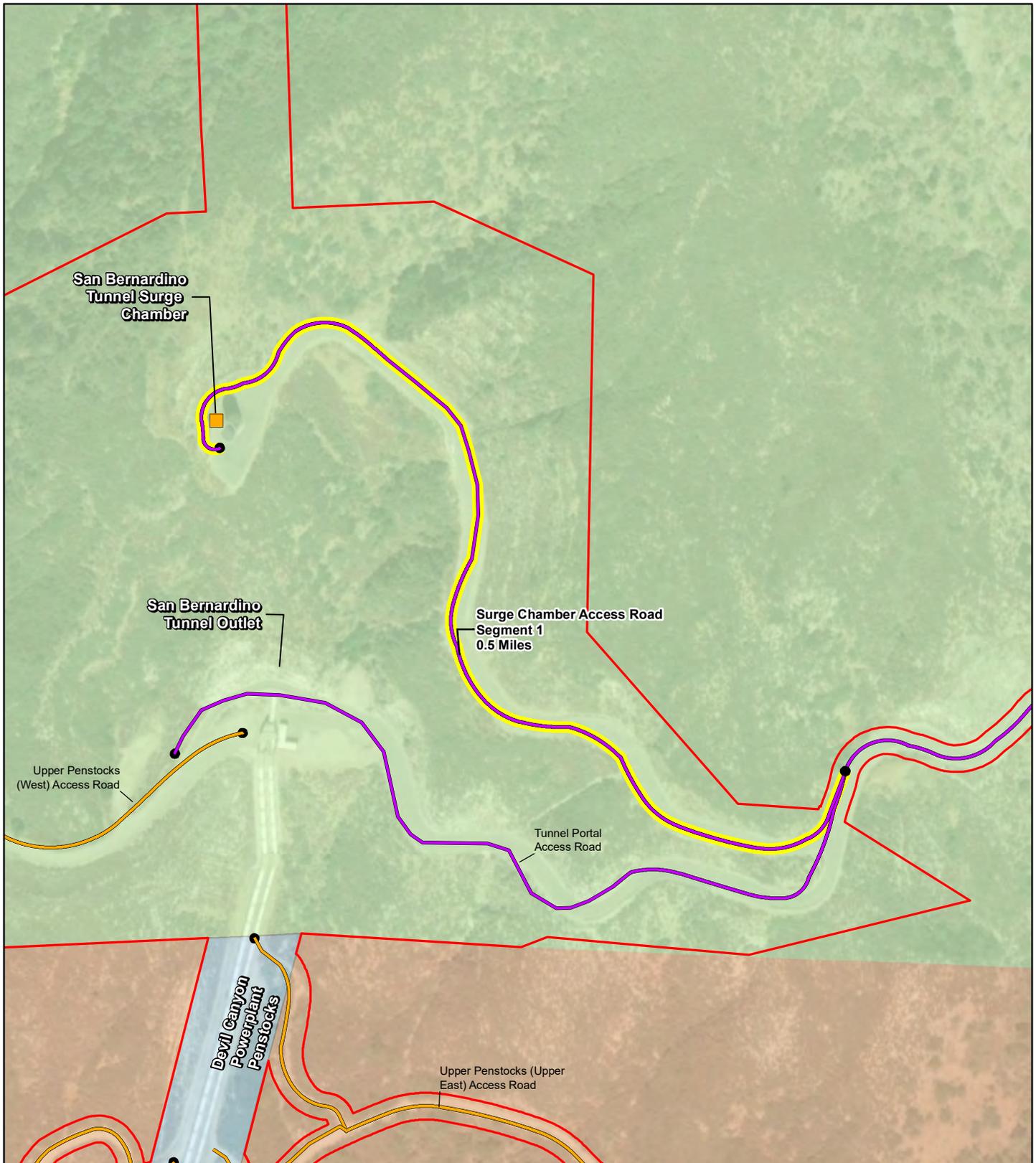
Feet
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**DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 1 OF 10**



DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

**TUNNEL PORTAL ACCESS
 ROAD
 (Road Highlighted in Yellow)**



Project Road Segment	Project Boundary Devil Canyon
Surface	Land Ownership
Paved	City of San Bernardino
Native	US Forest Service
	State of California

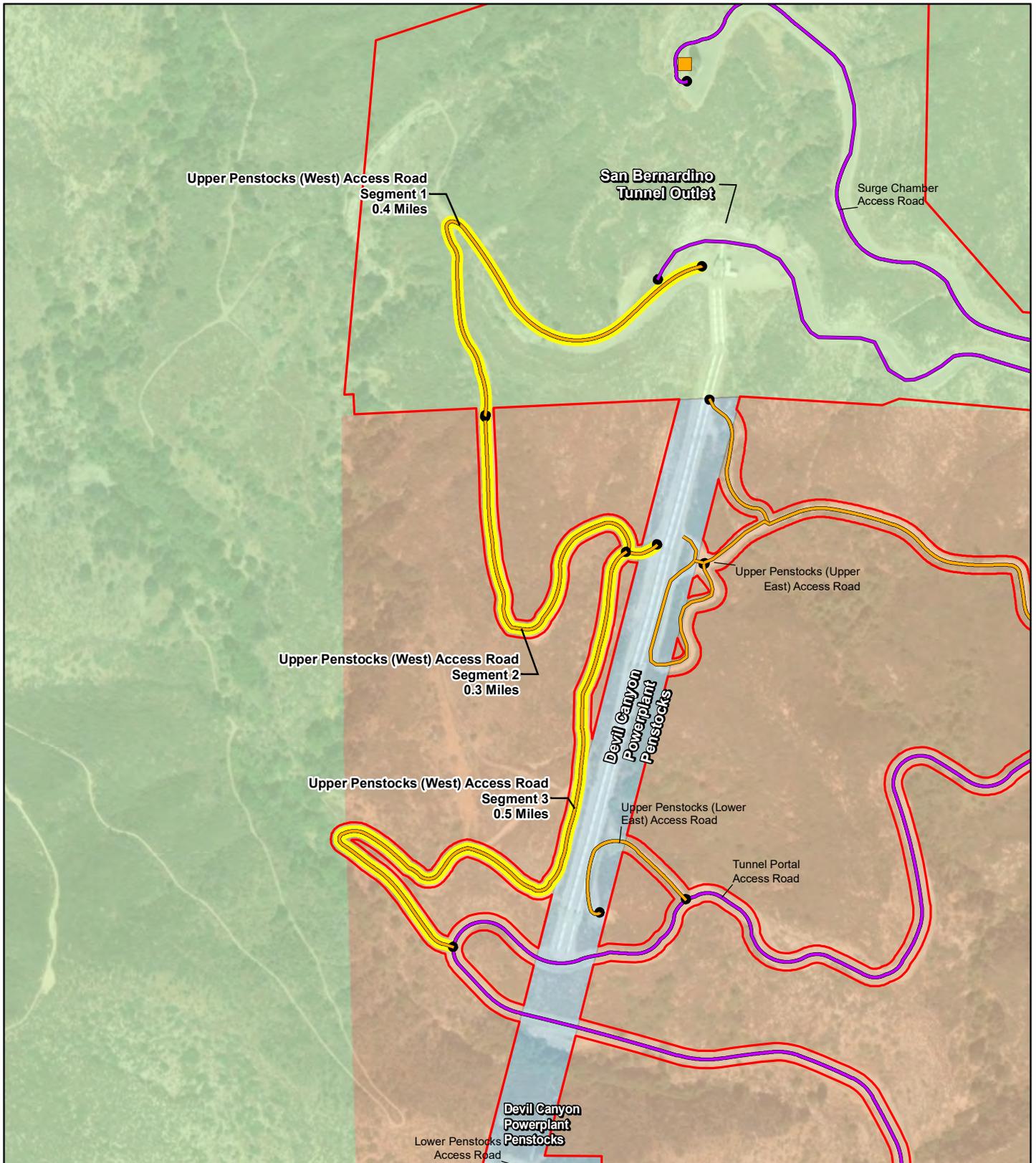
Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

0 240 480 Feet

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 2 OF 10



SURGE CHAMBER ACCESS ROAD
 (Road Highlighted in Yellow)



Project Road Segment Project Boundary Devil Canyon

Surface

- Paved
- Native

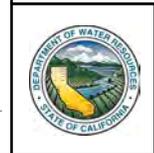
Land Ownership

- City of San Bernardino
- US Forest Service
- State of California

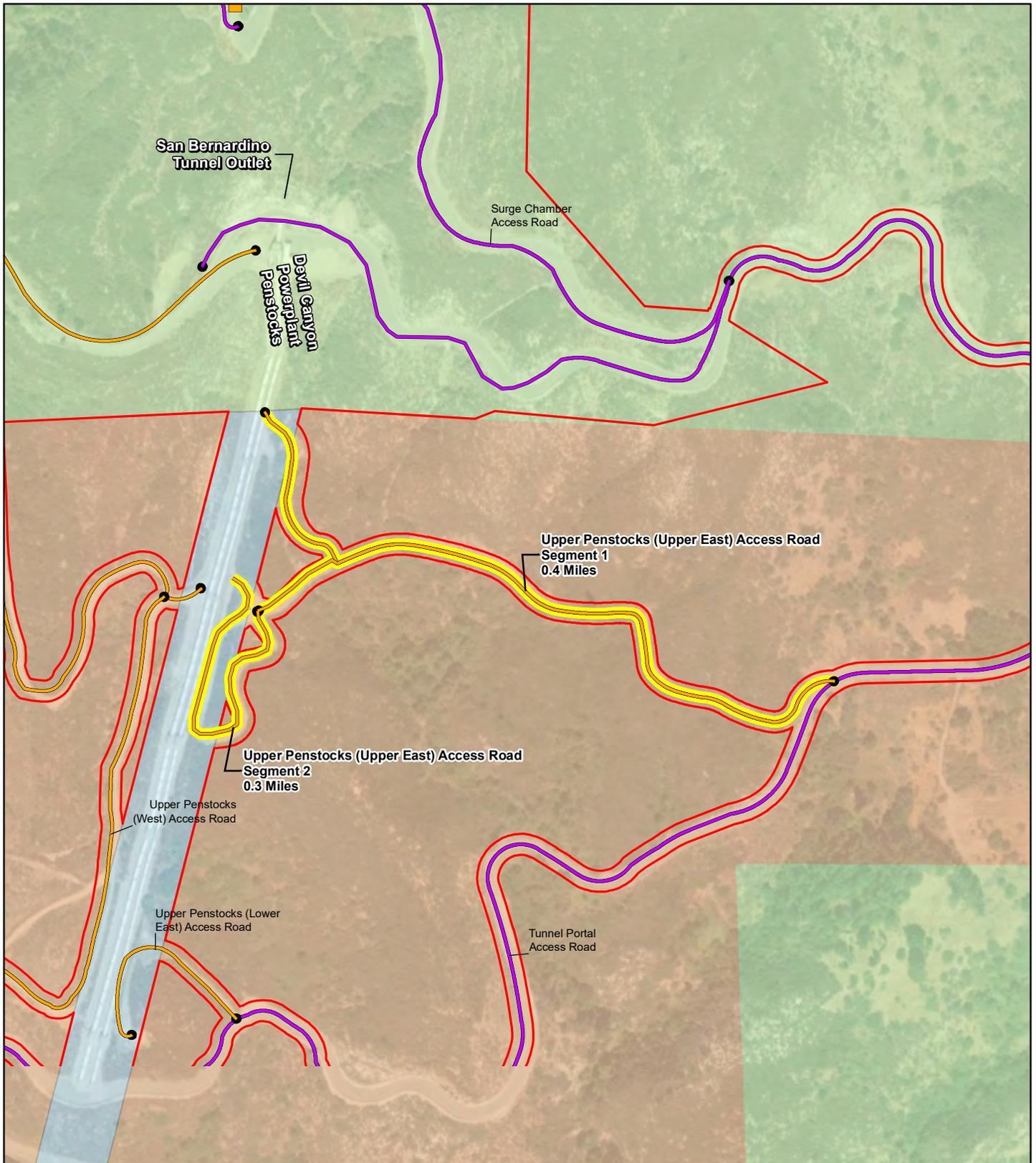
Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

Feet
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DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 3 OF 10



**UPPER PENSTOCKS (WEST)
 ACCESS ROAD
 (Road Highlighted in Yellow)**



Project Road Segment

- Red outline: Project Boundary Devil Canyon

Surface

- Purple line with black dots: Paved
- Yellow line with black dots: Native

Land Ownership

- Orange: City of San Bernardino
- Green: US Forest Service
- Blue: State of California

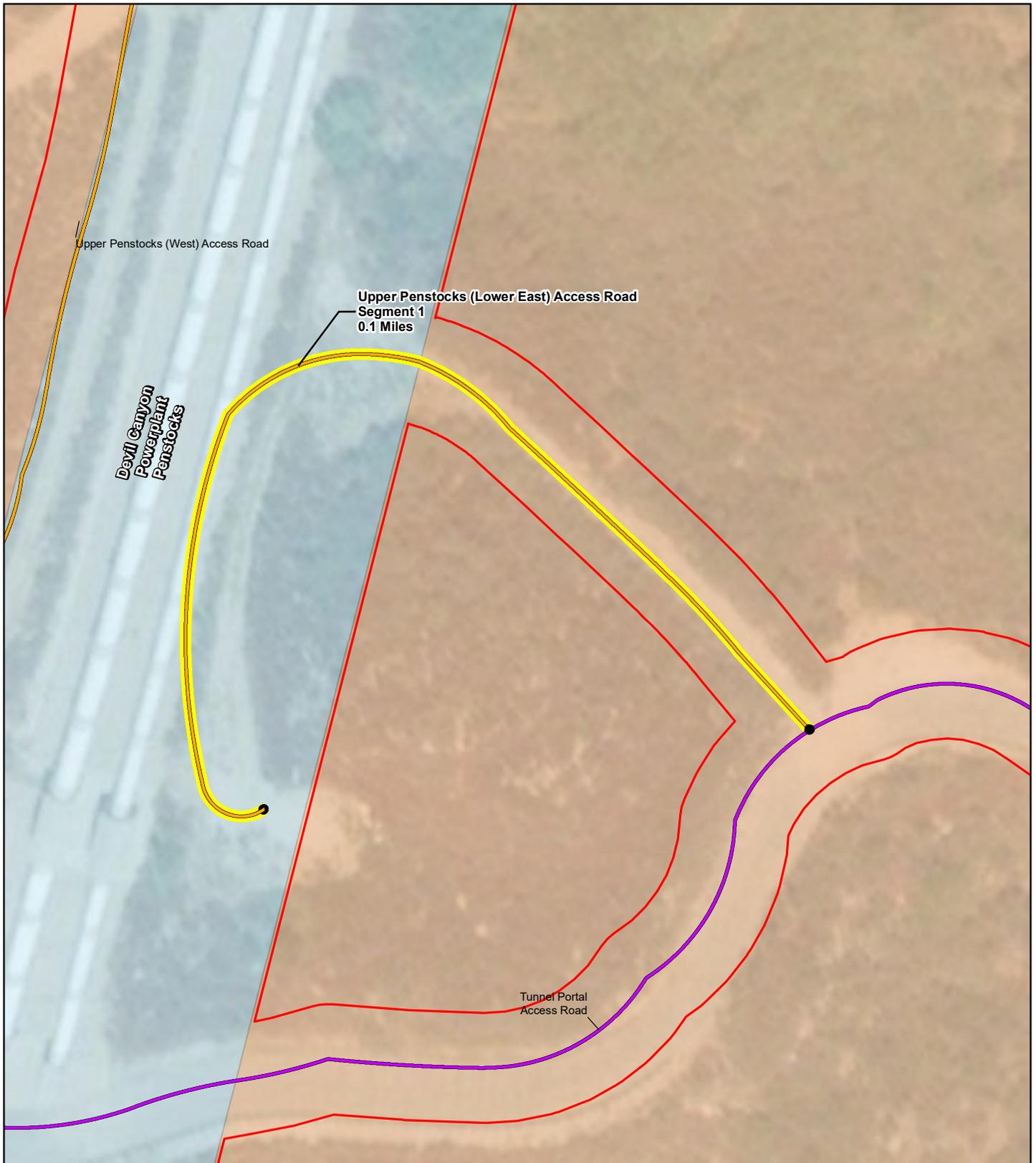
Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

0 300 600 Feet

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 4 OF 10



UPPER PENSTOCKS (UPPER EAST) ACCESS ROAD
 (Road Highlighted in Yellow)



Project Road Segment

Surface

- Paved
- Native

Land Ownership

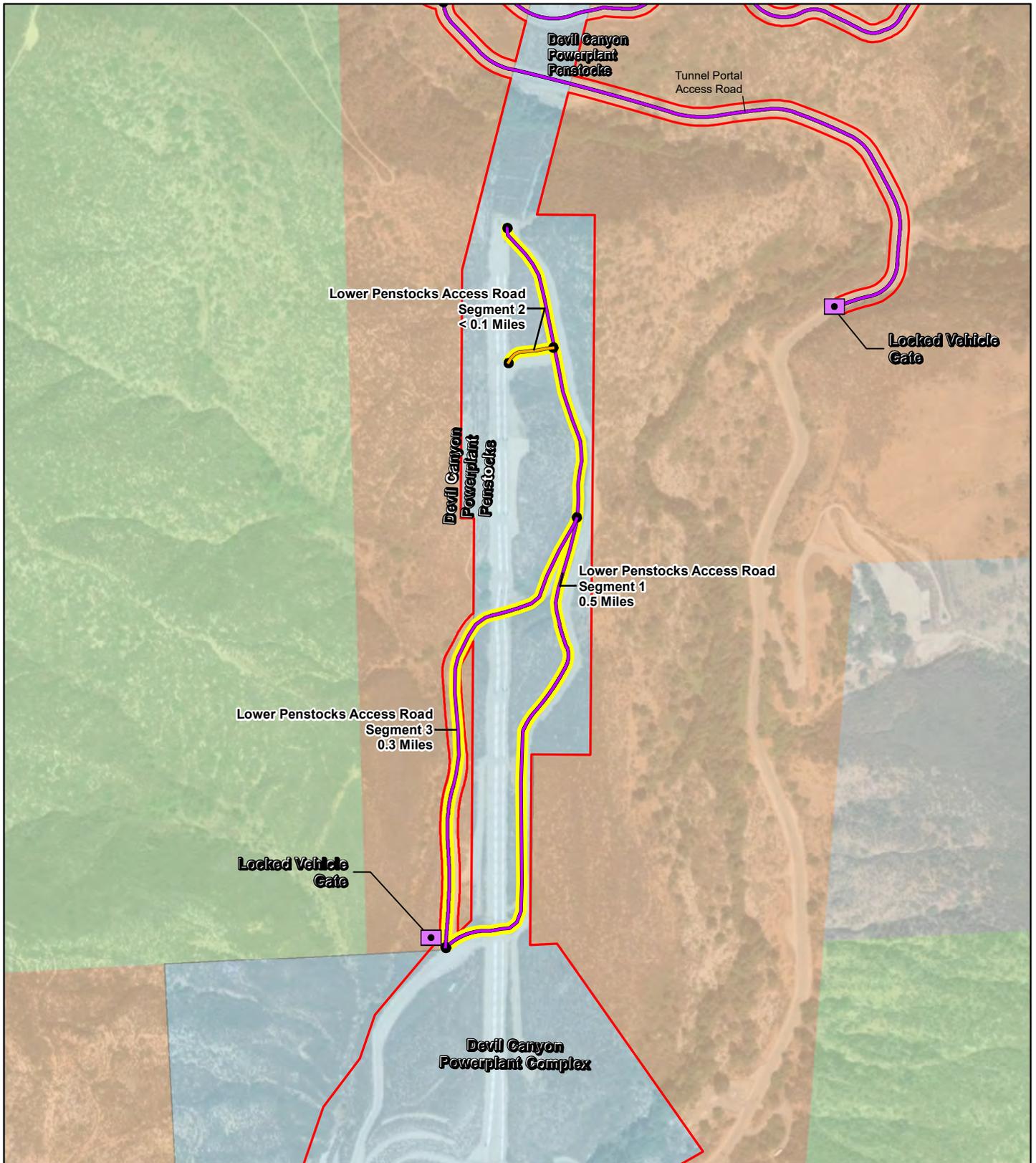
- Project Boundary Devil Canyon
- City of San Bernardino
- State of California

Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

0 Feet 50 100

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 5 OF 10

UPPER PENSTOCKS (LOWER EAST) ACCESS ROAD
 (Road Highlighted in Yellow)



- Project Road Segment**
- Red outline: Project Boundary Devil Canyon
- Surface**
- Yellow line: Paved
 - Black line: Native
- Land Ownership**
- Orange: City of San Bernardino
 - Green: US Forest Service
 - Blue: State of California
 - Grey: Private (or Other)

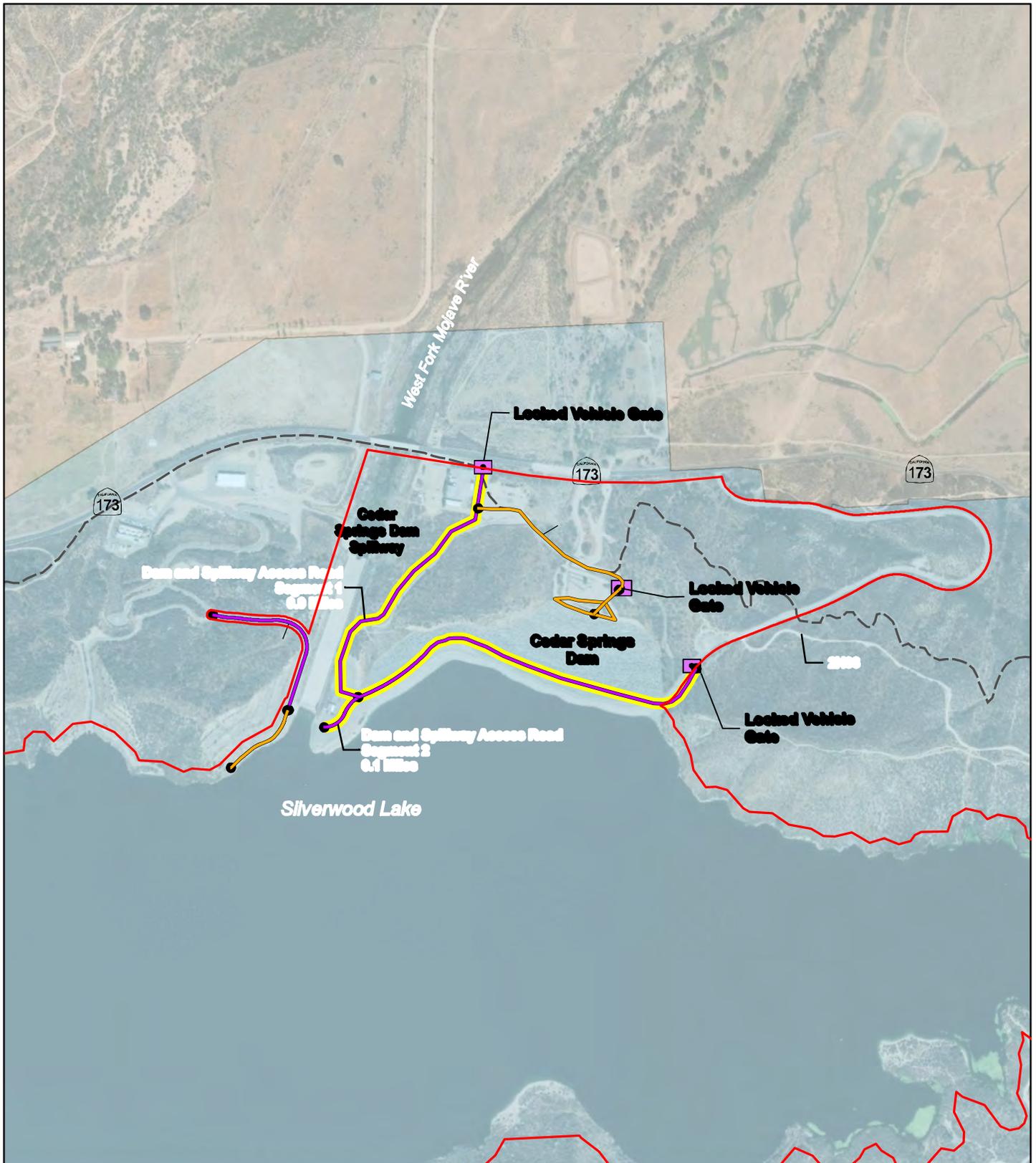
Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery,
 CA DWR Roads.



DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 6 OF 10



LOWER PENSTOCKS ACCESS ROAD
 (Road Highlighted in Yellow)



<p>— — — Pacific Crest Trail</p> <p>Project Road Segment</p> <p>Surface</p> <ul style="list-style-type: none"> ● — ● Paved ● — ● Native 	<p> Project Boundary Devil Canyon</p> <p>Land Ownership</p> <ul style="list-style-type: none"> US Forest Service State of California Private (or Other)
---	---

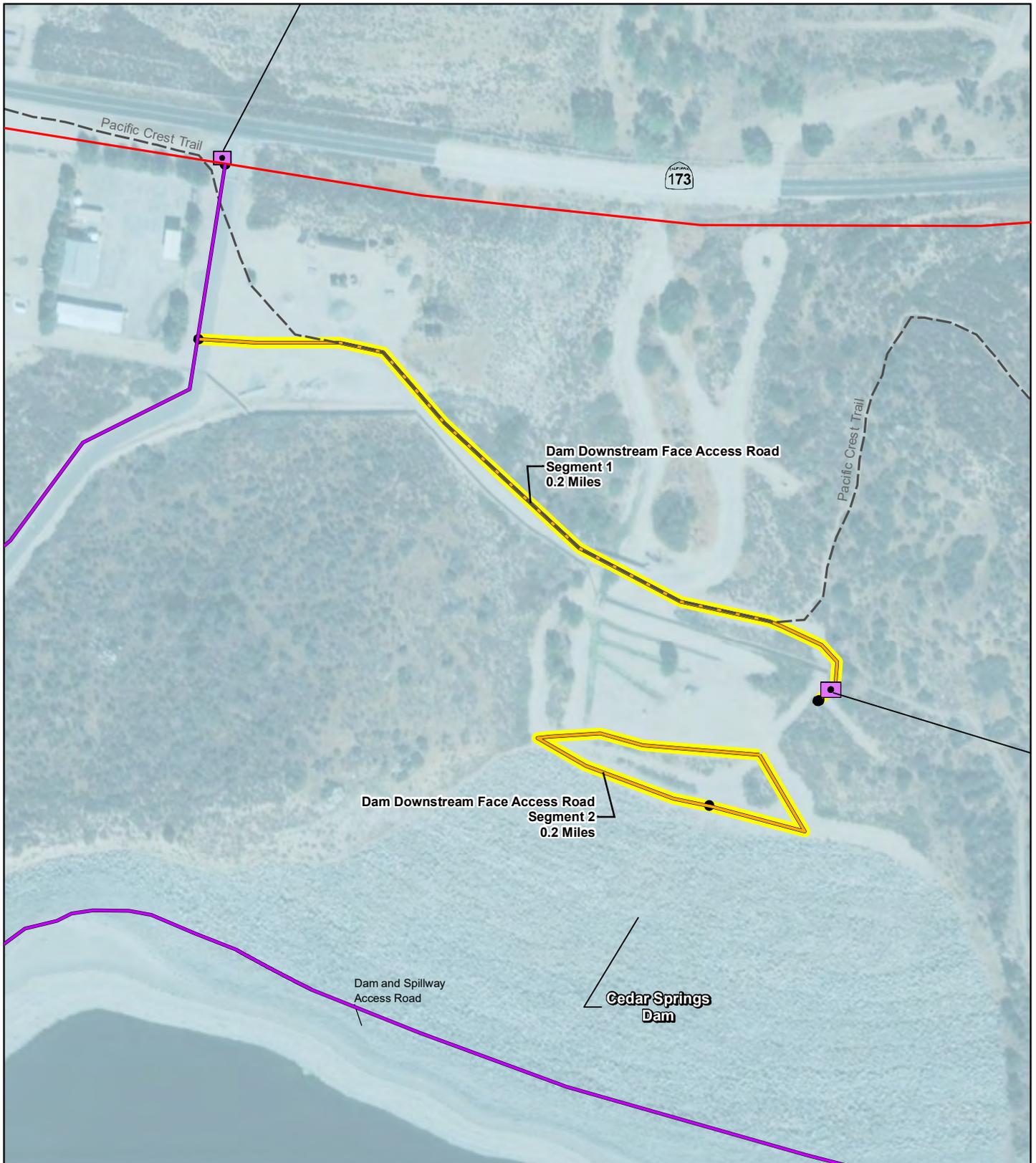
Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

Feet
 0 700 1,400

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 7 OF 10



DAM AND SPILLWAY ACCESS ROAD
 (Road Highlighted in Yellow)



- - - Pacific Crest Trail
 [Red Box] Project Boundary Devil Canyon
Project Road Segment
 [Purple Line with Dot] Paved
 [Yellow Line with Dot] Native
Land Ownership
 [Light Blue Box] State of California

Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

Feet
 0 160 320

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 8 OF 10



**DAM DOWNSTREAM FACE
 ACCESS ROAD
 (Road Highlighted in Yellow)**



Project Road Segment Project Boundary Devil Canyon

Surface

- Paved
- Native

Land Ownership

- State of California

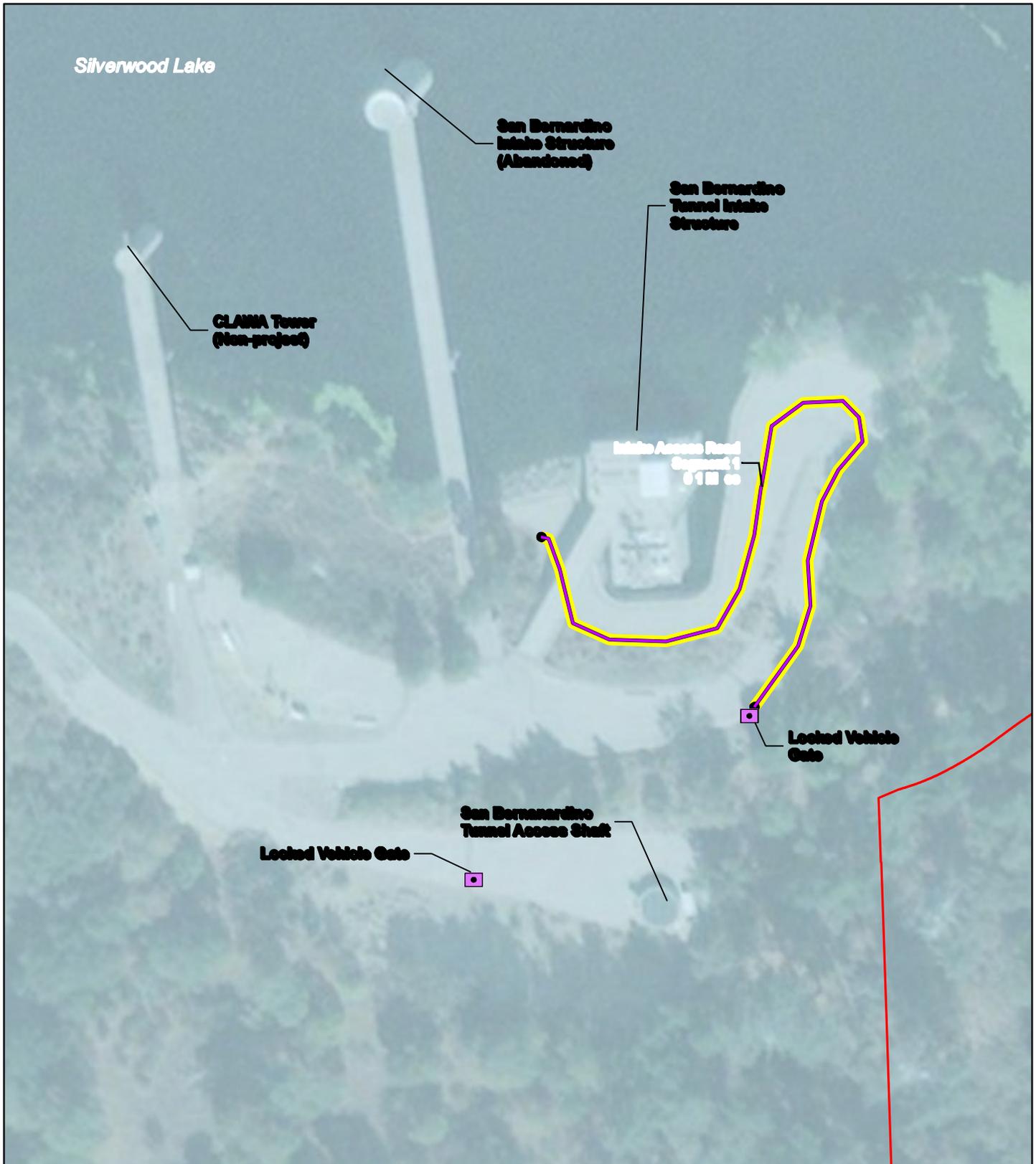
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 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

Feet
 0 140 280

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 9 OF 10



SPILLWAY ACCESS ROAD
 (Road Highlighted in Yellow)



Project Road Segment Project Boundary Devil Canyon

Surface

- — ● Paved
- — ● Native

Land Ownership

- State of California

Prepared: 10/23/2019
 Projection: CA StatePlane Zone 5, US FT
 Data and/or Background: Esri Imagery, CA DWR Roads.

Feet
0 70 140

DEVIL CANYON PROJECT RELICENSING
 TRANSPORTATION SYSTEM MANAGEMENT PLAN
 ATTACHMENT A - PRIMARY PROJECT ROADS
 FIGURE 10 OF 10



INTAKE ACCESS ROAD
 (Road Highlighted in Yellow)

Attachment 6

Fire Prevention and Response Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



FIRE PREVENTION AND RESPONSE PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources



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APPENDICES

Appendix A	Fire Plan for Construction and Service Contracts
Appendix B	Agency Checklist and Instructions for Determining Project Activity Levels Variances

COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

ACC	Area Control Center
Application for New License	DWR's Application for a New License for Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797
CAL FIRE	California Department of Forestry and Fire Protection
CPRC	California Public Resource Code
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
FSM	Forest Service Manual
NFS	National Forest System
O&M	operation and maintenance
PAL	project activity levels
Plan prevention	Fire Prevention and Response Plan Activities directed at reducing the number of person-caused fires, including public education, law enforcement, dissemination of information, and the reduction of hazards
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
Project boundary	The Project boundary is the area to which DWR requires access for normal Project operations and maintenance. The boundary is shown in Exhibit G of DWR's Application for New License
SBNF	San Bernardino National Forest
SRA	State Recreation Area
suppression	All the work of extinguishing or containing a fire, beginning with its discovery
SWP	State Water Project
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
wildfire	An unplanned and unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out

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1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project).

DWR included this Fire Prevention and Response Plan (Plan) in its November 2019 Application for New License. This Plan addresses fire prevention procedures, reporting, and safe fire practices for DWR personnel and contractors responsible for operating and maintaining the Project.

All elevation data in this exhibit are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Description of the Project

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). Project facilities range in elevation from 3,378 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel and Surge Chamber; Devil Canyon Powerplant Penstocks; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation (DPR), on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., the Pacific Crest National Scenic Trail and DPR administrative buildings) traverse or are located in the Silverwood Lake SRA but are not Project facilities. The Project does not include any open water conduits or transmission lines. DWR operates the Project using SWP water as the water is delivered to downstream SWP water users; no local water is used for

Project purposes. Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including the Project boundary.

1.2 PURPOSE OF THE PLAN

The purpose of this Plan is to provide guidance for fire prevention, response, and investigation, including prevention, emergency response preparedness, reporting, and fire control/extinguishing during operation and maintenance (O&M) of the Project. To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The goals of the Plan are to guide Project O&M in a manner intended to help prevent the ignition and spread of wildfires, and to guide response should fires occur. The objective of the Plan is to describe the fire prevention, protection and response actions to meet the Plan's purposes and goals.

1.4 CONTENTS OF THE FIRE PREVENTION AND RESPONSE PLAN

This Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including the purpose and goals of the Plan.
- Section 2.0. Methods. This section describes the research conducted and relevant documents consulted for the development of the Plan.
- Section 3.0. Fire Prevention and Protection Actions. This section describes fire prevention and protection measures for the Project.
- Section 4.0. Fire Response Actions. This section describes fire response measures for the Project.
- Section 5.0. Consultation, Reporting, and Plan Revisions. This section describes consultation between DWR and SBNF, reporting, and plan revisions.
- Section 6.0. References Cited. This section provides a list of the references cited in this Plan.



Figure 1.1-1. Devil Canyon Project Vicinity

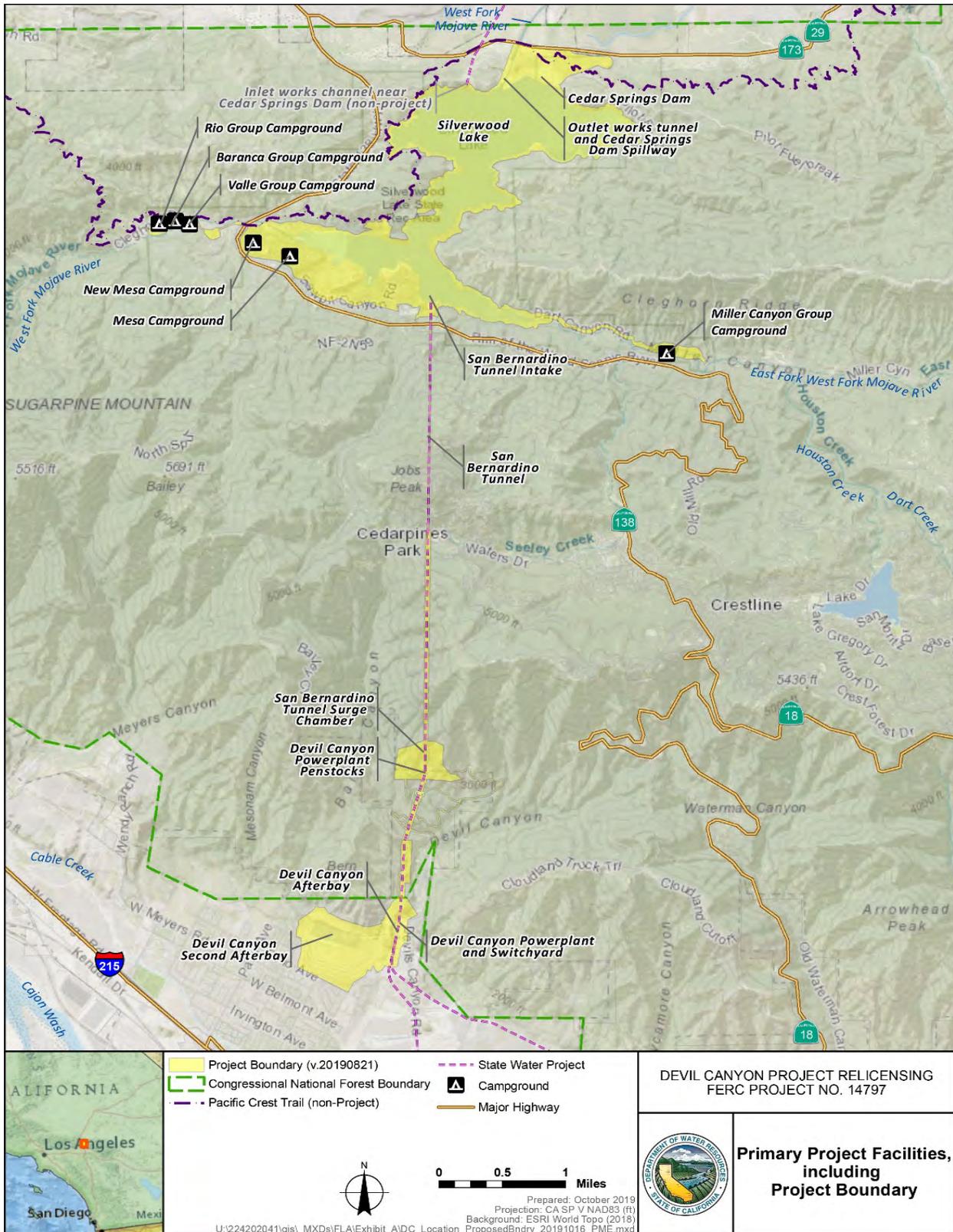


Figure 1.1-2. Devil Canyon Project Boundary

2.0 METHODS

A variety of methods and research were utilized in the development of this Plan, all of which are summarized in the sub-sections that follow.

2.1 INFORMATION/DATA COLLECTION AND RESEARCH

The information sources and data listed below relating to fire prevention, suppression, and fuel management on lands within the Project boundary were reviewed to provide appropriate background and technical reference for the development of this Plan. Note that not all of the information sources listed below may be applicable to the Project and DWR.

2.1.1 Federal Agency Land Use and Resource Management Plans

The following federal land use and resource management plans were reviewed for development of this Plan:

- SBNF Land Management Plan 2006 Revision Final Environmental Impact Statement, Record of Decision (USFS 2006)
- SBNF Land Management Plan, Part 2 (USFS 2005)
- SBNF Land Management Plan Monitoring and Evaluation Report: Fiscal Year 2016 (USFS 2017)

2.1.2 Fire Management, Fire Prevention, Fire Response, and Fuel Management Plans

The following federal, State, local and interagency fire prevention, management, and response plans were reviewed for development of this Plan:

- California Department of Forestry and Fire Protection (CAL FIRE) San Bernardino Unit Strategic Fire Plan for San Bernardino, Inyo and Mono Counties, 2017 (CAL FIRE 2017)
- USFS Fire Management Planning Guide, 2017 (USFS 2017)
- Forest Service Manual (FSM) 5100 – Forest Service Policies for Wildland Fire Management – Wildfire Prevention (USFS 2010)
- Forest Service Handbook 5109.18 – Forest Service Wildland Fire Prevention Handbook (USFS 2015)
- CAL FIRE, Strategic Fire Plan for California, 2012 (CAL FIRE 2012)
- San Bernardino County, Community Wildfire Protection Plan, Arrowhead Communities (San Bernardino County 2005a)

- San Bernardino County, Community Wildfire Protection Plan, Wrightwood Communities (San Bernardino County 2005b)
- California Interagency Mobilization Guide, 2018 (California Wildland Fire Coordinating Group 2018)
- Interagency Standards for Fire and Fire Aviation Operations, 2016 (DOI and USDA 2016)
- The National Strategy, The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy, 2014 (Wildland Fire Leadership Council 2014)

2.1.3 Federal Agency Management Goals for Implementation of Fire Prevention and Response Actions

The Interagency Standards for Fire and Fire Aviation Operations (DOI and USDA 2016) contain fire and fire aviation program management direction for federal land managers on federal lands at the following federal agencies: USFS; Bureau of Land Management (BLM); U.S. Fish and Wildlife Service (USFWS); and the National Park Service.

The Interagency Standards work concurrently with the guiding principles of two other main federal policies for management of wildland fires on federal lands: the 1995 Federal Wildland Fire Management Policy and the Guidance for Implementation of Federal Wildland Fire Management Policy. The 1995 Federal Wildland Fire Management Policy has 17 elements that are detailed in the Interagency Standards document. The Guidance for Implementation of Federal Wildland Fire Management Policy details guidelines for implementing policy consistent with federal wildland fire policy. Also, each of the four federal agencies has its own fire management and fire aviation goals that are also outlined in the Interagency Standards.

2.1.4 Cooperative Agreements, Regulations, and Codes

Federal, State, and local agencies' cooperative agreements, regulations, and codes related to fire protection, prevention, and suppression activities within or near the Project boundary were reviewed. These references include: California Public Resource Codes (CPRC) 4291-4293, 4421-4446; California Health and Safety Codes 12101, 13000, 13001, and 13005; the FSM 5100; CAL FIRE Power Line Fire Prevention Field Guide (2008); the California Master Cooperative Wildland Fire Management and Stafford Act Response Agreement (2013-2018); and Current San Bernardino County Fire Code.

2.1.5 Emergency Communication Plans

Federal, State, and local fire agency emergency management, fire dispatch, and mobilization plans and documents were reviewed. These included:

- Project-related fire prevention and safety plans
- Federal Interagency Communications Center, 2018

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3.0 FIRE PREVENTION AND PROTECTION ACTIONS

3.1 GENERAL FIRE PREVENTION AND PROTECTION ACTION SUMMARY

DWR Project operators will adhere to the following codes, regulations, requirements, measures, and activities on NFS lands:

- The general fire prevention requirements applicable to Project-related operations, maintenance, equipment, tool use, and fire use activities
- SBNF's project activity levels (PAL) fire restrictions

DWR will contact DPR when Project maintenance or repair will be conducted on State park property and will coordinate proper fire contingency specifications with DPR.

3.2 SPECIFIC FIRE PREVENTION AND PROTECTION REQUIREMENTS APPLICABLE TO PROJECT-RELATED OPERATIONS AND MAINTENANCE

DWR will, for the purposes of this Plan, follow the specific fire prevention and protection measures listed below that are applicable to O&M for the Project.

- DWR will secure special written permission from the SBNF's District Ranger (on NFS lands), District Fire Management Officer (on NFS lands), CAL FIRE battalion chief (on private lands only), or any of their officially designated representatives, before engaging in any of the activities listed below:
 - Blasting and storage of explosives and detonators (explosives permit required by California Health and Safety Code, Section 12101)
 - Burning, as authorized under the current operating plan
 - Welding, cutting, and grinding; DWR always follows Code of Safe Work Practices and established DWR Policies and Procedures for safe work, especially hot work
- In the event of discovery of a fire within the Project boundary, the Area Control Center (ACC) will notify USFS and/or CAL FIRE dispatch centers.
- In general, DWR may equip each work-related O&M vehicle on NFS lands with the following firefighting equipment at all times:
 - A round point shovel with an overall length of not less than 46 inches (for clearing away flammable materials); a rake may be used, but it may not be a substitute for the shovel on the vehicle
 - One backpack water pump ready for use
 - One five-pound or greater ABC fire extinguisher

- An axe and saw
- Radio for coordination with the DWR Control Center in the event of a fire on NFS lands.
- DWR normally provides to O&M work groups in the field a water trailer with one of the vehicles.
- Firefighting equipment will be accessible at the job site in the event of an emergency.
- National Fire Protection Association placards will be posted at locations with hazardous materials to alert emergency responders.

DWR will review the SBNF PAL website or call the dedicated phone line daily for NFS lands to determine the PAL. See Appendix A, Fire Plan for Construction and Service Contracts, for PAL requirements. If emergency repairs on NFS lands (i.e., those repairs necessary for public safety or to prevent damage to facilities) are necessary that require welding, grinding, or cutting, and DWR does not have a permit, DWR will strive to follow the “Very High” fire rating restrictions, have appropriate fire safety equipment available on site, and notify the Duty Officer at the SBNF by phone as soon as reasonably possible after responding to the emergency. In the event of an emergency, DWR staff onsite will contact DWR’s ACC and the ACC will then contact the responsible fire agency while staff onsite proceed with emergency repairs.

3.3 PROJECT OPERATIONS REQUIRING THE USE OF FIRE/BURNING

DWR will obtain permission from SBNF prior to burning on NFS lands.

3.4 PROTECTION, APPLICABLE CODES, AND CODE COMPLIANCE ACTIONS

DWR practices ongoing fire protection measures to comply with applicable codes and safeguard Project assets. For example, DWR creates a defensible space around all Project structures, including the powerplant and recreation facilities, by routinely clearing vegetation in the immediate vicinity. This includes periodic inspections to determine the need for vegetation removal, hazard tree trimming/removal, and compliance with CPRC clearance requirements. These efforts are expected to provide an effective level of fire protection and prevention within the Project boundary.

3.5 FIRE PREVENTION REQUIREMENTS FOR PROJECT AREA TOOL AND EQUIPMENT USE

DWR’s Operations staff involved with any type of equipment/tool use within the Project boundary will take specific fire prevention actions and measures. Tools and equipment may be inspected by CAL FIRE or USFS, if the work is on NFS lands, to continue compliance with fire safety rules. DWR will follow the applicable equipment use-specific restrictions detailed by PAL ratings, as identified in Appendix A.

3.6 FIRE HAZARD ZONE LEVELS

USFS and CAL FIRE use the Fire Hazard Zone model to evaluate fire hazard severity zones within the local responsibility areas (CAL FIRE 2018). In turn, the results of the zone model are used as a tool to create local ordinances for planning purposes. Nearly all of the area within the Project boundary lies within the Very High fire hazard level, and within the Moderate fire hazard level along the perimeter of Silverwood Lake in the northern portion of the Project area. Figure 3.6-1 shows land ownership in the Project vicinity, and Figure 3.6-2 shows fire hazard levels as designated by the SBNF and CAL FIRE in the vicinity of the Project boundary.

3.7 PROJECT ACTIVITY LEVEL PLANNING REQUIREMENTS FOR THE PROJECT AREA

USFS has a fire prevention process that determines fire danger each day on NFS lands as displayed by PAL. The PAL is implemented and administered to regulate activities of private companies performing work on NFS lands. For DWR's Project O&M that involves equipment/tool use within the Project boundary, DWR will monitor fire danger conditions and comply with the appropriate PAL fire prevention requirements. Project vicinity lands reside within SBNF PAL jurisdictions.

The SBNF may, in most cases, determine the following day's activity level on NFS lands by 4:00 p.m. each afternoon. DWR can obtain Project Area PAL fire and activity restrictions on NFS lands for the following day by calling 909-382-2997, or going to the SBNF website after 4:00 p.m.: <https://www.fs.usda.gov/detailfull/sbnf/alerts-notices/?cid=stelprdb5156627&width=full>. DWR will then comply with the prescribed requirements and restrictions for that day.

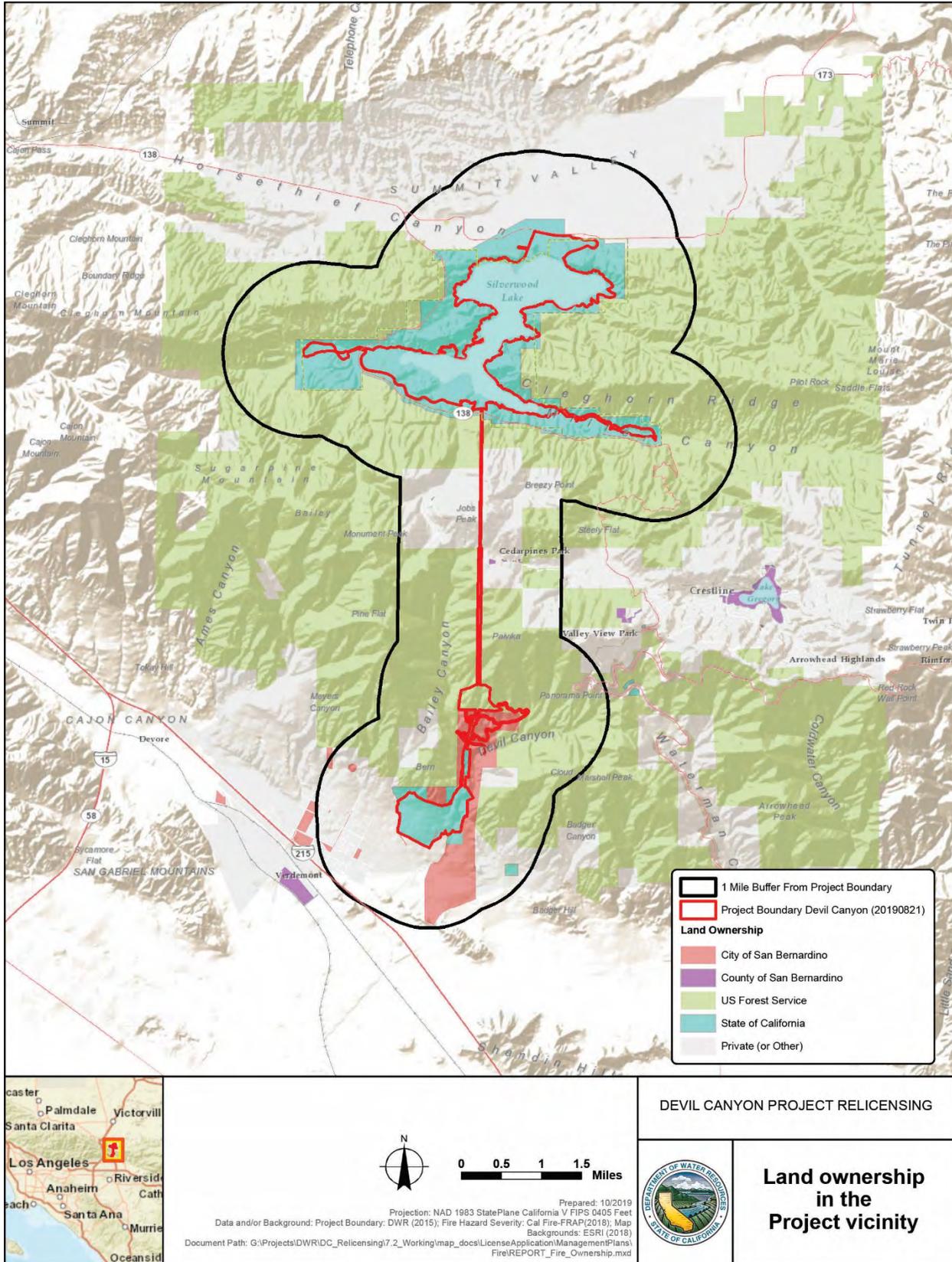


Figure 3.6-1. Land Ownership in the Project Vicinity

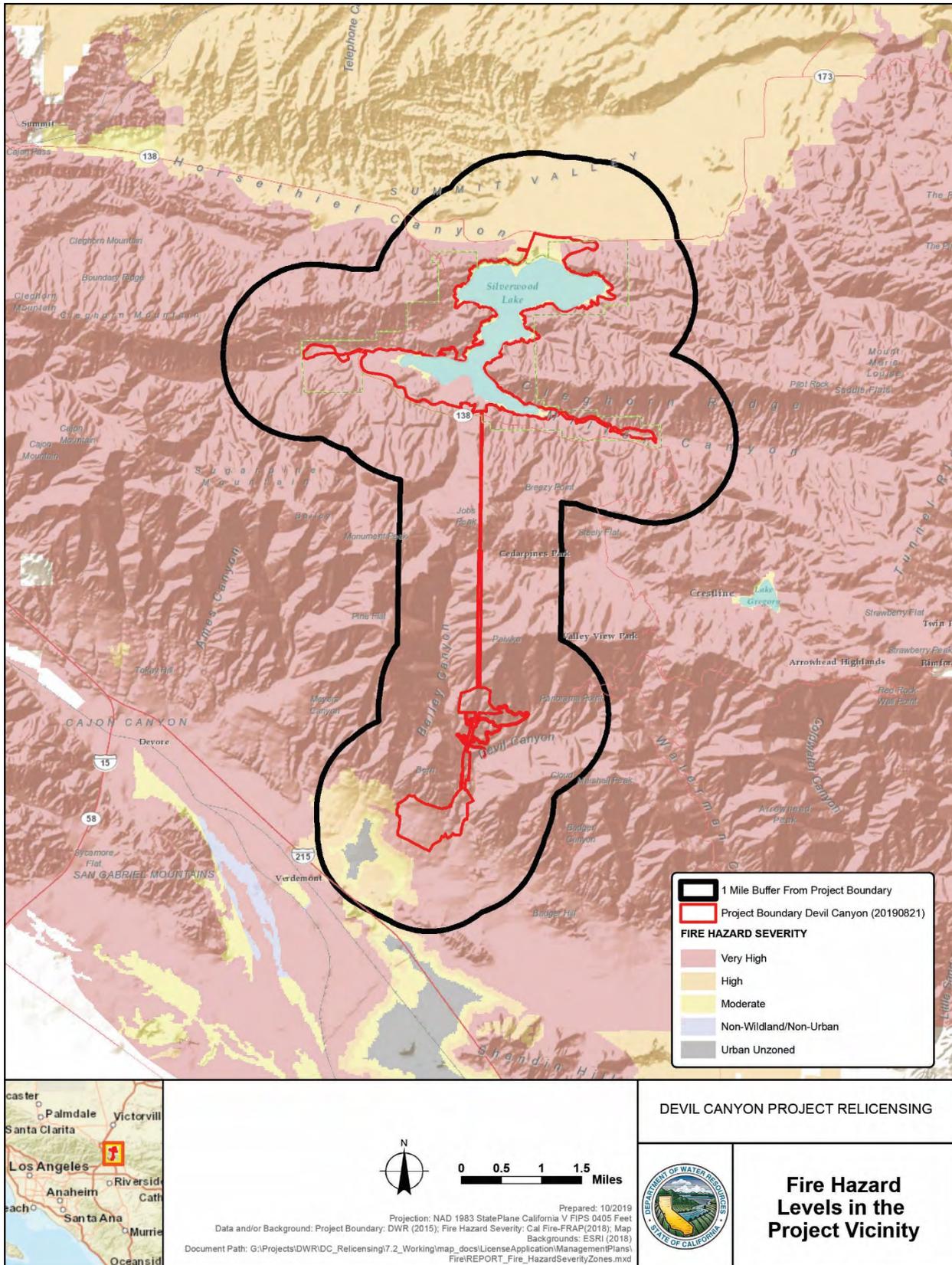


Figure 3.6-2. Fire Hazard Levels in the Project

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4.0 FIRE RESPONSE ACTIONS

4.1 EMERGENCY RESPONSE PREPAREDNESS

Generally, DWR's Operation staff vehicles and contractor vehicles have axes, saws, shovels, and radios while in the field to facilitate DWR's emergency response preparedness and prevent or extinguish small fires. They may also have a water trailer with one of the vehicles.

4.2 REPORTING FIRES

DWR will report Project-related fires and any fire it detects within the Project boundary by calling 9-1-1.

When reporting a wildland fire, DWR personnel will provide incident information, which may include the following:

- Reporting party's name
- Radio number; office or cell phone call back number
- Fire estimated location:
 - Legal or global positioning system location description (township, range, section or latitude and longitude), if available at the time
 - Descriptive location (road or geographic reference point)
- Best access routes in DWR's Operations staff opinion
- Incident size estimate (in acres)
- Incident status
- Estimated rate of fire growth or spread
- Weather conditions
- Radio frequencies
- Special hazards and concerns, if DWR's Operations staff are aware of any
- Additional resource needs, if DWR's Operations staff are aware of any

4.3 FIRE CONTROL/EXTINGUISHING FIRES

Fire suppression within the Project boundary is the responsibility of three agencies. Fire suppression in the Silverwood Lake SRA is managed by CAL FIRE, suppression on

NFS lands is the responsibility of USFS, and suppression at the Devil Canyon Powerplant and associated facilities are within the jurisdiction of the San Bernardino County Fire Department (Figure 3.6-1). (State of California 2012.)

Each public agency within the Project boundary has its own communication center for coordinating the mobilization of resources for wildland fire and other incidents. Should a wildfire occur within the Project boundary, DWR would call 9-1-1, which would contact the appropriate jurisdiction. On NFS lands, the SBNF Communication Center is the central location for coordinating USFS resources. On private lands, CAL FIRE's San Bernardino Unit Emergency Command Center is the central location for coordinating resources.

4.4 EMERGENCY EVACUATION PLANS

DPR has an Emergency Evacuation Plan for the Silverwood Lake SRA. Also, DWR has an Emergency Action Plan that is routinely tested with key agencies including DPR and USFS. Any emergency evacuation triggered by a wildfire would be directed by the agency responsible for controlling the wildfire (i.e., CALFIRE, USFS, and/or San Bernardino County Fire Department).

4.5 ROAD ACCESS

Portions of the Project boundary are normally accessible by fire suppression crews through federal, State, City of San Bernardino, and NFS roads, and by DWR's Primary Project access roads, though DWR cannot ensure access by fire suppression crews to these areas under all conditions. A description of potential access routes is provided below.

4.5.1 Directions to Project Facilities

4.5.1.1 *Devil Canyon Powerplant*

Take Interstate Highway 215 to the University Parkway exit then proceed north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road to the Devil Canyon Powerplant complex, a fenced and gated area at 6900 Devils Canyon Road in San Bernardino, California. The complex is closed to the public at the entrance gate.

The routes to access each Project facility are described below. Road lengths provided below are rounded to the nearest tenth of a mile and based on Google Maps road and routing data.

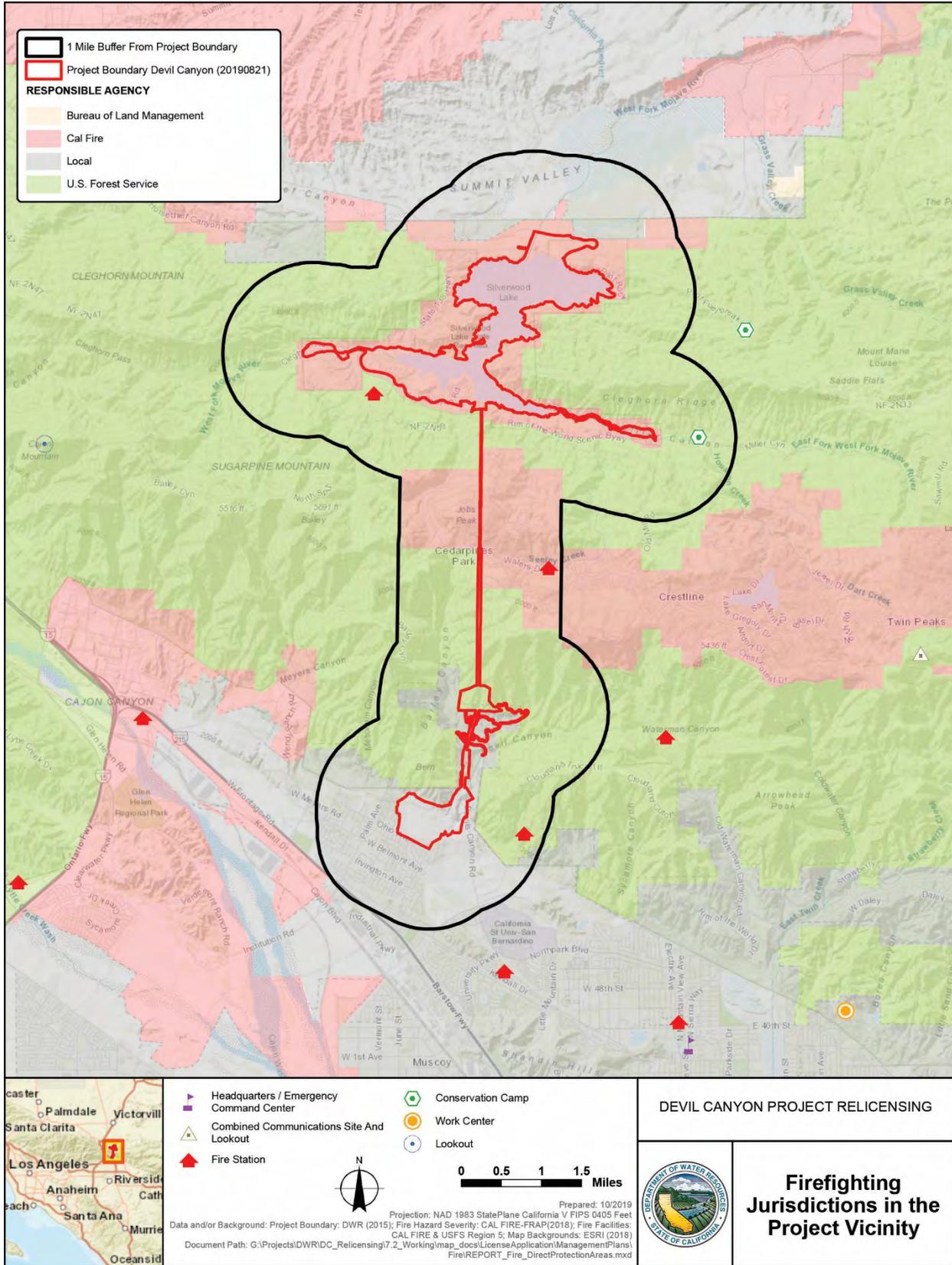


Figure 4.3-1. Firefighting Jurisdictions in the Project Vicinity

4.5.1.2 San Bernardino Tunnel Outlet

Take Interstate Highway 215 to the University Parkway exit and head north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road past the Devil Canyon Powerplant complex at 6900 Devils Canyon Road, 0.9 miles to the locked gate. Beyond the locked gate, the road is named Tunnel Outlet Access Road. Continue beyond the gate for 2.1 miles to the fork/junction. Take the left fork option and travel 0.3 miles to the San Bernardino Tunnel Outlet, where the tunnel transitions to above ground penstocks.

4.5.1.3 San Bernardino Tunnel Surge Chamber

Take Interstate Highway 215 to the University Parkway exit and head north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road past the Devil Canyon Powerplant complex at 6900 Devils Canyon Road, 0.9 miles to the locked gate. Beyond the locked gate, the road is named Tunnel Outlet Access Road. Continue beyond the gate for 2.1 miles to the fork/junction. Take the right fork option and then drive another 0.4 miles along the Surge Chamber Access road to the Surge Chamber.

4.5.1.4 Devil Canyon Powerplant Penstocks, Upper Portion

The upper portion of the penstocks can be accessed at several locations along the alignment of the penstocks. This description provides directions to the uphill and downhill ends of the penstocks.

Take Interstate Highway 215 to the University Parkway exit and head north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road past the Devil Canyon Powerplant complex at 6900 Devils Canyon Road, 0.9 miles to the locked gate. Beyond the locked gate, the road is named Tunnel Outlet Access Road. Continue beyond the gate for 0.5 miles to the downhill end of the upper penstocks. To access the uphill end of the upper penstocks, continue another 1.6 miles up Tunnel Outlet Access Road to a fork/junction of the Tunnel Outlet Access Road. Take the left fork option and travel 0.3 miles to the uphill end of the upper penstocks.

4.5.1.5 Devil Canyon Powerplant Penstocks, Lower Portion

The lower portion of the penstocks can be accessed at several locations along the alignment of the penstocks. This description provides directions to the uphill and downhill ends of the penstocks.

To access the downhill end of the lower penstocks, take Interstate Highway 215 to the University Parkway exit and head north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road to the Devil Canyon Powerplant complex, a fenced and gated area at 6900 Devils Canyon Road in San Bernardino, California. The complex is closed to the public at the entrance gate. Once inside the complex, proceed west 300 feet on Memory

Lane, then turn right following the access road along the east shore of the afterbay, past the powerhouse, uphill and north of the powerhouse.

To access the uphill end of the lower penstocks, take Interstate Highway 215 to the University Parkway exit and head north. From University Parkway, turn left onto Northpark Boulevard West, which becomes Devils Canyon Road. Continue on Devils Canyon Road to the Devil Canyon Powerplant complex, a fenced and gated area at 6900 Devils Canyon Road in San Bernardino, California. The complex is closed to the public at the entrance gate. Once inside the complex, proceed west 0.1 miles on Memory Lane, then turn left and proceed south 0.2 miles to the fork in the road. Take the right fork and follow this road completely around (clockwise) the lower afterbay and proceed up the hill alongside the penstocks for 2.4 miles, making sure to take the right fork at 1.8 miles, to the uphill end of the lower penstocks. Taking the right fork at 1.8 miles eliminates the need to use a penstocks undercrossing that might present clearance issues with larger vehicles.

4.5.1.6 Cedar Springs Dam and Spillway

Cedar Springs Dam and Spillway are located immediately adjacent to State Highway 173. To access the facilities, from the Highway 173 bridge over the Cedar Springs Spillway, proceed 0.1 miles east to the gated entry to the dam facility on the south side of the highway. Continue 0.3 miles uphill on the paved access road from the highway to the crest of the dam and the top of the dam spillway. Access extends across the crest of the dam to a locked gate on the east end of the dam. Beyond this locked gate is public access to the Pilot Rock off highway vehicle parking area via Forest Service Road 2N33, which extends 0.8 miles back down to Highway 173.

4.5.1.7 Project Recreation Facilities at Silverwood Lake SRA

From the Highway 173 bridge over the Cedar Springs Spillway, proceed 2 miles west to the junction with State Highway 138. Turn left onto Highway 138 (east) and proceed 2.6 miles to the Cleghorn Road exit. Turn left and proceed under the highway onto Sawpit Canyon Road. Continue 0.5 miles to the Silverwood Lake SRA entrance station at 14000 Sawpit Canyon Road.

4.5.1.8 San Bernardino Tunnel Intake

From the Highway 173 bridge over the Cedar Springs Spillway, proceed 2 miles west to the junction with State Highway 138. Turn left onto Highway 138 (east) and proceed 2.6 miles to the Cleghorn Road exit. Turn left and proceed under the highway onto Sawpit Canyon Road. Continue 0.5 miles to the Silverwood Lake SRA entrance station at 14000 Sawpit Canyon Road. From the entrance station, continue on Sawpit Canyon road 1.2 miles to Lake Boat Launch Road. Turn right and continue 0.1 miles to the right turn leading up to the water treatment plant (restricted access at gate). Continue 0.2 miles on the access road toward the south shore of Silverwood Lake to the San Bernardino Tunnel Intake.

4.5.2 Directions from the Project Facilities

4.5.2.1 *Devil Canyon Powerplant*

Follow the road south along the east side of the afterbay to Memory Lane. Turn left onto Memory Lane and proceed through the facility security gate to Devils Canyon Road. Turn right and continue on Devils Canyon Road 1.5 miles into the urban area adjacent to California State University San Bernardino.

4.5.2.2 *San Bernardino Tunnel Outlet*

Depart the San Bernardino Tunnel Outlet and proceed 0.3 miles to the three-way intersection. Bear right and proceed down Tunnel Outlet Access Road 2.1 miles to the gate/start of Devils Canyon Road. Continue on Devils Canyon Road 2.4 miles into the urban area adjacent to California State University San Bernardino.

4.5.2.3 *San Bernardino Tunnel Surge Chamber*

Depart the San Bernardino Tunnel Surge Chamber and proceed 0.4 miles to the three-way intersection. Bear left and proceed down Tunnel Outlet Access Road 2.1 miles to gate and start of Devils Canyon Road. Continue on Devils Canyon Road 2.4 miles into the urban area adjacent to California State University San Bernardino.

4.5.2.4 *Devil Canyon Powerplant Penstocks, Upper Portion*

Directions from each end of the Upper Portion of the Penstocks are described below.

For the uphill end, depart the upper portion of the San Bernardino Tunnel Outlet and proceed 0.3 miles to the three-way intersection. Bear right and proceed down Tunnel Outlet Access Road 2.1 miles to the gate and start of Devils Canyon Road. Continue on Devils Canyon Road 2.4 miles into the urban area adjacent to California State University San Bernardino.

For the downhill end, proceed down Tunnel Outlet Access Road 0.5 miles to the gate and start of Devils Canyon Road. Continue on Devils Canyon Road 2.4 miles into the urban area adjacent to California State University San Bernardino.

4.5.2.5 *Devil Canyon Powerplant Penstocks, Lower Portion*

Directions from each end of the Lower Portion of the penstocks are described below.

Depart the downhill end of the lower portion of the penstocks by following the road south along the east side of the afterbay to Memory Lane. Turn left onto Memory Lane and proceed through the facility security gate to Devils Canyon Road. Turn right and continue south on Devils Canyon Road 1.5 miles into the urban area adjacent to California State University San Bernardino.

Depart the uphill end of the lower portion of the penstocks by following the road 2.4 miles south alongside the penstocks (crossing over the top of the penstocks) then looping around the lower afterbay counterclockwise to the intersection with Memory Lane. Turn left (north) onto Memory Lane and continue for 0.3 miles to the locked gate at the intersection with Devils Canyon Road. Continue south on Devils Canyon Road 1.5 miles into the urban area adjacent to California State University San Bernardino.

4.5.2.6 Cedar Springs Dam and Spillway

Cedar Springs Dam and Spillway are located immediately adjacent to State Highway 173. To depart the facilities, proceed 0.3 miles north/downhill to the gated entry to the dam facility on the south side of Highway 173. Alternately, depart the east side of the dam crest and proceed to the locked gate at Forest Service Road 2N33. Continue down 2N33 for 0.8 miles to Highway 173.

4.5.2.7 Project Recreation Facilities at Silverwood Lake SRA

Proceed north 0.5 miles from the Silverwood Lake SRA entrance station to the onramp for Highway 138 at Cleghorn Road. To get to Highway 173, continue 2.6 miles west/north on Highway 138.

4.5.2.8 San Bernardino Tunnel Intake

Proceed 0.2 miles west on the access road towards the water treatment plant. Continue through the gate on the north side of the plant to Lake Boat Launch Road. Follow Lake Boat Launch Road 0.1 miles to Sawpit Canyon Road. Turn left onto Sawpit Canyon Road and continue 1.2 miles to the Silverwood Lake SRA entrance station. Then proceed north 0.5 miles from the Silverwood Lake SRA entrance station to the onramp for Highway 138 at Cleghorn Road. To get to Highway 173, continue 2.6 miles west/north on Highway 138.

4.6 HELICOPTER LANDING ZONES WITHIN THE PROJECT BOUNDARY

While all Project facilities normally may be accessed by road, fire suppression activities may require the use of helicopters. There are no dedicated helicopter landing zones within the Project boundary or within the Project vicinity; however, three helibases are located within 30 miles of the Project: (1) the SBNF's Heaps Peak Heliport, located approximately 11 miles east of the Project; (2) the CAL FIRE San Bernardino Unit's Prado Helitack, located approximately 27 miles southwest of the Project; and (3) the BLM's Apple Valley Helibase, located approximately 28 miles north-northeast of the Project.

4.7 FIRE SUPPRESSION EQUIPMENT AND PERSONNEL

DWR does not own fire suppression equipment suitable for combating wildland fires (e.g., fire trucks and helicopters). Fire suppression equipment owned by DWR within the Project boundary primarily consists of fire extinguishers located at Project buildings and in employee vehicles. Other fire suppression equipment owned by DWR is located at

various Project facilities and consists of permanently installed carbon dioxide systems within the powerplant and a water trailer, as mentioned in Appendix A, backpack water tanks, shovels, picks and axes. This portable equipment is deployed along with DWR work crews who are participating in activities that may potentially require fire suppression equipment above and beyond hand-held extinguishers (e.g., welding, facilities and equipment repair in heavily vegetated areas, and use of heavy equipment). While equipment for suppression is limited, water from all Project reservoirs is available to agencies responding to wildland fires.

DWR has personnel available to provide technical information and support for USFS and CAL FIRE operations in and adjacent to the Project. DWR employees and contractors will normally attempt to respond to fires that are a result of their activities, if the circumstances permit the safe containment and extinguishment of the fire. However, DWR Operations staff and contractors are not trained or required to fight fires.

CAL FIRE's San Bernardino Unit includes the following resources located within a radius of approximately 50 miles from the Project: 11 fire stations, 25 engines (Type 3), and 1 helicopter (Type 2), based out of the Prado Helitack located approximately 27 miles southwest of the Project (CAL FIRE 2017). The San Bernardino County Fire Stations located closest to the Devil Canyon Powerhouse are stations #227 and #232, and the stations closest to the Silverwood Lake area are stations #25 and #26; emergency contact information for these four county fire stations is provided below in Section 4.7.1.2

CAL FIRE's San Bernardino Unit maintains automatic aid agreements with all fire agencies within and adjacent to San Bernardino County (i.e., San Bernardino County Fire Department, SBNF, Angeles National Forest, BLM, National Park Service, Apple Valley Fire Department, Rancho Cucamonga Fire Department, Redlands Fire Department, and Running Springs Fire Department) (CAL FIRE 2017). The San Bernardino Unit Emergency Command Center has dispatch agreements with Arrow Bear Fire Department, Morongo Fire Department, Newberry Fire Department, and Yermo-Dagget Fire Department (CAL FIRE 2017).

The Federal Interagency Communications Center provides 24-hour dispatching, 365 days a year, and includes services such as: 100+ uniformed law enforcement officers, 7 special agents, 35 fire stations, 7 active fire lookouts, 20 fire prevention units, 70 forest protection officers, 6 hand crews, 1 fuels crew, 3 helicopters, 2 air tankers, 1 helitanker, 1 air attack, 1 law enforcement patrol plane, and 1 dozer.

4.8 KEY PERSONNEL CONTACT DIRECTORY

4.8.1 Emergency Contacts

4.8.1.1 *USFS Emergency Contacts – San Bernardino National Forest*

SBNF contacts for emergency fire-related issues:

Federal Interagency Communication Center: (909) 383-5652

SBNF Emergency Operations Unit: (909) 383-5651, or (909) 383-5651 for night or 24-hour emergency

4.8.1.2 *CAL FIRE / San Bernardino County Fire Department Emergency Contacts*

CAL FIRE and San Bernardino County Fire Department contacts for emergency fire-related issues:

San Bernardino County Fire Department: 9-1-1

San Bernardino County - Office of Emergency Management: (909) 356-3998, and at Hesperia (760) 995-8285

Arson Hotline: (800) 472-7766 (47 ARSON) Ext 1

San Bernardino Unit Emergency Command Center: secondary 9-1-1 responders

San Bernardino County
Office of the Fire Marshall
620 South E Street
San Bernardino, CA 92415
(909) 386-8400

San Bernardino County Fire Stations located closest to Devil Canyon Powerhouse:

San Bernardino Station (Station #232)
6065 Palm Ave.
San Bernardino, CA 92407
(909) 880-2137

San Bernardino Station (Station #227)
282 W 40th St.
San Bernardino, CA 92407
(909) 384-5407

San Bernardino County Fire Stations located closest to Silverwood Lake area:

Crestline Station (Station #25)
23407 Crest Forest Dr.
Crestline, CA 92325
(909) 338-0625

Twin Peaks Station (Station #26)
737 Grandview Rd.
Twin Peaks, CA 92391
(909) 337-8326

4.8.2 Non-Emergency Contacts

4.8.2.1 *USFS Non-Emergency Contacts – San Bernardino National Forest*

SBNF fire management contacts for non-emergency Project vegetation or fire-related issues:

SBNF Supervisor's Office
Recreation and Land Use Staff Officer
602 S. Tippecanoe Avenue
San Bernardino, CA 92408
(909) 382-2600

4.8.2.2 *CAL FIRE / San Bernardino County Fire Department Non-Emergency Contacts*

CAL FIRE and San Bernardino County Fire Department contacts for non-emergency Project vegetation or fire-related issues:

Fire Department (CAL FIRE San Bernardino Unit): (909) 881-6900; or at night
(909) 883-1112

4.8.2.3 *State Parks Non-Emergency Contacts*

State Parks fire management contacts for non-emergency Project vegetation or fire-related issues:

State Parks
Silverwood Sector Office
Silverwood Sector Superintendent.
760-389-2281

4.8.2.4 DWR Non-Emergency Contacts – Devil Canyon Project

DWR contacts for non-emergency fire-related issues:

Main Telephone: (661) 944-8600 – DWR Dispatch

Alternative (661) 944-8760 – Devil Canyon Facility

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5.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

5.1 CONSULTATION AND REPORTING

DWR will annually review with the SBNF activities related to fire prevention and response on NFS lands during the previous calendar year, as well as any activities related to fire resources on NFS lands planned for the current calendar year. In addition, DWR will consult with the SBNF, as needed, regarding fire resources and wildfires on NFS lands.

5.2 PLAN REVISIONS

DWR, in consultation with the SBNF, will review, update, and/or revise this Plan as it pertains to NFS lands. Any updates to the Plan will be prepared in coordination and consultation with the SBNF. The SBNF will have 60 days after receipt of the updated plan to provide written comment and recommendations before DWR files the updated Plan with FERC for FERC's approval. DWR will include documentation of all relevant coordination and consultation with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation by the SBNF, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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6.0 REFERENCES CITED

- California Natural Resources Agency, Department of Forestry and Fire Protection (CAL FIRE). 2018. Fire Hazard Severity Zone Development. Available online: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_development. Accessed: July 27, 2018.
- _____. 2017. Unit Strategic Fire Plan - San Bernardino Unit. Available online: http://cdfdata.fire.ca.gov/fire_er/fpp_planning_plans_details?plan_id=286. Accessed: May 20, 2018.
- _____. 2012. 2012 Strategic Plan. Available online: http://calfire.ca.gov/about/downloads/Strategic_Plan/StrategicPlan_SinglePages.pdf. Accessed: June 6, 2018.
- California Wildland Fire Coordinating Group. 2018. California Interagency Mobilization Guide. Available online: https://gacc.nifc.gov/oncc/mob_guide/2017/2017CompleteCAMobGuide.pdf. Accessed: May 20, 2018.
- Federal Interagency Communications Center. 2018. Available online: <https://www.fs.usda.gov/detail/sbnf/landmanagement/resourcemanagement/?cid=stelprdb5165957>. Accessed: May 20, 2018.
- San Bernardino County. 2016. Fire Annual Report July 2015-June 2016. Available online: www.sbcfire.org/Portals/58/Documents/About/2016%20Fire%20Annual%20Report_Final_Spreads.pdf?ver=2016-10-18-160826-620. Accessed: May 24, 2018.
- _____. 2005a. Arrowhead Communities Fire Safe Council - Community Wildfire Protection Plan. Available online: <http://www.sbcounty.gov/calmast/sbc/html/cwpp.asp>. Accessed: May 28, 2018.
- _____. 2005b. Wrightwood Community Wildfire Protection Plan. Available online: <http://www.sbcounty.gov/calmast/sbc/html/cwpp.asp>. Accessed: May 28, 2018.
- U.S. Department of Agriculture, Forest Service (USFS). 2017. Fire Management Planning Guide. July 2017. Available online: https://www.frames.gov/files/1515/1925/2248/Fire_Mgt_Planning_Guide_2017FINAL.pdf. Accessed: June 6, 2018.
- _____. 2015. Forest Service Handbook (FSH) 5109.18. Available online: https://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5109.18. Accessed: May 24, 2018.
- _____. 2010. Forest Service Manual 5100 – Fire Management. Wildfire Prevention. Available online: http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?5100. Accessed: May 20, 2018.

- _____. 2006. San Bernardino National Forest Land Management Plan, Final Environmental Impact Statement, Record of Decision. U.S. Department of Agriculture, Forest Service, Pacific Southwest Region. April 2006. Available online:
https://www.fs.usda.gov/wps/portal/fsinternet/cs/main!/ut/p/z/1/04_Sj9CPykssy0xPLMnMz0vMAfljo8zijQwgnNHCwN_DI8zPwBcqYKAfDIZggAM4GuhHEaMfj4Io_MaH60dhtSLMB2ECITMKckMjDDIdFQEHRNG/dz/d5/L2dBISEvZ0FBIS9nQSEh/?position=BROWSEBYSUBJECT&pname=San%20Bernardino%20National%20Forest-%20Planning&navtype=BROWSEBYSUBJECT&ss=110512&pnavid=130000000000000&navid=1301000000000000&ttype=main&cid=FSE_003756.
- _____. 2005. San Bernardino National Forest Land Management Plan, Part 2, San Bernardino National Forest Strategy. Department of Agriculture. Pacific Southwest Region. 117 pp. and appendices. Available online:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf.
USDA Forest Service. Pacific Southwest Region.
- U.S. Department of the Interior and U.S. Department of Agriculture (DOI and USDA). 2016. Interagency Standards for Fire and Fire Aviation Operations. January 2016. Available online:
<https://www.nifc.gov/PUBLICATIONS/redbook/2016/RedBookAll.pdf>. Accessed: June 6, 2018.
- Wildland Fire Leadership Council. 2014. The National Strategy, The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy. April. Washington, D.C. Available online:
<https://www.forestsandrangelands.gov/strategy/documents/strategy/CSPPhaseIIINationalStrategyApr2014.pdf>. Accessed: June 6, 2018.

Appendix A

Fire Plan for Construction and Service Contracts

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FIRE PLAN FOR CONSTRUCTION AND SERVICE CONTRACTS
08/02/2012

1. SCOPE:

The provisions set forth below outline the responsibility for fire prevention and suppression activities and establish a suppression plan for fires within the contract area. The contract area is delineated by map in the contract. The provisions set forth below also specify conditions under which contract activities will be curtailed or shut down.

2. RESPONSIBILITIES:

A. CONTRACTOR

- (1) Shall abide by the requirements of this Fire Plan.
- (2) Shall take all steps necessary to prevent his/her employees, subcontractors and their employees from setting fires not required in completion of the contract, shall be responsible for preventing the escape of fires set directly or indirectly as a result of contract operations, and shall extinguish all such fires which may escape.
- (3) Shall permit and assist in periodic testing and inspection of required fire equipment. Contractor shall certify compliance with specific fire precautionary measures in the fire plan, before beginning operations during Fire Precautionary Period and shall update such certification when operations change.
- (4) Shall designate in the Fire Plan and furnish on Contract Area, during operating hours, a qualified fire supervisor authorized to act on behalf of Contractor in fire prevention and suppression matters.

B. Forest Service

The Forest Service may conduct one or more inspections for compliance with the Fire Plan. The number, timing, and scope of such inspections will be at the discretion of agency employees responsible for contract administration. Such inspections do not relieve the Contractor of responsibility for correcting violations of the fire plan or for fire safety in general, as outlined in paragraph 2.A above.

3. DEFINITIONS:

The following definitions shall apply:

Active Landing: A location the contractor may be skidding logs into, or performing other operations such as delimiting, log manufacturing, and chipping logs. Except for EV and E days, loading logs or stockpiling chips only, on a cleared landing, does not constitute an Active Landing.

Hot Saw: A harvesting system that employs a high-speed (>1100 rpm) rotating felling head, i.e., full rotation lateral tilt head.

Mechanical Operations: The process of felling, skidding, chipping, shredding, masticating, piling, log processing and/or yarding which requires the use of motorized power which includes, chainsaws, chippers, motorized carriages, masticators, stroke delimiters, skidders, dozers etc.

4. TOOLS AND EQUIPMENT:

The Contractor shall comply with the following requirements during the fire precautionary period, as defined by unit administering contracts:

The Fire Precautionary Period is set by the State of California which is April 1 through December 1 of any year.

- This contract requires, does not require, a Fire Box and associated Fire Tools according to CPRC Section 4428.

- A. **Fire Tools and Equipment:** Contractor shall meet minimum requirements of Section 4428 of the California Public Resources Code (C.P.R.C.). Fire tools kept at each operating landing shall be sufficient to equip all employees in the felling, yarding, loading, chipping, and material processing operations associated with each landing. Fire equipment shall include two tractor headlights for each tractor dozer used in Contractor's Operations. Tractor headlights shall be attachable to each tractor and served by an adequate power source. All required fire tools shall be maintained in suitable and serviceable condition for fire fighting purposes.

Trucks, tractors, skidders, pickups and other similar mobile equipment shall be equipped with and carry at all times a size 0 or larger shovel with an overall length of not less than 46 inches and a 2-1/2 pound axe or larger with an overall length of not less than 28 inches.

Where cable yarding is used, Contractor shall provide a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump within 25 feet of each tail and corner block.

- B. **Fire Extinguishers:** Contractor shall equip each internal combustion yarder, fuel truck, and loader with a fire extinguisher for oil and grease fires (4-A:60-B:C).

Skidders and tractors shall be equipped with a minimum 5-BC fire extinguisher.

All Fire Extinguishers shall be mounted, readily accessible, properly maintained and fully charged.

Contractor shall equip each mechanized harvesting machine with hydraulic systems, powered by an internal combustion engine (chipper, feller/buncher, harvester, forwarder, hot saws, stroke delimber, etc), except tractors and skidders, with at least two 4-A:60-B:C fire extinguishers or equivalent.

- C. **Spark Arresters and Mufflers:** Contractor shall equip each operating tractor and any other internal combustion engine with a spark arrester, except for motor vehicles equipped with a maintained muffler as defined in C.P.R.C. Section 4442 or tractors with exhaust-operated turbochargers. Spark Arresters shall be a model tested and approved under Forest Service Standard 5100-1a as shown in the National Wildlife Coordinating Group Spark Arrester Guide, Volumes 1 and 2, and shall be maintained in good operating condition. Every motor vehicle subject to registration shall at all times be equipped with an adequate exhaust system meeting the requirements of the California Vehicle Code.

- D. **Power Saws:** Each power saw shall be equipped with a spark arrester approved according to C.P.R.C. Section 4442 or 4443 and shall be maintained in effective working order. An Underwriters Laboratories (UL) approved fire extinguisher containing a minimum 14 ounces of fire retardant shall be kept with each operating power saw. In addition, a size 0 or larger shovel with an overall length of not less than 38 inches shall be kept with each gas can but not more than 300 feet from each power saw when used off cleared landing areas.

- This contract requires, does not require, Section 4E of the Fire Plan.

- E. **Tank Truck or Trailer:** Contractor shall provide a **water tank truck or trailer** on or in proximity to Contract Area during Contractor's Operations hereunder during Fire Precautionary Period. When Project Activity Level B or higher is in effect, a tank truck or trailer shall be on or immediately adjacent to each active landing, unless otherwise excepted when Hot Saws or Masticators are being used. See Section 6 for specific contract requirements.

The tank shall contain at least 300 gallons of water available for fire suppression. Ample power and hitch shall be readily available for promptly and safely moving tank over roads serving Contract Area. Tank truck or trailer shall be equipped with the following:

- (1) Pump, which at sea level, can deliver 23 gallons per minute at 175 pounds per square inch measured at the pump outlet. Pumps shall be tested on Contract Area using a 5/16 inch orifice in the Forester One Inch In-Line Gauge test kit. Pump shall meet or exceed the pressure value in the following table for nearest temperature and elevation:

Temp	Sea Level		1000 Feet		2000 Feet		3000 Feet		4000 Feet		5000 Feet		6000 Feet		7000 Feet		8000 Feet		9000 Feet		10000 Feet	
55	179	23	174	23	169	23	165	22	161	22	157	22	153	22	150	21	146	21	142	21	139	21
70	175	23	171	23	166	22	162	22	158	22	154	22	150	21	147	21	143	21	139	21	136	20
85	171	23	168	23	163	22	159	22	155	22	151	21	147	21	144	21	140	21	136	20	133	20
100	168	23	164	23	159	22	155	22	152	22	148	21	144	21	141	21	137	20	133	20	131	20
	P S I	G P M																				

The pump outlet shall be equipped with 1-1/2 inch National Standard Fire Hose thread. A bypass or pressure relief valve shall be provided for other than centrifugal pumps.

- (2) 300 feet of 3/4-inch inside diameter rubber-covered high-pressure hose mounted on live reel attached to pump with no segments longer than approximately 50 feet, when measured to the extreme ends of the couplings. Hose shall have reusable compression wedge type 1-inch brass or lightweight couplings (aluminum or plastic). One end of hose shall be equipped with a coupling female section and the other end with a coupling male section. The hose shall, with the nozzle closed, be capable of withstanding 200 PSI pump pressure without leaking, distortions, slipping of couplings, or other failures.
- (3) A shut-off combination nozzle that meets the following minimum performance standards when measured at 100 P.S.I. at the nozzle:

	G.P.M.	Horizontal Range
Straight Stream	10	38 feet
Fog Spray	6 - 20	N/A

- (4) Sufficient fuel to run the pump at least 2 hours and necessary service accessories to facilitate efficient operation of the pump.

When Contractor is using Hot Saws or Masticators, an additional 250 feet of light weight hose, approved by the Forest Service, shall be immediately available for use and be capable of connecting to the 300 feet of hose and appurturances in (2) and (3) above.

This equipment and accessories shall be deliverable to a fire in the area of operations and is subject to the requirements for each specific activity level identified in Section 6.

F. Compressed Air Foam System: A Compressed Air Foam System (CAFS) is a fire suppression system where compressed air is added to water and a foaming agent. By agreement, Contractor may substitute a CAFS or functional equivalent in lieu of the tank truck, trailer or fire extinguishers, provided it meets or exceeds the following specifications and requirements:

1. Variable foam expansion ratio – 10:1 to 20:1.
2. Units shall be kept fully charged with air; water and foam concentrate as recommended by the manufacturer and have the appropriate tools to service the system.
3. The unit shall contain enough energy to empty tank and clear hose prior to exhausting propellent.
4. The unit shall be capable of being completely recharged within 10 minutes.
5. When used on cable yarding landings, the unit shall be outfitted for immediate attachment to carriage and transported without damage to the unit.

Fire extinguishers required for Hot Saws, Masticators and similar equipment identified in Section 4 B. above may be substituted with a 3 gallon CAFS.

Tank truck, trailer or equivalent may be substituted with a 30 Gallon CAFS with at least 550 feet of one inch hose and an adjustable nozzle with enough water, air and foam concentrate for at least one recharge.

This equipment and accessories shall also be deliverable to a fire in the area of operations and subject to the requirements for each specific activity level identified in Section 6.

5. GENERAL

- A. State Law:** In addition to the requirements in this Fire Plan, the Contractor shall comply with all applicable laws of the State of California. In particular, see California Public Resource Codes.
- B. Permits Required:** The Contractor must secure a special written permit from the District Ranger or designated representative before burning, welding or cutting metal or starting any warming fires. If contract requires Blasting and Storing of Explosives and Detonators, an Explosives Permit may be required pursuant to the California Health and Safety Code, Section 12101.
- C. Blasting:** Contractor shall use electric caps only unless otherwise agreed in writing. When blasting is necessary in slash areas, a Fire Patrolperson equipped with a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump shall remain in the immediate area for an hour after blasting has been completed.
- D. Smoking:** Smoking shall not be permitted during fire season, except in a barren area or in an area cleared to mineral soil at least three feet in diameter. In areas closed to smoking, the CO may approve special areas to be used for smoking. The Contractor shall sign designated smoking areas. Contractor shall post signs regarding smoking and fire rules in conspicuous places for all employees to see. Contractor's supervisory personnel shall require compliance with these rules. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, or walking or working in grass and woodlands.
- E. Storage and Parking Areas.** Equipment service areas, parking areas, and gas and oil storage areas shall be cleared of all flammable material for a radius of at least 10 feet unless otherwise specified by local administrative unit. Small mobile or stationary internal combustion engine sites shall be cleared of flammable material for a slope distance of at least 10 feet from such engine. The COR shall approve such sites in writing.
- F. Reporting Fires:** As soon as feasible but no later than 15 minutes after initial discovery, Contractor shall notify Forest Service of any fires on Contract Area or along roads used by Contractor. Contractor's employees shall report all fires as soon as possible to any of the following Forest Service facilities and/or personnel listed below, but not necessarily in the order shown:

	Name	Office Address	Office telephone
Dispatch Center			
Nearest FS Station			
Inspector			
COR			
District Ranger			

When reporting a fire, provide the following information:

- Your Name
- Call back telephone number
- Project Name

- Location: Legal description (Township, Range, Section); and Descriptive location (Reference point)
- Fire Information: Including Acres, Rate of Spread and Wind Conditions.

- This contract requires, does not require, Section 5G of the Fire Plan.

G. Communications: Contractor shall furnish a serviceable telephone, radio-telephone or radio system connecting each operating side with Contractor's headquarters. When such headquarters is at a location which makes communication to it clearly impractical, Forest Service may accept a reasonable alternative location. The communication system shall provide prompt and reliable communications between Contractor's headquarters (or agreed to alternative) and Forest Service via commercial or Forest Service telephone.

- This contract requires, does not require, Section 5H of the Fire Plan.

H. Fire Patrolperson: Contractor shall furnish a qualified fire patrolperson each operating day when Project Activity Level C or higher is in effect. When on duty, sole responsibility of patrolperson shall be to patrol the operation for prevention and detection of fires, take suppression action where necessary and notify the Forest Service as required. This Fire patrol is required on foot, unless otherwise agreed. By agreement, one patrolperson may provide patrol on this and adjacent projects. No patrolperson shall be required on Specified Road construction jobs except during clearing operations unless otherwise specified.

The Contractor shall, prior to commencing work, furnish the following information relating to key personnel:

Title	Name	Telephone Number
Fire Supervisor		
Fire Patrolperson		

- I. Clearing of Fuels:** Contractor shall clear away, and keep clear, fuels and logging debris as follows:

Welding equipment and stationary log loaders, yarders and other equipment listed in California State Law	10 feet slope radius
Tail or corner haulback blocks	All running blocks shall be located in the center of an area cleared to mineral soil at least 15 feet in diameter.
Lines near, between or above blocks	Sufficient clearing to prevent line from rubbing on snags, down logs and other dead woody material.

6. EMERGENCY PRECAUTIONS

Contractor's Operations shall conform to the limitations or requirements in the Project Activity Level (PAL) table below. Project Activity Levels applicable to this project shall be the predicted activity levels for the Fire Danger Rating Area(s), or fire weather station(s) stated in the Contract Area Map Legend on Integrated Resource Service Contracts (IRSC's), and other contracts where applicable.

Fire Danger Rating Area/Fire Weather Station for Project: _____

The Forest Service, in its sole discretion, may change the predicted activity level if the current fire suppression situation, weather and vegetation conditions warrant an adjustment. If practicable, Forest Service will determine the following day's activity level by 6:00 PM. Contractor shall obtain the predicted Project Activity Level from the appropriate Ranger District Office before starting work each day.

Phone Number or Website to obtain Predicted Activity Levels: _____

Forest Service may change the Project Activity Level Table to other values upon revision of the National Fire Danger Rating System. When Contractor is notified, the revised Project Activity Levels will supersede the levels in the Project Activity Level Table below.

PROJECT ACTIVITY LEVEL

Level	<i>Project Activity Minimum Requirements and Restrictions. Restrictions at each level are cumulative.</i>
A	Minimum requirements noted above in Sections 4 and 5.
B	1. Tank truck, trailer, or approved CAFS substitute shall be on or adjacent to the Active Landing.
C	1. When Hot Saws or Masticators are operating, a tank truck, trailer, or approved CAFS substitute shall be within ¼ mile of these operations. Effective communications shall exist between the operator and the Active Landing. 2. Immediately after Mechanical Operations cease, Fire patrol is required for two hours.
D	1. Immediately after Hot Saw or Masticator operations cease, Fire patrol is required for three hours. 2. No Dead Tree felling after 1:00 PM, except recently dead. 3. No burning, blasting, welding or cutting of metal after 1:00 PM, except by special permit.
Ev	<p>1. The following activities may operate all day:</p> <ul style="list-style-type: none"> a) Loading and hauling logs decked at approved landings. b) Loading and hauling chips stockpiled at approved landings. c) Servicing equipment at approved sites. d) Dust abatement, road maintenance (Chainsaw use prohibited), culvert installation within cleared area, chip sealing, paving, earth moving or rock aggregate stock pile loading and installation (does not include pit or quarry development). e) Chainsaw and log processing operations associated with loading logs or other forest products at approved landings. <p>2. Hot Saws or Masticators may operate until 1:00 PM; provided that:</p> <ul style="list-style-type: none"> a) A tractor or other equipment with a blade capable of constructing fireline is on or adjacent to the active landing or within ¼ mile of the operating equipment. This piece of equipment shall have effective communication with the Hot Saw or Masticator. b) Any additional restrictions specified by the Forest. <p>3. All other conventional Mechanical Operations are permitted until 1:00 PM.</p> <p>4. Some operations may be permitted after 1:00 PM, on a case-by-case basis, under the terms of a PAL Ev Variance Agreement. Activities for which a Variance may be issued are:</p> <ul style="list-style-type: none"> • Rubber Tire Skidding • Chipping on Landings • Helicopter Yarding • Fire Salvage <p>When approved by a Line Officer, a Variance Agreement can be implemented when the criteria specified in the agreement are met and mitigation measures are in place. This approval is good for ten (10) days unless cancelled sooner or extended by the Contracting Officer for an additional ten (10) days. Variance approval can be withdrawn at the sole discretion of the Forest Service. Variance approval is contingent on the 7-day fire weather forecast, fuel conditions, site characteristics, current fire situation, state of Contractor’s equipment for prevention and suppression readiness, type of operation and social and community considerations etc. (See attached Project Activity Level Variance Agreement).</p>

Level	Project Activity Minimum Requirements and Restrictions. Restrictions at each level are cumulative.
E	The following activities may operate all day: <ol style="list-style-type: none"> 1. Loading and hauling logs decked at approved landings. 2. Loading and hauling chips stockpiled at approved landings. 3. Servicing Equipment at approved sites. 4. Dust abatement, road maintenance (chainsaw use prohibited) or loading stock piles and rock aggregate installation (does not include pit or quarry development). 5. Chainsaw operation associated with loading at approved landings. All other activities are prohibited.

This Project utilizes “The Project Activity Level” (PAL), an industrial operation’s fire precaution system. The following Climatology Chart indicates the Historic Activity Levels for the Project Fire Danger Rating Area or Fire Weather Station utilized on this Project. This is only a historical average of the Activity Levels for the identified Fire Danger Rating Area or Weather Station.

Project Activity Level Climatology								
Fire Danger Rating Area/Weather Station						Years Analyzed		
	A	B	C	D	E_v	E	Days	
Month	Expected Days per Month at Each PAL Value						Days	Analyzed
July								
August								
September								
October								

Region 5 Project Activity Level (PAL) Ev Variance Application/Agreement

Project Name: _____
 Contract Number: _____
 Contractor Name: _____
 Request #__, for period: _____
 Units/Subdivisions Affected: _____

Location of operation:	
Slope	
Aspect	
Elevation	
Fuels on site	
Fuels in surrounding area	
7 Day PAL Outlook	
Short range predictions (Red Flags)	
Fuel Moistures	
Response time of suppression resources	
Potential for ignition	
RAWS location	
Current Fire Situation:	
Draw down information	
National Readiness Level	
Contractual considerations:	
Normal Operating Season	
Frequency of recent contract fires in area	
Type of operation	
Contractors past/current performance & equipment readiness	
Other site specific mitigation or precaution (i.e. Contractors proposals)	
Social & Community Considerations:	
Proximity of high value resources	
Sensitivity of location	

Proposed Actions:

Description of Mitigation Measures:

Remarks:

Fire Management Officer Concurrence

Date

Line Officer Approval

Date

I have considered the above request and determined the specified mitigation measures or actions must be implemented to continue operations in Project Activity Level Ev. Unless extended, the approval remains in effect for ten (10) calendar days unless cancelled sooner or extended by the Forest Service for an additional ten (10) days. At the sole discretion of the Forest Service, this variance can be modified and/or cancelled at no cost to the government.

Contracting Officer

Date

Contractor Representative

Date

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Appendix B

Agency Checklist and Instructions for Determining Project Activity Level Variances

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Project Name: _____
 Contract Number: _____
 Purchaser/Contractor Name: _____
 Request #__, for period: _____
 Units/Subdivisions Affected: _____

Location of operation:	
Slope Aspect Elevation	
Fuels on site	
Fuels in surrounding area	
10 day Forecast	
Short range predictions (Red Flags)	
Fuel Moistures	
Response time of suppression resources	
Potential for ignition RAWS location	
Current Fire Situation:	
Draw down information	
National Readiness Level	
Contractual considerations:	
Operating Season	
Frequency of recent contract fires in area	
Type of operation	

Purchaser/Contractors past performance	
Other site specific mitigation or precaution (i.e. Purchaser/Contractors proposals)	
Social & Community Considerations:	
Proximity of high value resources	
Sensitivity of location	
Remarks:	

I have considered the above items and have determined the following actions must be implemented to continue operations in Project Activity Levels _____ through EV

-
-
-
-

Fire Management Consulted _____ Name

Line Officer Concurred _____ Name

Contracting Officer or Delegated Representative _____

Date: _____

Purchaser/Contractor Rep. _____ Date _____

**Instructions for Determining Variances for Continued Operations Within Specific Units
and With a Specific Time Frame**

1. Variances are in addition to the stated requirements for the Predicted Activity Level.
2. The Line Officer in consultation with the Forest Fire Management Officer or his/her representative will evaluate the items in the above check list as they relate to the existing and planned activities, add any mitigation measures as needed and the Line Officer will advise the Contracting Officer to execute the variance. The name of the Fire Management Representative and the Line Officer involved must be filled in but a signature is not required.
3. The delegated authority can be at the FSR/COR level since they would usually have more knowledge of the ground and access to the District Ranger.
4. The project area should be evaluated for differences in potential fire activity if a fire starts. This could necessitate the use of multiple forms. Examples of this would be units on a north slope near riparian areas vs. those on south slopes that would be dryer and expected to have more severe fire conditions or there is a significant difference from the predicted PAL and the actual conditions.
5. The Purchaser/Contractor or their representative should be consulted when determining types of variances that are being considered. They might be able to come up with other options.
6. Examples of written variances are:
 - A. Local assessment determines that existing precautions are adequate
 - B. Use of specialized detection equipment such as an infrared detection device for locating heat sources is required
 - C. Provide additional fire suppression resources (i.e. crews, equipment etc.) to achieve shorter response time.

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Attachment 7

Visual Resources Management Plan

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



VISUAL RESOURCES MANAGEMENT PLAN

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFORD
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources

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COMMONLY USED TERMS, ACRONYMS AND ABBREVIATIONS

Application for New License	DWR's Application for a New License for Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797
DPR	California Department of Parks and Recreation
DWR	California Department of Water Resources
FERC	Federal Energy Regulatory Commission
NFS	National Forest System
O&M	operations and maintenance
PCT	Pacific Crest National Scenic Trail
PCTA	Pacific Crest Trail Association
Plan	Visual Resources Management Plan
PM&E measures	Protection, Mitigation, and Enhancement measures, which are operations and management activities to: (1) protect resources against impacts from continued operations and maintenance of the Project; (2) mitigate any impacts from continued operations and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operations and maintenance
Primary Project Road	A road, or segment of a road, that is identified in the Project's new license as a Project facility, is used almost exclusively to access the Project, is within the FERC Project boundary, and is operated and maintained exclusively by DWR as a Project feature
Project	Devil Canyon Project Relicensing, FERC Project Number 14979
SBNF	San Bernardino National Forest
SRA	State Recreation Area
SWP	State Water Project
U.S.	United States
USFS	U.S. Department of Agriculture, Forest Service

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1.0 INTRODUCTION

In November 2019, the California Department of Water Resources (DWR), pursuant to Title 18 of the Code of Federal Regulations, Subchapter B (Regulation under the Federal Power Act), Part 4, Subpart F (Application for License for Major Project – Existing Dam) (Traditional Licensing Process), filed with the Federal Energy Regulatory Commission (FERC), an Application for a New License for Major Project – Existing Dam (Application for New License) for DWR’s Devil Canyon Project Relicensing, FERC Project Number 14797 (Project). DWR has included this Visual Resource Management Plan (Plan) in its November 2019 Application for New License.

All elevation data in this Plan are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

1.1 BACKGROUND

1.1.1 Brief Project Description

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States. The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is on the East Branch of the SWP in San Bernardino County, has a FERC-authorized installed capacity of 280 megawatts. Project facilities range in elevation from 3,378 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake; San Bernardino Tunnel; Devil Canyon Powerplant Penstocks and Surge Chamber; Devil Canyon Powerplant and Switchyard; Devil Canyon Afterbay and Devil Canyon Second Afterbay; Silverwood Lake-associated recreation facilities; and appurtenant facilities and features. The California Department of Parks and Recreation (DPR), on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., Crestline Lake Arrowhead Water Agency intake, and State Highway 138 – Rim of the World Scenic Byway, and the Pacific Crest National Scenic Trail [PCT]) traverse or are located in the Silverwood Lake SRA but are not Project facilities. The Project interconnects with the regional electric transmission system grid at the Devil Canyon Switchyard and therefore does not include any transmission lines. DWR generates electricity using SWP water as the water is delivered to downstream SWP water users.

The Project boundary comprises 2,079.2 acres, of which 125.7 acres are National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service (USFS), as part of the San Bernardino National Forest (SBNF). USFS

administers the SBNF in conformance with the SBNF Land Management Plan (USFS 2005), as amended.

DWR will continue to operate the Project as it has been operated historically, with the addition of a number of Protection, Mitigation, and Enhancement (PM&E) measures, which are operations and management activities to: (1) protect resources against impacts from continued operations and maintenance (O&M) of the Project; (2) mitigate any impacts from continued O&M of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project O&M. This Plan is one of those PM&E measures.

Figure 1.1-1 shows the Project vicinity. Figure 1.1-2 shows primary Project facilities, including DWR's Project boundary.



Figure 1.1-1. Devil Canyon Project Vicinity

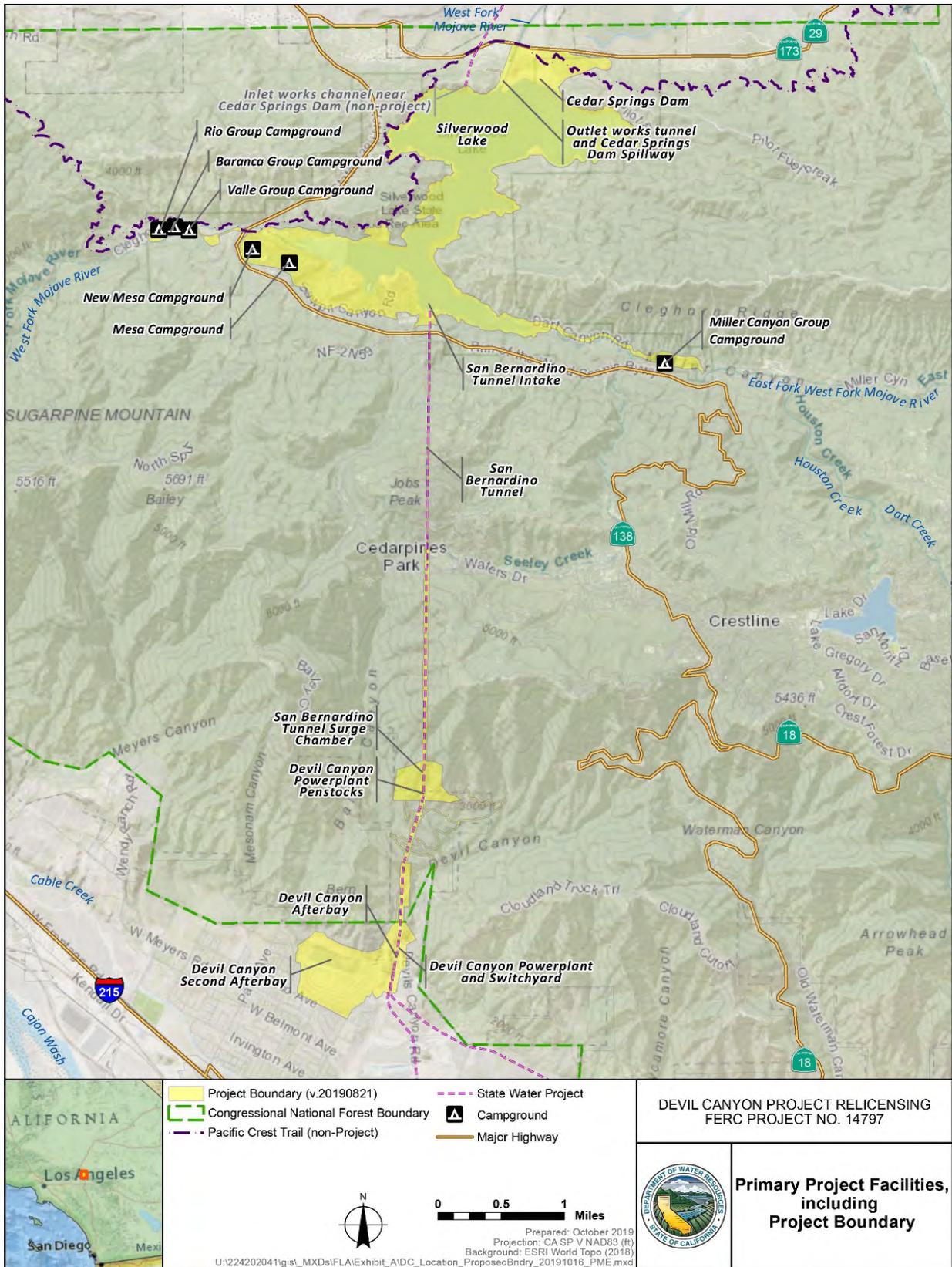


Figure 1.1-2. Devil Canyon Project Boundary

1.2 PURPOSE OF THE PLAN

This Plan provides guidance for the implementation of PM&E measures related to visual resources in the Project vicinity and the visual quality of Project facilities. In addition, this Plan provides a framework for addressing visual quality when there are changes to the Project. To the extent appropriate, DWR will coordinate the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the license.

1.3 GOALS AND OBJECTIVES OF THE PLAN

The primary goals of this Plan are to describe the PM&E measures for maintaining, updating and enhancing visual quality conditions affected by Project facilities and features, and to describe the consultation process and the consideration of new mitigation measures if there are changes to the Project that could affect visual quality. The objective of the Plan is to provide the guidance necessary to meet Plan goals.

1.4 CONTENTS OF THE PLAN

The Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including the purpose and goal of the Plan.
- Section 2.0. Visual Resource Issues. This section identifies visual resource issues at the Project facilities.
- Section 3.0. Proposed Protection, Mitigation, and Enhancement Measures. This section includes a description of proposed PM&E measures and enhancements.
- Section 4.0. Consultation, Reporting, and Plan Revisions. This section describes consultation between DWR and the SBNF; reporting; and Plan review as it pertains to visual resources on NFS lands.
- Section 5.0. References Cited. This section includes the resource documents cited in the Plan.

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2.0 VISUAL RESOURCE ISSUES

This section discusses the existing visual condition of the Project facilities in the Silverwood Lake area (Figure 2.0-1) and in the Devil Canyon Powerplant area (Figure 2.0-2), which are the foundation for the development of the PM&E measures in Section 3.0.

2.1 SILVERWOOD LAKE, THE PACIFIC CREST NATIONAL SCENIC TRAIL, AND STATE HIGHWAY 138

All of the Project facilities associated with Silverwood Lake, both recreational and operational, are located on lands owned and managed by the State of California. NFS lands surround the State of California lands, except to the north, where the ownership is private. Some non-Project facilities (e.g., the PCT) traverse or are located in the Silverwood Lake SRA, but they are not Project facilities.

The PCT crosses through Silverwood Lake SRA on State of California lands along the north and west shores of Silverwood Lake (Figure 2.0-1) and is administered by USFS through an easement agreement with DPR. On State lands near Cedar Springs Dam, USFS has an easement agreement with DPR for the PCT in this area. On March 26, 1980, the State of California, acting through DWR, granted the United States, acting through USFS, a non-exclusive agreement for use of certain State of California-owned land parcels in San Bernardino County to “locate, construct, use, maintain, relocate and repair” the PCT on lands below Cedar Springs Dam (DWR 1980), which had already been built and was already in operation. The agreement reserved DWR’s rights to continue to use the area for its purposes and specified that USFS was responsible for constructing and maintaining the PCT on those land parcels.

State Highway 138 passes along the west and south sides of the Project in the Silverwood Lake area (Figure 2.0-1). State Highway 138 is part of the 110-mile Rim of the World Scenic Byway, which encompasses portions of State Highways 138, 18, and 38 (USFS 2018). A Corridor Management Plan for the portion of State Highway 138 near the Project has not been prepared. The Rim of the World Scenic Byway traverses the rim of the San Bernardino Mountains from Cajon Pass to their eastern and then southern edges offering numerous vistas and panoramas along the route. In the Project area, State Highway 138 includes one formal vista point with parking (a non-Project facility) along the west side of Silverwood Lake that provides expansive views of Silverwood Lake and the facilities near the dam. In addition, there are several roadside pull off areas along the south side of the Project area that provide limited views of Silverwood Lake and associated Project and non-Project facilities. Much of the roadside pull offs along the southern side of the reservoir lack views of the lake due to thick vegetation.

The SBNF Land Management Plan identifies for SBNF lands a Desired Condition emphasis on preserving natural appearing views from the scenic byway and the PCT. Standard SBNF S7 in the Land Management Plan also requires that scenic values in accordance with adopted scenic integrity objectives be protected, as well as foreground

views from the footpath and designated viewpoints. Where practicable, it is also emphasized to avoid establishing non-conforming land uses within the viewshed of the trail.

Silverwood Lake is a scenic asset for the area. However, it also has some hydropower-related and recreation facilities that do not blend in well with the natural landscape, as described below.

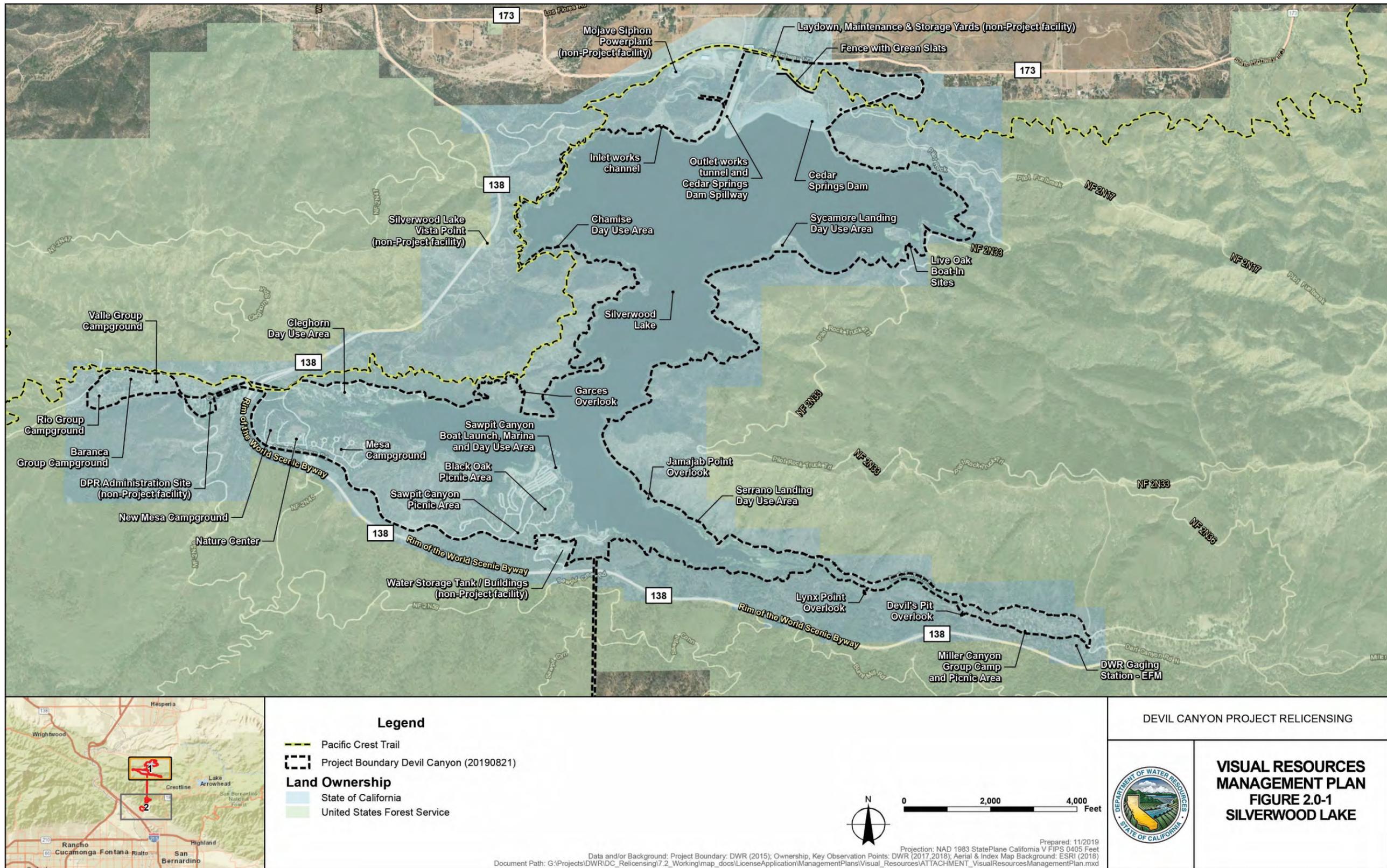
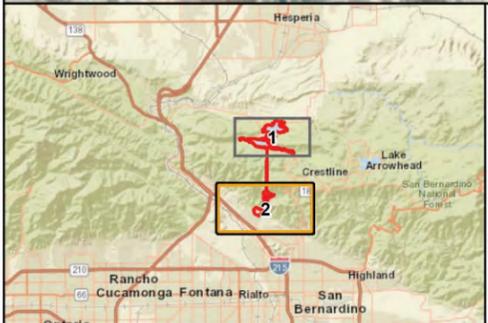
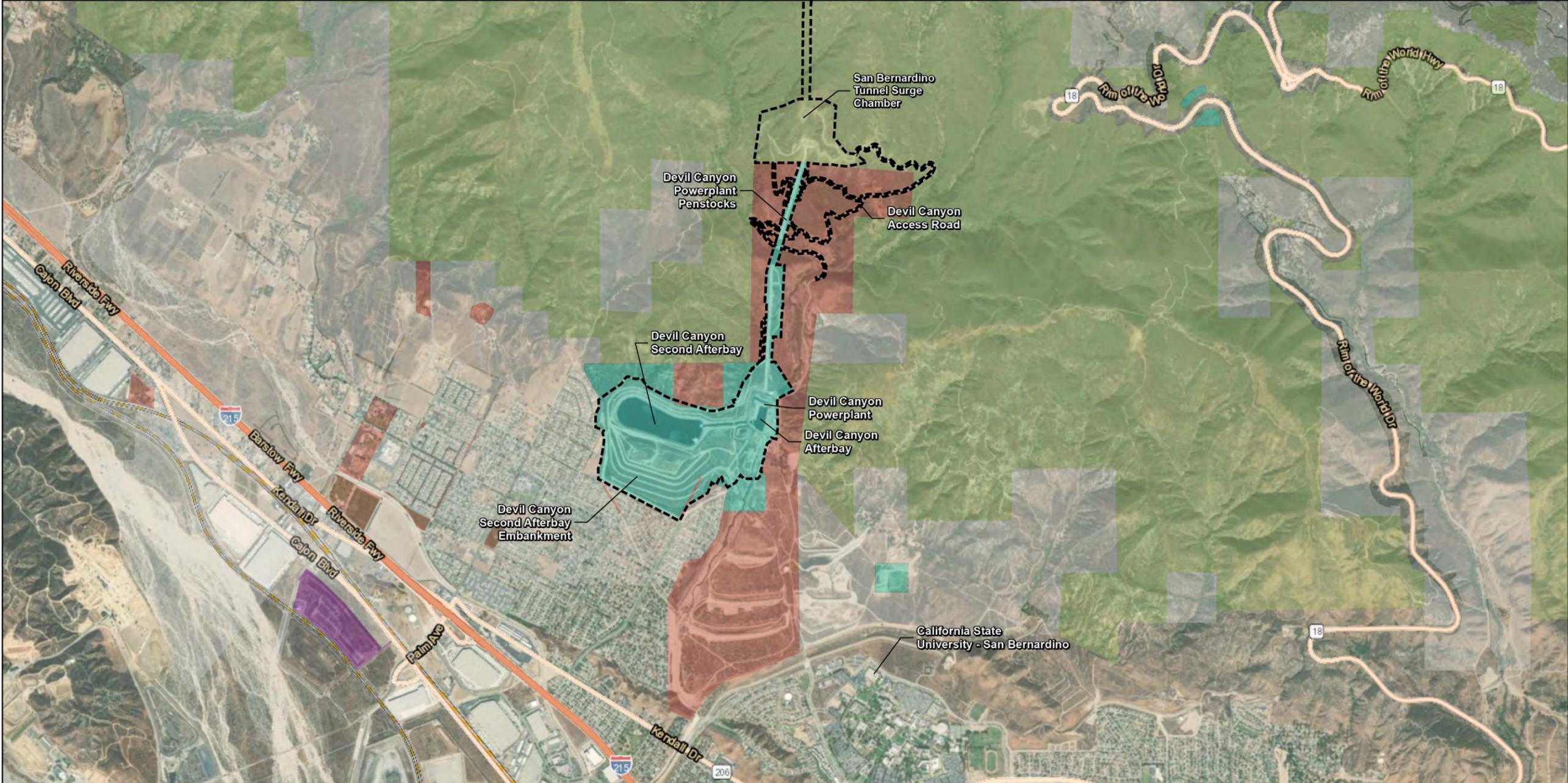


Figure 2.0-1. Devil Canyon Project Facilities at Silverwood Lake, including the Non-Project PCT



Legend

 Project Boundary Devil Canyon (20190821)
Land Ownership
 City of San Bernardino
 County of San Bernardino
 US Forest Service
 State of California
 Private (or Other)

Prepared: 10/2019
 Projection: NAD 1983 StatePlane California V FIPS 0405 Feet
 Document Path: G:\Projects\DWR\DC_Relicensing\7_2_Working\map_docs\LicenseApplication\ManagementPlans\Visual_Resources\ATTACHMENT_VisualResourcesManagementPlan.mxd

DEVIL CANYON PROJECT RELICENSING



**VISUAL RESOURCES
 MANAGEMENT PLAN**

**FIGURE 2.0-2
 DEVIL CANYON
 POWERPLANT, PENSTOCKS
 AND AFTERBAYS**

Figure 2.0-2. Devil Canyon Project Facilities in the Devil Canyon Powerplant Area

2.1.1 Cedar Springs Dam, Spillway and Associated Facilities

The Cedar Springs Dam and spillway are on State lands. The dam and spillway, as viewed from the PCT (along an approximately 0.9-mile segment) and State Highway 173 (an eligible State Scenic Highway), all present strong visual contrast to the natural setting (Figures 2.1-1 through 2.1-3). The recently constructed Cedar Springs Dam security fence was intentionally built with a section of green slats running along the PCT to screen views of the dam from the trail just below the dam (Figures 2.1-1 through 2.1-3).

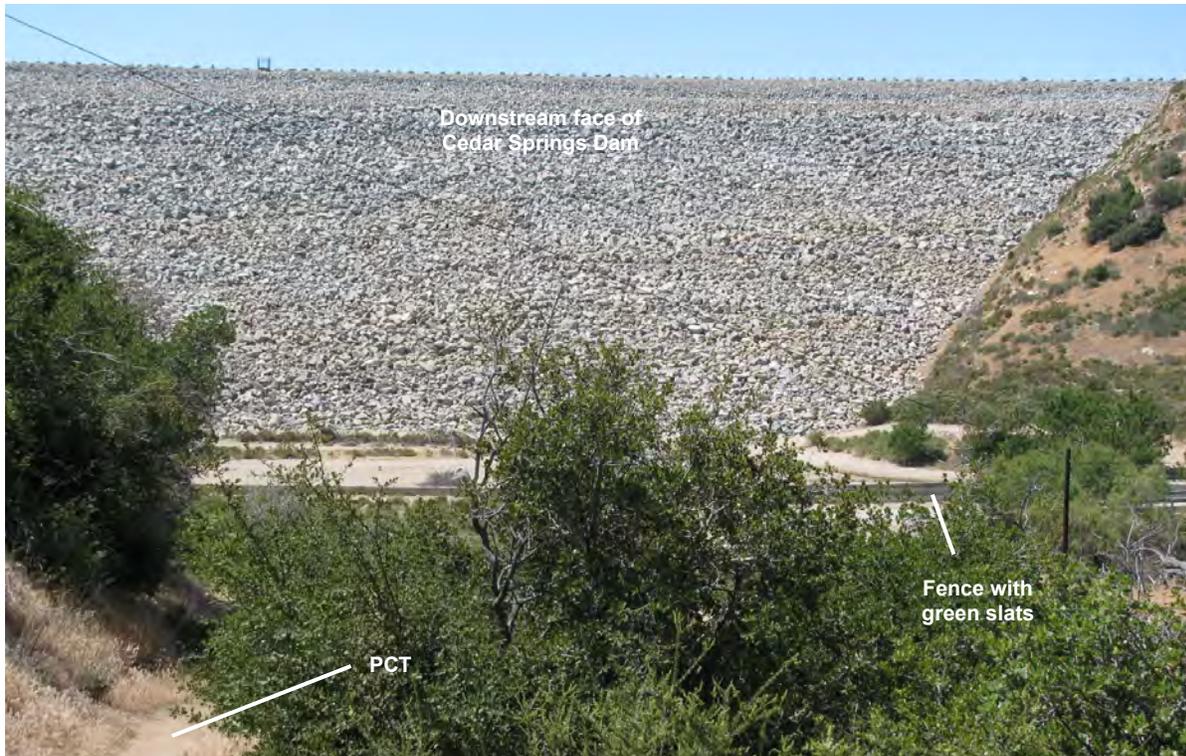


Figure 2.1-1. Cedar Springs Dam as Viewed from the PCT from the Ridgeline as the Project is First Viewable by PCT Users from the North

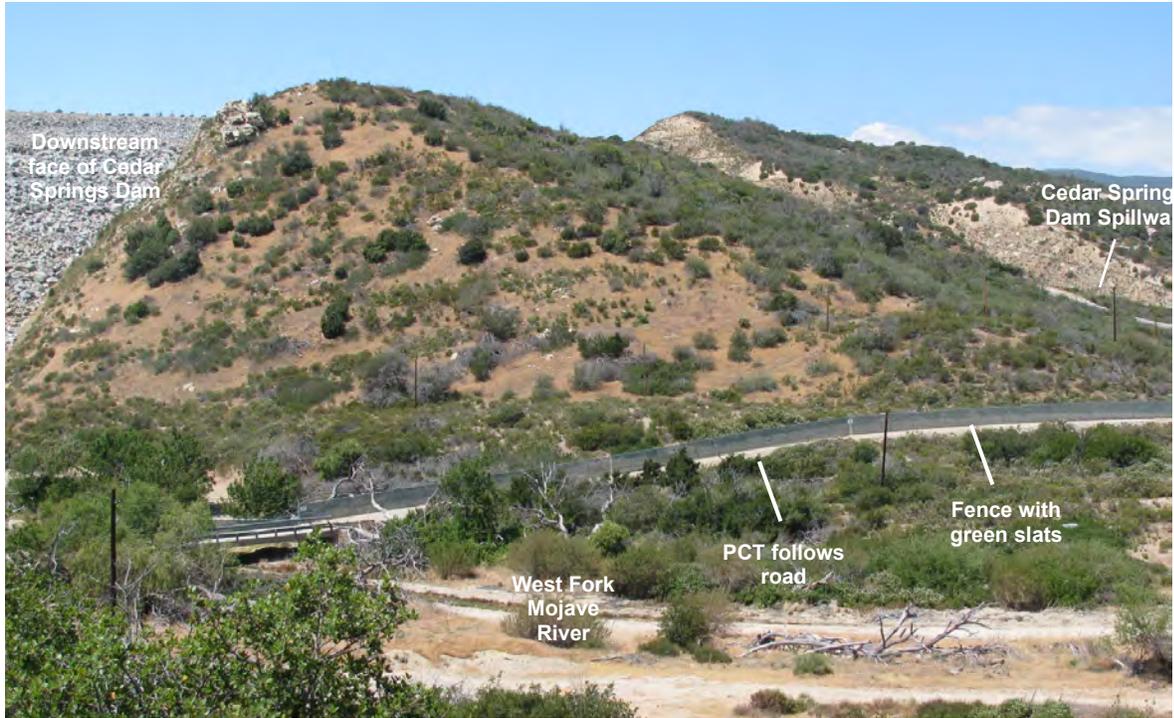


Figure 2.1-2. Fence with Green Slats Along the PCT as Viewed from the PCT Along the Ridgeline as the Project is First Viewable by PCT Users from the North

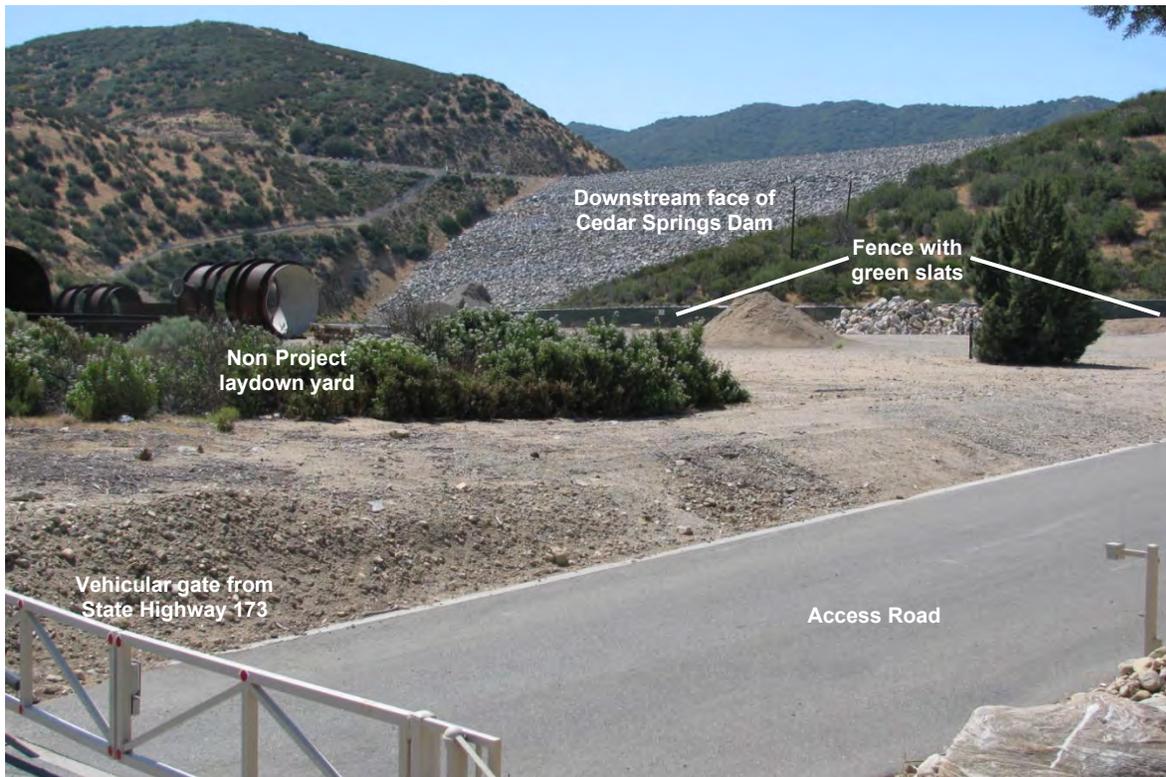


Figure 2.1-3. Cedar Springs Dam as Viewed from the PCT Along The Shoulder of Highway 173 Showing the Fence with Green Slats

The Cedar Springs Dam and spillway are also visible from the reservoir side of the dam along the PCT, and State Highway 138; but these facilities, including the outlet and inlet works, present less visual contrast because water covers most of the dam and spillway (Figures 2.1-4 and 2.1-5). Primary Project Roads associated with the dam and spillway can also present various levels of visual contrast, depending on the view point, but overall the contrast is light to moderate for these Project Roads, and they are seldom seen from sensitive viewpoints.

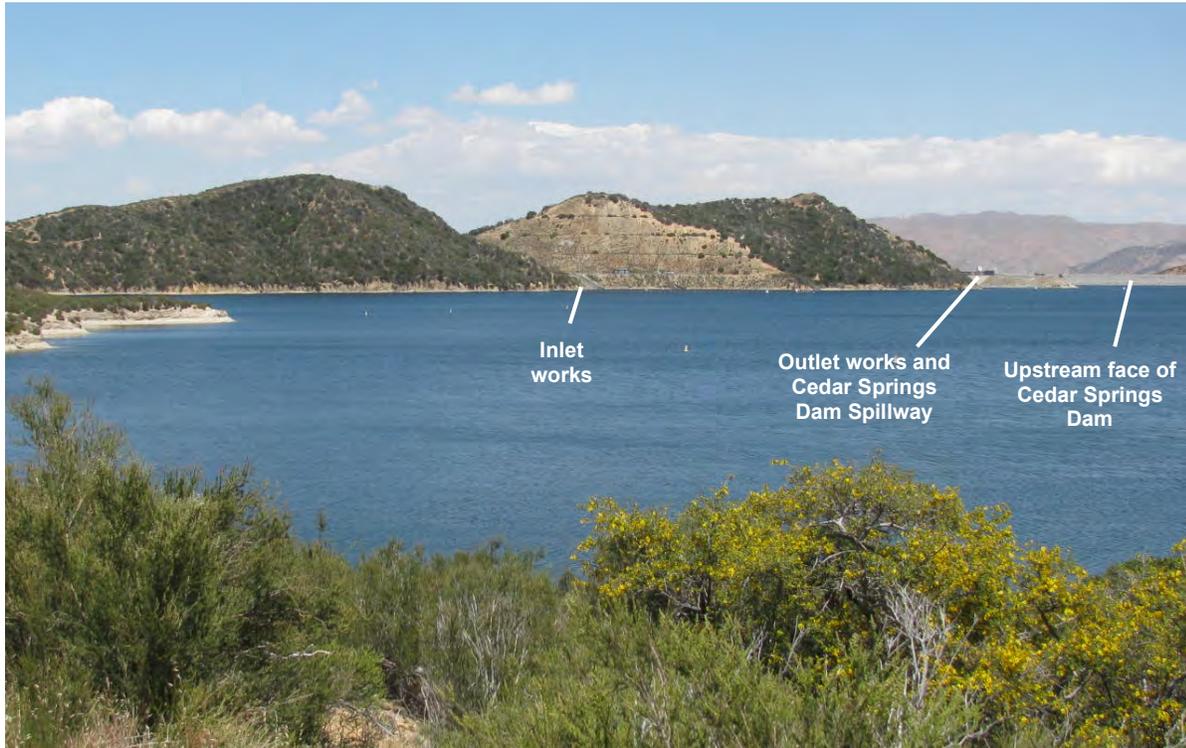


Figure 2.1-4. Cedar Springs Dam and Spillway as Viewed from the PCT from the Reservoir Side



Figure 2.1-5. Cedar Springs Dam and Spillway as Viewed from State Highway 138 from the Reservoir Side

2.1.2 Project Recreation Facilities

Overall views of Silverwood Lake SRA Project recreational facilities are primarily available from the PCT, which traverses the western shoreline of the reservoir, and from vehicle pullouts serving as vista points along State Highway 138. The Sawpit Canyon Boat Ramp and Marina are visible from State Highway 138, the PCT, and boaters on the reservoir and sent strong visual contrast (Figures 2.1-6 through 2.1-8). Note that the white water tank and buildings in the far right of Figure 2.1-6 are non-Project. Overall, the few facilities with visual contrast are typical of a reservoir-oriented setting and common to visitors to this Project and the other reservoirs in the area. Therefore, visual PM&E measures for these Project features (e.g., marina, boat docks, etc.) are not a necessity.



Figure 2.1-6. Sawpit Canyon Boat Ramp and Marina as Viewed from the PCT



Figure 2.1-7. Sawpit Canyon Boat Ramp and Marina as Viewed from the State Highway 138 Pull Off along Miller Canyon



Figure 2.1-8. Sawpit Canyon Boat Ramp Parking Area and Marina as Viewed from the State Highway 138 Pull Off

The group campground facilities are located in Cleghorn Canyon, west of Silverwood Lake and State Highway 138. The group campground facilities (i.e., Valle, Barranca and Rio sites) are generally well screened by vegetation as viewed in the foreground from the PCT and Cleghorn Road, except for the metal corral fencing in Rio Group Campground. Overall the building and structure colors match the local native soil well with only minimal contrast due to their geometric shapes (Figure 2.1-9).



Figure 2.1-9. Rio Group Campground as Viewed from the PCT

2.2 DEVIL CANYON POWERPLANT

The Devil Canyon Powerplant area includes the Devil Canyon Penstocks, Powerplant, and Afterbay facilities located on the south side of the San Bernardino Mountains at the transition from the mountains to the inland coastal plain. The mountainous areas are generally within the SBNF. However, the majority of the Project facilities are on State lands, with a small portion of the Project on NFS lands, including the upper surge chamber and top portion of the penstocks.

2.2.1 Devil Canyon Penstocks, Powerplant, Surge Chamber, and Roads

The two parallel penstocks, roads, surge chamber, and the powerplant are visible in the middleground from the south near the California State University, San Bernardino campus and from the residential communities of Verdemon and University Heights (Figures 2.2-1, 2.2-2, and 2.2-3). The penstocks and associated concrete visually contrast with the surrounding greens and browns of the landscape as they descend through Devil Canyon. The light colors, lines, and geometric shapes of the Devil Canyon Powerplant, surge chamber, and Primary Project Roads are visible from the south and create a visual contrast against the visual character of the mountains.



Figure 2.2-1. Devil Canyon Powerplant, Penstocks, and Surge Chamber as Viewed from Ohio Street at Ashley Court



Figure 2.2-2. Devil Canyon Powerplant, Penstocks, and Surge Chamber as Viewed from Campus Parkway



Figure 2.2-3. Devil Canyon Powerplant, Penstocks, and Surge Chamber as Viewed from California State University San Bernardino

The portion of the Project that is located on NFS lands is a short section of the uppermost penstocks, the upper surge chamber just above the start of the penstocks, and short segments of Primary Project Roads. These facilities do not meet the SBNF Land Management Plan’s scenic integrity objective of “high” (i.e., the landscape should appear unaltered) (USFS 2005).

The vast majority of public viewpoints of the Project facilities in the Devil Canyon Powerplant area occur from heavy residential and commercial settings on private lands. As such, most views are bracketed by residential and commercial structures with geometric shapes and light colors similar to some of the Project facilities.

2.2.2 Devil Canyon Second Afterbay

Devil Canyon Second Afterbay, located entirely on State lands, is viewable in the foreground from the nearby residential communities (Figure 2.2-4). Devil Canyon Second Afterbay embankment terraces can only be seen from select viewpoints; the majority of the views are from the south where the terraces are not visible (Figure 2.2-5). Overall, Devil Canyon Second Afterbay and its embankment blend well with the surrounding landscape, particularly due to the native chaparral/sage scrub plant vegetation covering the embankment, which appears natural when viewed from the south in the foreground and middleground.



Figure 2.2-4. Devil Canyon Second Afterbay as Viewed from North Melvin Avenue

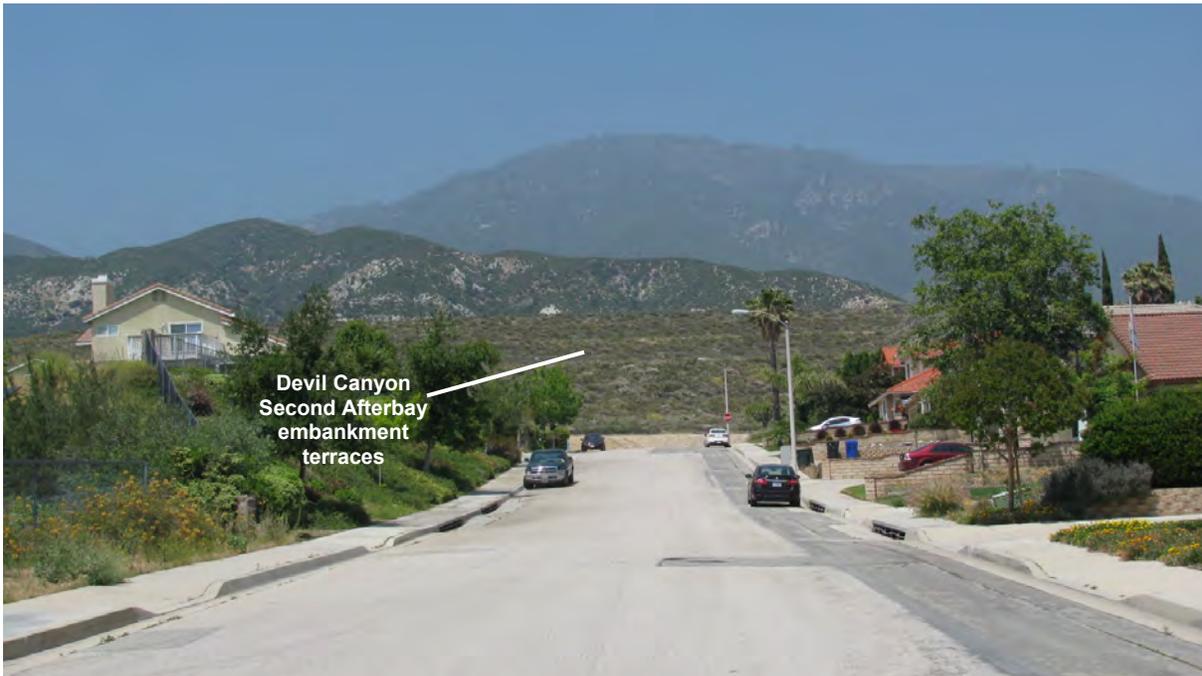


Figure 2.2-5. Devil Canyon Second Afterbay Embankment Terraces as Viewed from North Walnut Avenue

3.0 PROPOSED PROTECTION, MITIGATION, AND ENHANCEMENT MEASURES

The Cedar Springs Dam, spillway, and outlet structures as viewed from the PCT and the adjacent State Highway 173 present visual contrast to the natural setting, as described in Section 2.1.1. These facilities are seen in the immediate foreground from the PCT as trail users first view the Project from the north (Figures 2.1-1 and 2.1-2). Within a year of license issuance, DWR will coordinate with DPR, USFS, and the Pacific Crest Trail Association (PCTA) on installing an interpretive sign where the Cedar Springs Dam complex is first viewed by PCT users, but not directly on the PCT. This could be in or near the Cleghorn Day Use Area facilities or along the fence to the Cedar Springs Dam maintenance yards near State Highway 173 (also situated on State lands). The interpretive sign will explain the size and purpose of the Project, including where the water is coming from and going to. DWR will consult with USFS and the PCTA on the location and details related to the interpretive sign. Further, when in DWR's estimation that the slats in the fencing along the PCT are in need of replacement, DWR will consult with USFS and the PCTA regarding the color of the replacement slats. Within a year of license issuance, DWR will treat the metal corral fencing at Rio Group Campground to better match the surrounding natural environment.

Prior to performing scheduled maintenance of Project facilities (e.g., penstocks, powerplant, surge chamber) that affect the color of the facilities (e.g., painting, re-coating), to the extent consistent with the function and safe operation of the facility, DWR will select colors that blend with the natural landscape. If the facility is located on NFS lands, DWR will consult with SBNF regarding the selection of the color. Further, when Project facilities are replaced or updated, DWR will consult with the SBNF regarding potential visual improvements for the replacement or updated Project facilities.

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4.0 CONSULTATION, REPORTING, AND PLAN REVISIONS

4.1 CONSULTATION AND REPORTING

DWR will annually review with the SBNF any DWR activities on NFS lands that could affect visual resources as seen from NFS lands that are completed in the previous calendar year, as well as any DWR activities planned for NFS lands for the current calendar year.

4.2 PLAN REVISIONS

DWR, in consultation with the SBNF, will review, update, and/or revise this Plan as it pertains to visual resources on NFS lands. Any updates to the Plan will be prepared in coordination and consultation with the SBNF. DWR will provide SBNF 60 days to provide written comment and recommendations before DWR files the updated Plan with FERC for FERC's approval. DWR will include documentation of all relevant coordination and consultation with the updated Plan filed with FERC. If DWR does not adopt a particular recommendation by the SBNF, the filing will include DWR's reasons for not doing so. DWR will implement the Plan as approved by FERC. The Plan will not be considered revised until FERC issues its approval.

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5.0 REFERENCES CITED

- California Department of Water Resources (DWR). 1980. Non-Exclusive Easement for the Pacific Crest Trail by State of California, acting through and by its Director of Water Resources, to the United States of America, acting through the U.S. Forest Service of the U.S. Department of Agriculture. March 25, 1980. Sacramento, California.
- U.S. Department of Agriculture, Forest Service (USFS). 2018. San Bernardino National Forest Website - Rim of the World Scenic Byway. Available online: <https://www.fs.usda.gov/recarea/sbnf/recarea/?recid=74122>. Accessed: August 10, 2018.
- _____. 2005. San Bernardino National Forest Land and Resource Management Plan. Department of Agriculture. San Bernardino, California. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_007719.pdf. Accessed: June 25, 2018.

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Attachment 8

Historic Properties Management Plan (Privileged)

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DEVIL CANYON PROJECT RELICENSING

HISTORIC PROPERTIES MANAGEMENT PLAN

The Federal Energy Regulatory Commission (FERC) typically completes Section 106 of the National Historic Preservation Act (NHPA) by entering into a Programmatic Agreement (PA) with the Advisory Council on Historic Preservation and the State Historic Preservation Officer (SHPO) that typically requires the license applicant to develop and implement a Historic Properties Management Plan (HPMP). The HPMP is a plan for considering and managing Project effects on historic properties. Through an approved HPMP and executed PA, FERC can require the California Department of Water Resources’ (DWR) consideration and appropriate management of effects on historic properties throughout the term of the license, and in turn, allow FERC to meet the requirements of NHPA Section 106 for its undertakings.

The HPMP contains sensitive, confidential, and privileged information. As such, the HPMP will only be distributed to interested tribes; the San Bernardino National Forest (SBNF) under the U.S. Department of Agriculture, Forest Service (USFS); the California Department of Parks and Recreation; and SHPO for review and comment as part of the NHPA Section 106 consultation process.

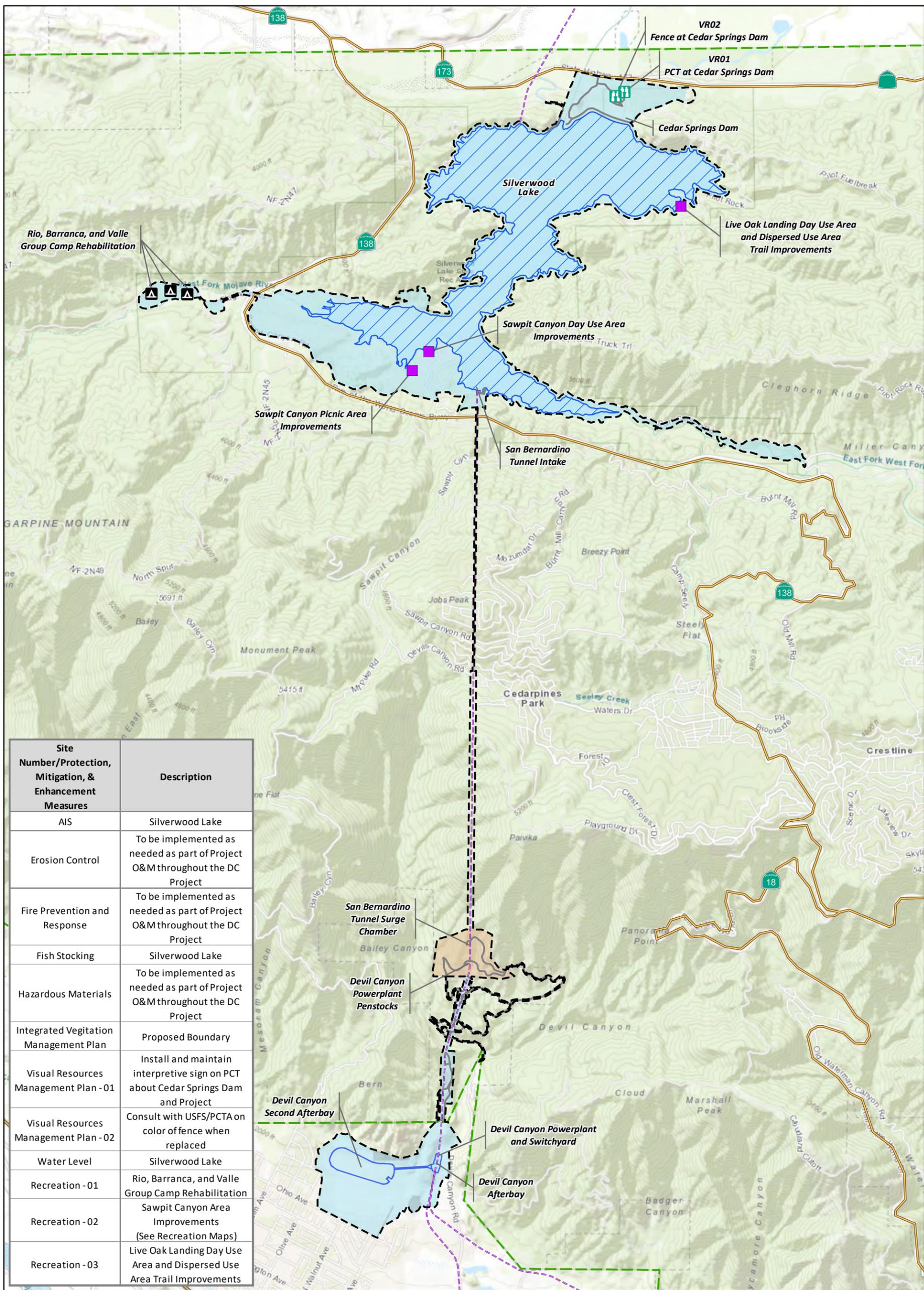
DWR distributed the draft HPMP to the tribes and USFS SBNF on April 10, 2019 as part of the 90-day review of DWR’s Draft License Application (DLA) for its Devil Canyon Project Relicensing, FERC Project Number 14797 that was filed the same day with FERC. In a letter dated June 26, 2019, DWR requested a formal 30-day review of the DLA and draft HPMP by the tribes, SBNF, and the California Department of Parks and Recreation under NHPA Section 106. Written comments were provided on July 26, 2019 by the San Manuel Band of Mission Indians, and relevant comments will be addressed in the final HPMP. DWR received comments on July 3, 2019 as part of FERC’s review of the DLA and HPMP. DWR will address FERC’s comments in the final HPMP. As of the date of this FLA filing, DWR is still engaging tribes and agencies on the preparation of the HPMP. The draft HPMP, as included in DWR’s DLA, has been included in this FLA. DWR plans to file a final HPMP with FERC upon the conclusion of consultation with the tribes, agencies, and SHPO, which DWR anticipates to be between February and April of 2020.

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Attachment 9

Protection, Mitigation, & Enhancement (PM&E) Map

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Site Number/Protection, Mitigation, & Enhancement Measures	Description
AIS	Silverwood Lake
Erosion Control	To be implemented as needed as part of Project O&M throughout the DC Project
Fire Prevention and Response	To be implemented as needed as part of Project O&M throughout the DC Project
Fish Stocking	Silverwood Lake
Hazardous Materials	To be implemented as needed as part of Project O&M throughout the DC Project
Integrated Vegetation Management Plan	Proposed Boundary
Visual Resources Management Plan - 01	Install and maintain interpretive sign on PCT about Cedar Springs Dam and Project
Visual Resources Management Plan - 02	Consult with USFS/PCTA on color of fence when replaced
Water Level	Silverwood Lake
Recreation - 01	Rio, Barranca, and Valle Group Camp Rehabilitation
Recreation - 02	Sawpit Canyon Area Improvements (See Recreation Maps)
Recreation - 03	Live Oak Landing Day Use Area and Dispersed Use Area Trail Improvements



Legend

- Recreation Point
- Aesthetic Point
- Campground
- Project Road
- State Water Project
- Major Highways
- Proposed Project Boundary (v.20190821)
- Silverwood Lake

Land Ownership

- City
- Federal
- Private
- State of California

Congressional National Forest Boundary

0 0.5 1 Miles

Prepared: September 2019
 Projection: CA SP V NAD83 (ft)
 Data and/or Background: ESRI World Topo (2018)
 U:\224202041\gis\MXDs\FLA\PM&E\DC_PMan&E_20190912.mxd

DEVIL CANYON PROJECT RELICENSING
FERC PROJECT NO. 14797

Protection, Mitigation, & Enhancement (PM&E) Map

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Appendix F

PM&E Meeting Materials

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AGENDA

Devil Canyon Project Hydropower Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: April 16, 2018
Time: 9:00 am – 4:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the PM&E development for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- TLP Schedule
- Study Status Update
- PM&E Approach
- Discussion of April 17th Meeting Agenda
 - Discussion of PM&E process and PM&Es
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



Devil Canyon Project Relicensing

PM&E Meeting

Sign-In

Time/Date: 9:00 am – 4:00 pm / April 16, 2018

Location: TownePlace Suites San Bernardino/Loma Linda

Name	Organization	E-mail	Initial
Alvarez, Dawn	USFS	dalvarez@fs.fed.us	on phone
Bowes, Stephen	NPS	Stephen_Bowes@nps.gov	SMB
Cleary-Rose, Karin	FWS	Karin_cleary-rose@fws.gov	
Direen, Josh	USFS	jdireen@fs.fed.us	JD
Dorsey, Jeremy	USFS	Jdorsey02@fs.fed.us	JD
Fisch, Nathan	Waterboard	Nathan.Fisch@waterboards.ca.gov	NF
Gibson, Joanna	DFW	Joanna.Gibson@wildlife.ca.gov	
Gilbert, Kirby	Stantec	kirby.gilbert@stantec.com	KG
Goebel, Scott	DWR	Scott.Goebel@water.ca.gov	SG
Kass, Anitra	PCTA	akass@pcta.org	AK

Name	Organization	E-mail	Initial
Knittweis, Gwen	DWR	Gwen.Knittweis@water.ca.gov	GW
Lee, Lisa	DWR	Lisa.Lee@water.ca.gov	LL
Lynch, Jim	HDR	James.Lynch@hdrinc.com	△JK
McBride, Jenness	FWS	jenness_mcbride@fws.gov	
McElvain, Doug	SFD	doug.mcelvain@water.ca.gov	DZM
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Miller, Jill	Stantec	jill.miller2@stantec.com	jm
Murphy, Stephanie	Stantec	stephanie.murphy@stantec.com	SM
Stamer, Marc	USFS	mstamer@fs.fed.us	
Taylor, Robert	USFS	rgtaylor@fs.fed.us	RT
Torres, Ralph	DWR	torresraphael13@yahoo.com	RT
Gleim, Jim	DWR		on phone



Devil Canyon Project Relicensing

PM&E Meeting

Sign-In

Time/Date: 9:00 am – 3:00 pm / April 17, 2018

Location: TownePlace Suites San Bernardino/Loma Linda

Name	Organization	E-mail	Initial
Alvarez, Dawn	USFS	dalvarez@fs.fed.us	OK phone
Bowes, Stephen	NPS	Stephen_Bowes@nps.gov	SMB
Cleary-Rose, Karin	FWS	Karin_cleary-rose@fws.gov	
Direen, Josh	USFS		JD
Dorsey, Jeremy	USFS	jdorsey02@fs.fed.us	JD
Fisch, Nathan	Waterboard	Nathan.Fisch@waterboards.ca.gov	NF
Gibson, Joanna	DFW	Joanna.Gibson@wildlife.ca.gov	OK phone
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Goebel, Scott	DWR	Scott.Goebel@water.ca.gov	SG
Kass, Anitra	PCTA	akass@pcta.org	AK

Name	Organization	E-mail	Initial
Knittweis, Gwen	DWR	Gwen.Knittweis@water.ca.gov	<i>GK</i>
Lee, Lisa	DWR	Lisa.Lee@water.ca.gov	<i>LL</i>
Lynch, Jim	HDR	James.Lynch@hdrinc.com	<i>JL</i>
McBride, Jenness	FWS	jenness_mcbride@fws.gov	<i>Jem</i>
McElvain, Doug	SFD	doug.mcelvain@water.ca.gov	<i>DM</i>
Mendoza, Angelica	USFS		<i>AM</i>
Miller, Aaron	DWR	Aaron.S.Miller@water.ca.gov	<i>ASM</i>
Miller, Jill	Stantec	jill.miller2@stantec.com	<i>JM</i>
Murphy, Stephanie	Stantec	stephanie.murphy@stantec.com	<i>SM</i>
Stamer, Marc	USFS	mstamer@fs.fed.us	<i>MS</i>
Taylor, Robert	USFS	rgtaylor@fs.fed.us	<i>RT</i>
Torres, Ralph	DWR	torresraphael13@yahoo.com	<i>RT</i>
<i>GABINO VELAZQUEZ</i>	<i>DWR</i>	<i>GVELAZQUEZ@water.ca.gov</i>	<i>GV</i>
<i>Jim Gleim</i>	<i>DWR</i>		<i>on phone</i>

AGENDA

**Devil Canyon Project
Fish Stocking & Aquatic Invasive Species PM&E Discussion
Meeting 1
FERC Project No. 14797**

Date: Friday, May 11, 2018

Time: 10:00pm – 11:00am

Location: Skype Meeting Call-In information:
Phone: (888) 256-7209 / Conference ID: 53416138

Attendees: Staff from DWR-HLPCO, SBNF, CDWF, FWS, SWRCB, Stantec, and HDR

Objectives: To discuss interest in fish stocking and aquatic invasive species potential mitigation and enhancement measures (PM&E's) for the Devil Canyon Project.

10:00 - 10:10	Introductions, Purpose, and Objectives	Jill Miller
	Review agenda and introduce attendees. Discuss meeting purpose and objectives.	

10:10 – 10:50	PM&E Discussion	All
	<ul style="list-style-type: none">• Fish Stocking• Aquatic Invasive Species• Other Biological topics	

10:50 - 11:00	Action Items and Next Steps	Jill Miller
	Summarize action items and determine next steps	



Fish Stocking & Aquatic Invasive Species PM&E Discussion Meeting 1
Friday, 10:00 am – 11:00 am / May 11, 2018
Conference Call
Sign-In Sheet

Name	Organization	Phone Number	E-mail	Initial*
Fisch, Nathan	SWRQB			
Caldwell, Jarvis	HDR		Jarvis.caldwell@hdrinc.com	
Gibson, Joanna	CDFW		Joanna.Gibson@Wildlife.ca.gov	
Gilbert, Kirby	Stantec	425-896-6954	kirby.gilbert@stantec.com	
Gleim, James	DWR – HLPCO	916-541-9025	james.gleim@water.ca.gov	
Goebel, Scott	DWR – HLPCO	916-557-4561	scott.goebel@water.ca.gov	
Grandfors, Quinn	CDFW		Quinn.Grandfors@Wildlife.ca.gov	
Lee, Lisa	DWR – HLPCO	916-557-4557	lisa.lee@water.ca.gov	
Lynch, Jim	HDR	916-679-8740	Jim.Lynch@hdrinc.com	
Miller, Jill	Stantec	916-418-8439	jill.miller2@stantec.com	
Taylor, Robert	USFS	909-382-2660	rgtaylor@fs.fed.us	

*Attendance indicated by shaded Initial column.

AGENDA

**Devil Canyon Project
Visual Management Resources PM&E Discussion
Meeting 1
FERC Project No. 14797**

Date: Monday, May 14, 2018

Time: 2:00pm – 4:00pm

Location: Skype Meeting Call-In information:
Phone: (888) 256-7209 / Conference ID: 563567907

Attendees: Staff from DWR-HLPCO, SBNF, PCTA, Stantec, and HDR

Objectives: To discuss Pacific Crest Trail in relation to the Visual Management Resources potential mitigation and enhancement measures (PM&E's) for the Devil Canyon Project.

2:00 - 2:10	Introductions, Purpose, and Objectives	Stephanie Murphy
	Review agenda and introduce attendees. Discuss meeting purpose and objectives.	

2:10 – 3:50	PM&E Discussion	All
	<ul style="list-style-type: none">• Pacific Crest Trail	

3:50 - 4:00	Action Items and Next Steps	Stephanie Murphy
	Summarize action items and determine next steps	



Visual Management Resources PM&E Discussion Meeting 1
Monday, 2:00 pm – 4:00 pm / May 14, 2018
Conference Call
Sign-In Sheet

Name	Organization	Phone Number	E-mail	Initial*
Bowes, Stephen	National Parks Service	415-623-2321	Stephen_bowes@nps.gov	
Caldwell, Jarvis	HDR		Jarvis.caldwell@hdrinc.com	
Gibson, Joanna	CDFW		Joanna.Gibson@Wildlife.ca.gov	
Gilbert, Kirby	Stantec	425-896-6954	kirby.gilbert@stantec.com	
Gleim, James	DWR – HLPCO	916-541-9025	james.gleim@water.ca.gov	
Goebel, Scott	DWR – HLPCO	916-557-4561	scott.goebel@water.ca.gov	
Granfors, Quinn	CDFW		Quinn.Granfors@Wildlife.ca.gov	
Henriquez-Santos, Jose	USFS		jhenriquezsantos@fs.fed.us	
Lee, Lisa	DWR – HLPCO	916-557-4557	lisa.lee@water.ca.gov	
Lynch, Jim	HDR	916-679-8740	Jim.Lynch@hdrinc.com	
Kass, Anitra	PCTA	951-257-4100	akass@pcta.org	
Miller, Jill	Stantec	916-418-8439	jill.miller2@stantec.com	
Murphy, Stephanie	Stantec		Stephanie.murphy@stantec.com	
Paquette, Matthew	HDR	530-587-3682	Matthew.Paquette@hdrinc.com	
Taylor, Robert	USFS	909-382-2660	rgtaylor@fs.fed.us	

*Attendance indicated by shaded Initial column.

AGENDA

Devil Canyon Project Hydropower Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: July 17, 2018
Time: 9:00 am – 4:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the PM&E Plans for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Fire Prevention and Response Plan
- Erosion and Sediment Plan
- Hazardous Materials Plan
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



Devil Canyon Project Relicensing

PM&E Meeting

Sign-In

Time/Date: 9:00 am – 4:00 pm / July 17, 2018

Location: TownePlace Suites San Bernardino/Loma Linda

Name	Organization	E-mail	Initial
Elliot, Kelly	Parks		
Fisch, Nathan	Waterboard	Nathan.Fisch@waterboards.ca.gov	NF
Gilbert, Kirby	Stantec	kirby.gilbert@stantec.com	
Gill, Ryan	Parks	ryan.gill@parks.ca.gov	R
Gleim, Jim	DWR	James.Gleim@water.ca.gov	JG
Kams, Frank	SB County Sheriff	fkams@sbcasd.org	
Holzmer, Fred	HDR	Frederick.Holzmer@hdrinc.com	
Horton, Michael	SB Fire	mhorton@sbcfire.org	
Kass, Anitra	PCTA	akass@pcta.org	
Kent, Robin	HDR	Robin.Kent@hdrinc.com	

Name	Organization	E-mail	Initial
Lynch, Jim	HDR	James.Lynch@hdrinc.com	JML
McElvain, Doug	SFD	doug.mcelvain@water.ca.gov	
Miller, Aaron	DWR	Aaron.S.Miller@water.ca.gov	AM
Miller, Jill	Stantec	jill.miller2@stantec.com	JM
Murphy, Stephanie	Stantec	stephanie.murphy@stantec.com	SM
Panos, Adam	SB Fire	apanos@sbcfire.org	
Taylor, Robert	USFS	rgtaylor@fs.fed.us	RT
Wallace, Ionie	SB Fire	iwallace@sbcfire.org	IW
ZUCCARO JOE	SB Co FIRE	JZUCCARO@SBCFIRE.org	JZ
Enrique Arroyo	State Parks	Enrique.Arroyo@parks.ca.gov	EA
Padgett, Kamina	SWRCB	Kamina.padgett@waterboards.ca.gov	KP
WILLIAMS, VICTORIA	DWR - SFD	VICTORIA.WILLIAMS@WATER.CA.GOV	WV
DAN SNOW	USFS - BDF	dcsnow01@fs.fed.us	DS
Adam Panos	SBCoFD	apanos@sbcfire.org	AP

Name	Organization	E-mail	Initial
Ralph Torres	DWR	on phone	
Scott Goble	DWR	on phone	

AGENDA

Devil Canyon Project Hydropower Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: July 18, 2018
Time: 9:00 am – 4:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the PM&E Plans for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Transportation Management Plan
- Integrated Vegetation Management Plan
- Fish Stocking Measure
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



Devil Canyon Project Relicensing

PM&E Meeting

Sign-In

Time/Date: 9:00 am – 4:00 pm / July 18, 2018

Location: TownePlace Suites San Bernardino/Loma Linda

Name	Organization	E-mail	Initial
Arroyo, Enrique	Parks	Enrique.Arroyo@parks.ca.gov	EA
Dingman, Russ	Parks	Russ.Dingman@parks.ca.gov	
Direen, Josh	USFS	jdireen@fs.fed.us	JD
Elliot, Kelly	Parks	Kelly.elliott@parks.ca.gov	KE
Fisch, Nathan	Waterboard	Nathan.Fisch@waterboards.ca.gov	NF
Gibson, Joanna	DFW	Joanna.Gibson@wildlife.ca.gov	
Gilbert, Kirby	Stantec	kirby.gilbert@stantec.com	KG
Gill, Ryan	Parks		RG
Gleim, Jim	DWR	James.Gleim@water.ca.gov	JG
Granfors, Quinn	CDFW	Quinn.Granfors@wildlife.ca.gov	

Name	Organization	E-mail	Initial
Holson, John	Stantec	john.holson@stantec.com	
Lee, Lisa	DWR	Lisa.Lee@water.ca.gov	LL
Lynch, Jim	HDR	James.Lynch@hdrinc.com	JL
McBride, Jenness	FWS	jenness_mcbride@fws.gov	
McElvain, Doug	SFD	doug.mcelvain@water.ca.gov	
Miller, Aaron	DWR	Aaron.S.Miller@water.ca.gov	AM
Miller, Jill	Stantec	jill.miller2@stantec.com	JMM
Murphy, Stephanie	Stantec	stephanie.murphy@stantec.com	SM
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Joseph Salazar	DWR	joseph.salazar@water.ca.gov	JFS
Karmna Padgett	SWRCB	karmna.padgett@waterboards.ca.gov	KP
Gwen Knitweiss			Phone

Name	Organization	E-mail	Initial
Scott Goebel			Phone
Ralph Torres			Phone
DAN O'Gunnor	USFS	dsocומר@fs.fed.us	
DAVID AUSTIN	USFS	daustin@fs.fed.us	

AGENDA

Devil Canyon Project Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: August 7, 2018
Time: 9:00 am – 4:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the PM&E Plans for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Discuss Status of the Following:
 - Erosion Control Plan
 - Fire Prevention Plan
 - Hazardous Materials Plan
 - Transportation System Management Plan
 - Fish Stocking Measure
 - Preparation of Integrated Vegetation Management Plan
- Define What Constitutes “Agreement” on a Measure/Plan and How to Document Agreement
- Discuss Agencies’ Comments on Visual Resource Management Plan
- Discuss Agencies’ Comments on Aquatic Invasive Species Plan
- Recreation Study Data/Analysis
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



PM&E Meeting
Tuesday, 9:00 am – 4:00 pm / August 7, 2018
TownePlace Suites San Bernardino/Loma Linda
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AGENDA

Devil Canyon Project Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: August 8, 2018
Time: 9:00 am – 4:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the Recreation Management Plan for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Discuss Recreation Management Plan Outline
- Action Items and Next Steps, including Follow-up Calls/Meetings

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



PM&E Meeting
Wednesday, 9:00 am – 4:00 pm / August 8, 2018
TownePlace Suites San Bernardino/Loma Linda
Sign-In Sheet

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AGENDA

Devil Canyon Project Hydropower Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: October 2, 2018
Time: 8:30 am -11:30 am
Location: Via Skype
Call In: 888-256-7209
Conference ID: 951143341
Objectives: To discuss the current versions of the PM&E Plans for the DC Draft License Application.

- Introduction & Purpose

- Safety Moment

- PM&E Plans
 - Visual Resource Management Plan

 - Fire Prevention and Response Plan

 - Hazardous Substances Plan

 - Erosion and Sediment Control Plan

 - Transportation Plan

- Action Items and Next Steps

Meeting Attendees for 10/2 DC PM&E Plan Review Call



attended call

invited but didn't attend call

	First Name	Last Name	Agency Name
	Jill	Miller	Stantec
	Stephanie	Murphy	Stantec
	Jim	Lynch	DWR
	Hannah	Sada	Stantec
	Indya	Messier	Stantec
	Karmina	Padgett	SWRCB
	Robert	Taylor	Forest Service-San Bernadino NF
	Jose	Santos-Henriquez	Forest Service-Angeles NF
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	Scott	Goebel	DWR
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	Jeremiah	Mcneil	DWR
	Jim	Gleim	DWR
	Aaron	Miller	DWR
	Gwen	Scholl	DWR
	Joe	Zuccaro	San Bernadino County Fire Department
	Ryann	Gill	California State Parks
	Enrique	Arroyo	California State Parks
	Kirby	Gilbert	Stantec
	Joshua	Direen	Forest Service
	Nathan	Fisch	SWRCB
	Joanna	Gibson	CDFW
	Jenness	McBride	USFWS
	Adam	Panos	San Bernadino County Fire Department
	Kelly	Elliott	State Parks
	Ionie	Wallace	San Bernadino County Fire Department
	Michael	Horton	San Bernadino County Fire Department
	Quinn	Granfors	CDFW
	Doug	Mcelvian	DWR
	Gabino	Velazquez	DWR
	Susan	Monoheit	SWRCB
	Frank	Kams	San Bernadino County Sherrif's Department

AGENDA

Devil Canyon Project Hydropower Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: October 4, 2018
Time: 1:30-2:30p.m.
Location: Via Skype
Call In: 888-256-7209
Conference ID: 111123452
Objectives: To discuss the PM&E Fish Stocking Measure for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Fish Stocking Measure
- Action Items and Next Steps

Meeting Attendees for 10/4 DC PM&E Fish Measure Review Call



attended call

invited but didn't attend call

	First Name	Last Name	Agency Name	
attended call	Jill	Miller	Stantec	
	Stephanie	Murphy	Stantec	
	Brian	Rorie	Stantec	
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	Indya	Messier	Stantec	
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Denise		Barnes	DWR	
Blaine		Laumbach	DWR	
Joesph		Salazar		
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Francisco	Llamas	DWR		

AGENDA

Devil Canyon Project Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: October 30, 2018
Time: 9:00 am – 2:00 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the DC PM&E Plans for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Discuss Collaboration Agreement Language
- Discuss Agencies' Comments on Aquatic Invasive Species Plan
- Reach agreement on the following PM&E Plans:
 - Fish Stocking Measure
 - Erosion and Sediment Control Plan
 - Transportation Plan
 - Hazardous Substances Plan
- Discuss Comments and Reach Agreement on the Following PM&E Plans:
 - Fire Prevention and Response Plan
 - Visual Resource Management Plan
- DWR to Provide Status Update on Recreation and Integrated Vegetation Management Plans
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



PM&E Meeting
Tuesday, 9:00 am – 2:00 pm / October 30, 2018
TownePlace Suites San Bernardino/Loma Linda
Sign-In Sheet

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lan?				Phone

Add to invite list

AGENDA

Devil Canyon Project Relicensing Draft License Application PM&E Meeting - Recreation FERC Project No. 14797

Date: December 5, 2018
Time: 9:00 am – 3:30 pm *
Location: Towneplace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the DC PM&E Recreation Plan for the DC Draft License Application.

- Introduction & Purpose
- Safety Moment
- Discuss Current Version of Recreation Plan
- Action Items and Next Steps

* Meeting end time may be adjusted depending on progress.



PM&E Meeting
Tuesday, 9:00 am – 3:30 pm / December 5, 2018
TownePlace Suites San Bernardino/Loma Linda
Sign-In Sheet

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AGENDA

Devil Canyon Project Relicensing Draft License Application PM&E Meeting FERC Project No. 14797

Date: February 13, 2019
Time: 9:00 am – 2:00 pm *
Location: TownePlace Suites San Bernardino/Loma Linda
10336 Richardson Street, Loma Linda, CA 92354
Objectives: To discuss the DC PM&E Plans for the DC Draft License Application.

- Introductions & Purpose
- Safety Moment
- Integrated Vegetation Management PM&E Plan
- Aquatic Invasive Species PM&E Plan – West Fork Mojave River Reconnaissance Review
- Action Items and Next Steps

*These agenda items may be addressed in a different order and may go faster depending on discussions by participants at the meeting.



PM&E Meeting
Wednesday, 9:00 am – 3:30 pm / February 13, 2019
TownePlace Suites San Bernardino/Loma Linda
Sign-In Sheet

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Appendix G

West Fork Mojave River Reach Reconnaissance Survey

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DEVIL CANYON PROJECT RELICENSING FERC PROJECT NUMBER 14797



West Fork Mojave River Reach Reconnaissance Survey

November 2019



State of California
California Natural Resources Agency
DEPARTMENT OF WATER
RESOURCES
Hydropower License Planning and
Compliance Office

GAVIN NEWSOM
Governor
State of California

WADE CROWFOOT
Secretary for
California Natural Resources

KARLA A. NEMETH
Director
Department of Water Resources



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Executive Summary

This reconnaissance study was conducted in support of California Department of Water Resources' (DWR) relicensing of the Devil Canyon Project, Federal Energy Regulatory Commission Project Number 14797 (Project). This report presents existing, relevant, and reasonably available information and the results of a field reconnaissance survey. The field survey was conducted December 18 through December 20, 2018 on the 6.4-mile-long section of the West Fork Mojave River (WFMR) between Cedar Springs Dam and the Saddle Dike Diversion Dam at the Mojave Forks Reservoir (WFMR reach). The Project's Silverwood Lake, which is impounded by Cedar Springs Dam, is in the WFMR basin, but the Project does not use natural flow into Silverwood Lake for power generation, nor does the Project have discretion over releases from Silverwood Lake into the WFMR reach.

The existing, relevant, and reasonably available information described a reach that has flows in excess of 1,000 cubic feet per second in some years, but with all years having prolonged periods of up to 9 to 10 months with no flow, and heavy public use. Four amphibian and fish species listed under the federal Endangered Species Act (ESA) have the potential to occur in this reach including the federally endangered arroyo toad (*Anaxyrus californicus*), the federally threatened California red-legged frog (*Rana draytonii*; CRLF), the federally endangered southern mountain yellow-legged frog (*Rana muscosa*; SMYLF), and the federally endangered Mohave tui chub (*Gila bicolor* ssp. *Mohavensis*). Also, western spadefoot (*Spea hammondi*) is a special-status species that has the potential to occur in the reach. The arroyo toad has been reported to occur in the reach and is considered extant (CDFW 2018a, Thomson et al. 2016). A segment of the WFMR reach, beginning in the area on the north side of Highway 173 and northwards, is designated critical habitat for arroyo toad. The other four species (CRLF, SMYLF, Mohave tui chub, and western spadefoot) either have not recently been detected in the vicinity of the WFMR reach or are considered extirpated from the region (USFWS 2002, Moyle 2002, USFWS 2018a, CDFW 2018a).

During DWR's survey, no releases from Cedar Springs Dam were being made. The upstream half of the reach had very slow flowing water and included moderately deep pool habitat resulting from beaver dam complexes. No ESA-listed species or special status species were observed. Evidence of four aquatic invasive species – American bullfrog (*Lithobates catesbeianus*), red swamp crayfish (*Procambarus clarkii*), Asian clam (*Corbicula fluminea*), and Eurasian watermilfoil (*Myriophyllum spicatum*) – were observed. Fish species observed included unidentified minnows and mosquitofish, and vocalizing chorus frogs were heard. Riparian habitat varied from nearly void in the upstream portion of the reach to moderately dense with a lateral extent up to 100 feet in other areas. Riparian composition for the upper portion of the reach included common reed, shrubs including mule fat and willows, as well as intermittent sycamore, cottonwood and ash trees. In-channel disturbances observed included off-highway vehicle usage, cattle-grazing, and other human activities.

The downstream half of the reach was either dry during the survey or consisted of a few isolated pools with no surface flow. No ESA-listed species, special status species or fishes were observed. Evidence of Asian clam and red swamp crayfish was observed. Riparian habitat varied from near void to dense, with a lateral extent ranging from 10 feet to approximately 300 feet. Riparian composition consisted of similar species to the upper portion of the reach, with a more mature riparian corridor upstream of Deep Creek. Observed in-channel disturbances were similar to those observed in the upper portion of the reach.

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
AIS	aquatic invasive species
cfs	cubic feet per second
CNDDDB	California Natural Diversity Database
CRLF	California red-legged frog
Decree	Mojave River Adjudication Decree
DO	dissolved oxygen
DPS	Distinct Population Segment
DWR	California Department of Water Resources
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FR	Federal Register
GPS	Global Positioning System
LFR	Las Flores Ranch
mg/L	milligrams per liter
MWA	Mojave Water Agency
NAS	Nonindigenous Aquatic Species, a USGS location database
OHW	ordinary high water
OHWM	ordinary high water mark
PAD	Pre-Application Document
Project	Devil Canyon Project, FERC Project Number 14797
SMYLF	Southern mountain yellow-legged frog or Sierra Madre yellow-legged frog
SRA	State Recreation Area
Sub-Reach 1	Cedar Springs Dam Spillway Tailrace
Sub-Reach 2	West Fork Mojave River above Horsethief Creek; extends from the downstream end of Sub-Reach 1 to the confluence with Horsethief Creek
Sub-Reach 3	West Fork Mojave River below Horsethief Creek; approximately 1.5-mile section of the West Fork Mojave River downstream of Horsethief Creek to just beyond the Hesperia Venture I (Las Flores

	Ranch) property boundary with US Army Corps of Engineers' property
Sub-Reach 4	West Fork Mojave River upstream of Grass Valley Creek
Sub-Reach 5	West Fork Mojave River downstream of Grass Valley Creek
Sub-Reach 6	West Fork Mojave River Mature Riparian Corridor; the last 0.5-mile of the West Fork Mojave River before reaching the confluence with Deep Creek at the Saddle Dike Diversion Dam at Mojave River Forks Reservoir
SWP	State Water Project
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WFMR	West Fork Mojave River
WFMR reach	The 6.4-mile-long section of the West Fork Mojave River between Cedar Springs Dam and the Saddle Dike Diversion Dam at the Mojave River Forks Reservoir
YSI	Yellow Springs Instruments

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1.0 INTRODUCTION

This report presents existing, relevant, and reasonably available information and the results of a field reconnaissance survey (survey) conducted on December 18, 2018 through December 20, 2018. The survey was conducted on the 6.4-mile-long section of the West Fork Mojave River (WFMR) between Cedar Springs Dam and the Saddle Dike Diversion Dam at the Mojave Forks Reservoir (WFMR reach) in support of the California Department of Water Resources' (DWR) application for a new license with Federal Energy Regulatory Commission (FERC) for the Devil Canyon Project, FERC Project Number 14797 (Project).

1.1 BACKGROUND

1.1.1 Description of the Project

The Project is part of a larger water storage and delivery system, the State Water Project (SWP), which is the largest state-owned and operated water supply project of its kind in the United States (U.S.). The SWP provides southern California with many benefits, including affordable water supply, reliable regional clean energy, opportunities to integrate green energy, accessible public recreation opportunities, and environmental benefits.

The Project, which is located on the East Branch of the SWP in San Bernardino County, California, has a FERC-authorized installed capacity of 276,796 kilowatts. Project facilities range in elevation from 5,377 feet to 1,778 feet, and include: Cedar Springs Dam and Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant Penstocks and Surge Chamber, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay and Devil Canyon Second Afterbay, Silverwood Lake-associated recreation facilities, and appurtenant facilities and features. The California Department of Parks and Recreation, on behalf of DWR, maintains and operates the Silverwood Lake-associated Project recreation facilities as part of the Silverwood Lake State Recreation Area (SRA). Non-Project facilities (e.g., the Pacific Crest National Scenic Trail) traverse or are located in the Silverwood Lake SRA, but are not Project facilities. The Project does not include any transmission lines or open water conduits, except for the short cross channel that connects the Devil Canyon Afterbay and Devil Canyon Second Afterbay. Silverwood Lake, which is formed by Cedar Springs Dam, is in the WFMR basin, but the Project does not use natural flow into Silverwood Lake for electricity generation, nor does the Project have discretion over releases from Silverwood Lake into the WFMR. Power is generated as SWP water is released from the south end of Silverwood Lake to Devil Canyon Powerplant. Water deliveries for water rights to the natural flow are released from Cedar Spring dam on the north end of Silverwood Lake.

1.1.2 Description of the River Basin

The WFMR originates at an elevation of 4,960 feet on the north side of a saddle between summits on a ridge running west-northwest of Sugarpine Mountain. The WFMR has no significant diversions or withdrawals upstream of Silverwood Lake. At its inflow into Silverwood Lake, the WFMR drains an area of 3.2 square miles.

The East Fork of the WFMR originates at an elevation of 5,500 feet in Twin Peaks, California. Prior to construction of Cedar Springs Dam, the East Fork of the WFMR was a tributary to the WMFR. However, today, the East Fork of the WFMR drains directly into Silverwood Lake and drains an area of 11.3 square miles. Upstream of Silverwood Lake, the East Fork of the WFMR receives water from Houston Creek, which has a small reservoir called Lake Gregory at its headwaters. Lake Gregory Dam was built in 1938 by the Crest Forest County Water District. Today, Lake Gregory serves primarily as a recreation destination that includes a San Bernardino County Regional Park (Lake Gregory Regional Park).

Flows from WFMR and the East Fork of the WFMR mix with SWP water in Silverwood Lake. Flow in both rivers is seasonal (intermittent), in that each river flows during certain times of the year (i.e., primarily from December through May) when smaller upstream stream courses are flowing and when groundwater provides enough water for surface river flow. Runoff from rainfall or other precipitation supplements the flow. Several unnamed tributaries enter Silverwood Lake, however, none of these tributaries are gaged. Collectively, these tributaries drain an area of 19.3 square miles.

Silverwood Lake and Cedar Springs Dam discharge into the WFMR, which flows downstream from the dam approximately 4.3 miles to where Grass Valley Creek enters the WFMR. Grass Valley Creek has a small private reservoir called Grass Valley Lake, which is located near its headwaters.

From its confluence with Grass Valley Creek, the WFMR flows another 2.1 miles to join with Deep Creek to form the Mojave River. The watershed that feeds Grass Valley Creek and the 6.4 miles of WFMR downstream from Cedar Springs Dam to Deep Creek is approximately 41 square miles. This area consists of steep mountainous terrain, with elevations that range from 3,000 to 6,000 feet, and a long, narrow valley to the west of the WFMR.

The sub-basin that is drained by Deep Creek is 135 square miles of rugged mountainous terrain, with elevations that range from 3,000 to 8,200 feet. Deep Creek collects water from several tributaries, including Coxey, Holcomb, Willow, and Little Bear creeks. The privately-owned Lake Arrowhead, formed by Lake Arrowhead Dam, is located near the headwaters of Little Bear Creek. The dam was completed in 1922 by the Arrowhead Lake Company to create Lake Arrowhead as a resort destination.

The Mojave Forks Dam, which is also known as the Mojave River Dam or West Fork Dam, is located just downstream of the WFMR and Deep Creek confluence. The dam is a U.S. Army Corps of Engineers (USACE) flood-control structure completed in 1974 to

provide flood protection to the cities located downstream on the Mojave River and can store approximately 179,400 acre-feet of water. The dam is 200 feet high and 2,223 feet long. The dam serves strictly for flood control, therefore, the reservoir is usually dry. However, the reservoir can fill quickly following heavy winter storms. Flood waters are released as quickly as possible without exceeding the capacity of downstream levees. The reservoir is generally drained within two to three days of a heavy rain event. The dam reduces the sharp peaks of flash floods in the Mojave River channel and also provides incidental groundwater recharge benefits in the Victor Valley area.

From the Mojave Forks Dam, the Mojave River flows north and east through the California cities of Hesperia, Victorville, and Barstow and through the Mojave Desert for approximately 100 miles before terminating into the Mojave River Wash on the western edge of the Mojave National Preserve. River flow of the Mojave River is intermittent and seasonal, with much of the flow subsurface except for several bedrock gorges. The Mojave River basin covers approximately 4,600 square miles.

1.1.3 Description of the West Fork Mojave River Reach

For the purpose of this report, the 6.4-mile-long reach of the WFMR between Cedar Springs Dam and the Saddle Dike Diversion Dam at the Mojave Forks Reservoir is referred to as the “WFMR reach,” and is shown in Figure 1.1-1. This portion of the WFMR has approximately 0.4 percent gradient. DWR’s review of existing information and the survey was limited to characterizing conditions within the principal flow channel of the WFMR reach, as well as characterizing the primary riparian community along this principal flow channel, as described below.

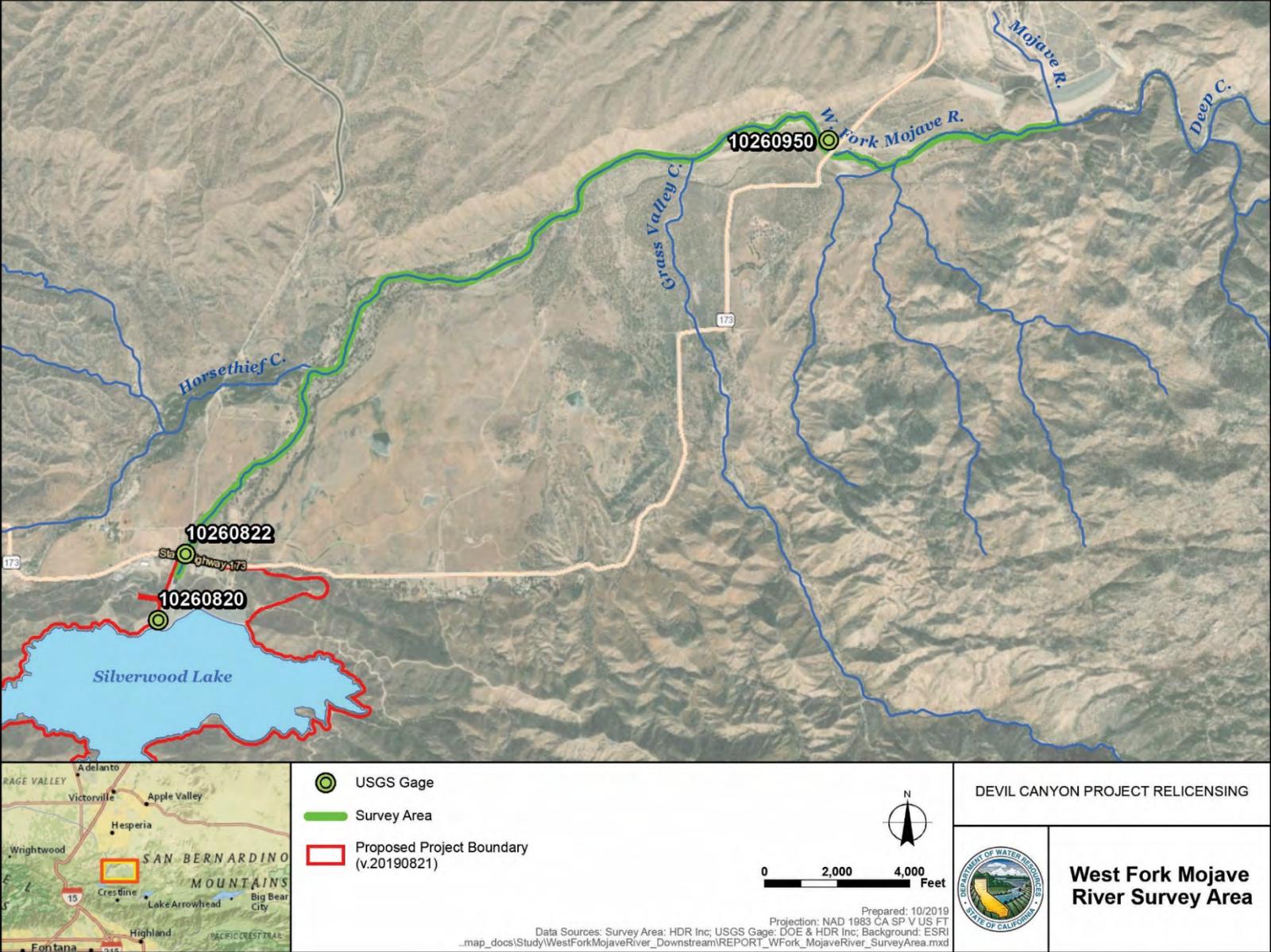


Figure 1.1-1. WFM R Reach

2.0 METHODS

This reconnaissance study was completed in two steps: (1) desktop analysis, literature review, and data gathering; and (2) field reconnaissance. These are described in detail below. Prior to conducting surveys, landowner access and permission was secured. DWR confirmed with the appropriate agencies that permits were not needed for the work. DWR implemented standard decontamination guidelines to minimize the likelihood of transmitting diseases during the fieldwork (USFWS 2005, CDFW 2013).

2.1 DESKTOP ANALYSIS, LITERATURE REVIEW, AND DATA GATHERING

Prior to the survey, existing information regarding the WFMR reach was reviewed. This included information gathered as part of DWR's Devil Canyon Project Relicensing Pre-Application Document (PAD) and Draft License Application documents, as well as Google Earth historical and contemporary imagery, National Wetland Inventory maps, U.S. Geological Survey (USGS) gage data, the Draft Desert Renewable Energy Conservation Plan Baseline Biology Report (Dudek and ICF 2012), Tapestry Project Biological Technical Report (HELIX 2014), and other sources of information pertinent to the work.

In addition, the California Natural Diversity Database (CNDDDB) (CDFW 2018a), the U.S. Fish and Wildlife Service Information and Planning and Consultation website (iPaC) (USFWS 2019a), and U.S. Fish and Wildlife Service Critical Habitat mapper (USFWS 2019b) were reviewed to determine Endangered Species Act (ESA)-listed species, special-status species and critical habitat that may occur within the vicinity of the WFMR reach. The CNDDDB was queried on December 14, 2018 (CDFW 2018a), based on a search of the USGS 7.5-minute quadrangles in which the reach is located (i.e., Silverwood Lake quadrangle), and the adjacent quadrangles (i.e., Baldy Mesa, Hesperia, Apple Valley South, Lake Arrowhead, Cajon, Harrison Mountain, San Bernardino North, and Devore) covering approximately 554 square miles. This was an area much larger than the WFMR reach, but was intended to provide a comprehensive list of ESA-listed species and special-status species potentially occurring within the WFMR reach. Landowners within the WFMR reach were identified and potential access points were reviewed and mapped (Figure 2.1-1).

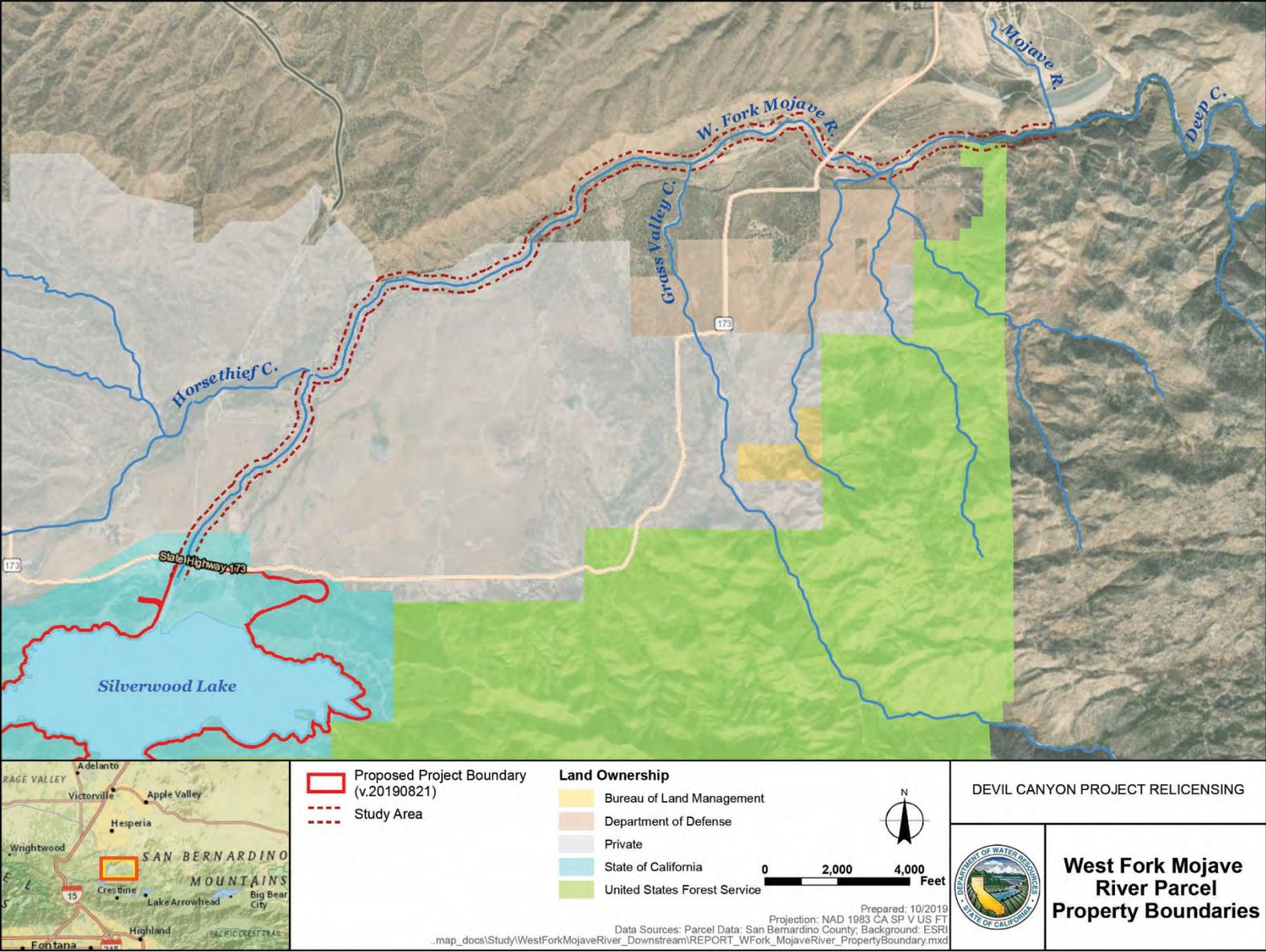


Figure 2.1-1. Property Ownership Within the WFMR Reach

2.2 SURVEY

The reconnaissance survey was conducted between December 18 and 20, 2018. The purpose of the survey was to characterize the WFMR reach. The entire reach was traversed by foot. The first two days of reconnaissance surveys were in an upstream direction. On the third day, the site was accessed from the top of the reach and surveyed in a downstream direction to the location where the previous day's survey ended.

Surveyors recorded information related to hydrology, geomorphology, aquatic and riparian habitat, fish, and amphibians. Representative photos and Global Positioning System (GPS) points were taken at locations deemed necessary and representative of site conditions (e.g., changes in habitat and wetted portions of the reach). Data collection methods for each category are described below.

2.2.1 Hydrology

During the survey, sections of the reach that were wetted were documented and the extent (e.g., length, depth, and width) of the wetted portion was visually estimated or recorded using GPS. Discharge measurements were taken in areas where the volume of flowing water was suitable for measurement. In areas where the flow was too low to measure (i.e., less than 1 cubic foot per second [cfs]), a visual estimate of flow was recorded. Locations with visible groundwater seepage were recorded with GPS.

2.2.2 Geomorphology

Several parameters were utilized to characterize the geomorphology of the reach. Within the primary flow channel, general sediment was characterized. Based on visual inspection, dominant and subdominant grain sizes were recorded within the ordinary high water (OHW) line of wetted features along the channel. Channel width was estimated based on indicators of ordinary high water mark (OHWM) and bankfull. The OHWM was determined based on the presence of certain features within the channel such as debris lines, upland vegetation lines, or topographical breaks along the bank. Bankfull was delineated by determining the elevation that flows overtopped the primary channel and flooded adjacent channels or the floodplain. Indicators of bankfull included sand or silt at the active scour mark, a break-in stream bank slope, perennial vegetation limit, rock discoloration, and exposed root hairs.

2.2.3 Aquatic Habitat

In areas of the WFMR reach that were wetted (e.g., flowing water or standing pools), the type and extent of aquatic habitat present (i.e., riffle, run, pool in flowing water, and depth and diameter of standing pools) was documented based on visual inspection. The approximate length and width of each unit was recorded. In standing pools, the length and width of each unit, as well as maximum and average depth was recorded. When relatively few standing pools were present in an area, each pool was characterized and a GPS point taken. In areas with large numbers of standing pools (e.g., beaver dam

complexes), the number of pools was estimated or counted and parameters were measured for a subsample of the pools.

2.2.4 Amphibians and Fish

DWR's primary focus during the survey was ESA-listed species and special-status species that have the potential to occur in the WFMR reach. All amphibian and fish species observed during the survey were recorded to species or nearest identifiable taxon through visual observation (e.g., young-of-year minnows were identified to the Family Cyprinidae). Representative photos were taken when possible. No samples were collected.

2.2.5 Water Quality

Water quality parameters were collected using a Yellow Springs Instruments (YSI) Model Pro2030 water quality meter. The YSI meter was field-calibrated each day prior to use. Parameters measured included dissolved oxygen (DO) in milligrams per liter (mg/L) and percentage, and water temperature in degrees Celsius (°C). Water quality measurements were collected for a subsample of standing pools, as well as at the start and end of wetted stream sections. In areas where the reach was wetted for long periods (i.e., as documented in the upper portion of the reach), measurements were taken at least once per mile. No releases from Cedar Springs Dam were being made during the course of the survey.

2.2.6 Riparian Vegetation

The riparian community was characterized along the primary flow channel. This characterization included documenting the dominant and subdominant species, abundance, and extent of riparian habitat, including the distance from flowing water. Photos were taken of plant species that were not readily identified in the field due to the seasonal timing of the survey. No samples were collected.

2.2.7 Aquatic Invasive Species

Aquatic invasive species (AIS) observed within the reach were documented and the species, location, and estimated abundance of each observed AIS was recorded. No samples were collected.

2.2.8 Incidental and Other Observations

In addition to the information described above, incidental observations made during the survey were recorded. These included observations of wildlife species and habitat (i.e., birds, bird nests, mammals, or reptile species). Other information collected during the survey included noting the location of existing man-made features (e.g., roads, bridges, residences, commercial buildings, parks, and designated trails) immediately adjacent to the reach, as well as weather conditions and other information deemed pertinent to the survey.

3.0 RESULTS

3.1 DESKTOP ANALYSIS

3.1.1 Hydrology

The WFMR basin is classified as arid or a cold desert climate. The area loses more water via evapotranspiration than falls as precipitation. Average annual precipitation is approximately 6 inches, with rare snowfalls, and the average annual evapotranspiration rate is 57 inches. Air temperatures range from approximately 100 degrees Fahrenheit (°F) in July to about 30°F in January. Excluding a small stretch with perennial flow, the Mojave River is normally dry except for periods after intense storms (USGS 2001). Stream gage data in the vicinity on the WFMR detailed a hydrograph depicting conditions similar to the general description of surface flows in the main stem Mojave River.

The WFMR reach receives inflows from five different source categories: (1) releases through the Cedar Springs Dam spillway; (2) releases through Cedar Spring's Dam's low-level outlet as scheduled by downstream water users; (3) Cedar Springs Dam seepage; (4) Las Flores Ranch (LFR) Diversion overflow; and (5) unregulated tributaries. Each of these is discussed below.

Releases through Cedar Springs Dam's low-level outlet are deliveries of natural Silverwood Lake inflow to the users identified in the Mojave River Adjudication Decree (Decree) issued by the Riverside County Superior Court in 1996. The Project has no discretion on releases of natural flow from Silverwood Lake; Mojave Water Agency (MWA) is the Watermaster for the adjudicated Mojave River Basin that is responsible for managing the release of water supplies allocated under the Decree.

Cedar Springs Dam seepage is minor and is monitored daily by DWR at seven locations on the WFMR downstream of the dam. Total seepage varies considerably over the water year, and from 1972 through 2017, ranged from 0 cfs to 2.28 cfs, with a long-term average daily seepage of 0.24 cfs.

USGS gage 10260820 (WFMR below Silverwood Lake, near Hesperia, California) measures flow at the upstream end of the WFMR reach, which includes a combination of spills, low-level outlet releases, and seepage from Cedar Springs Dam. Figure 3.1-1 shows that from water years 2006 through 2017, flows in excess of 1,000 cfs occurred in some years, with all years having prolonged periods (up to 9 to 10 months) with no flows other than seepage.

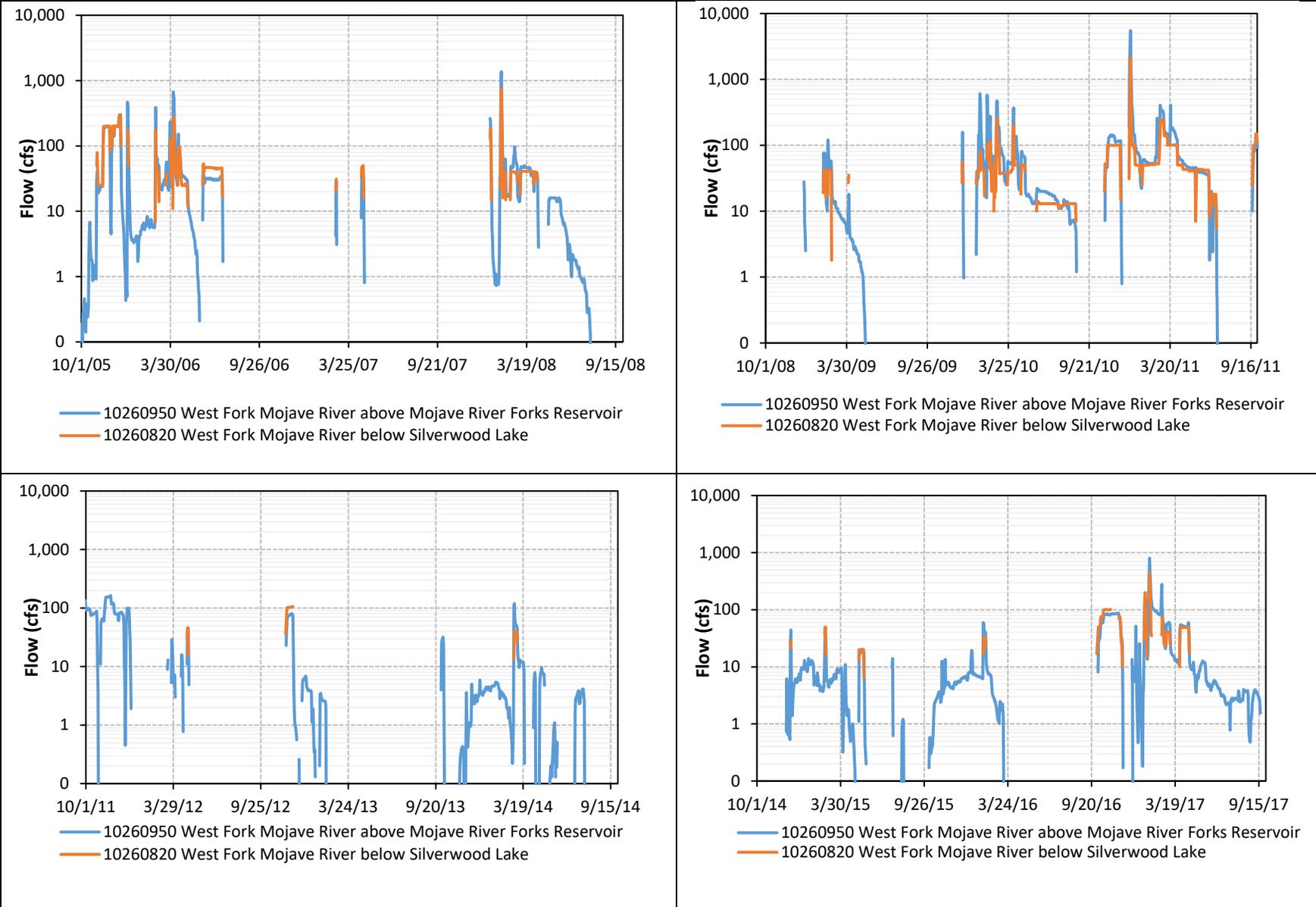


Figure 3.1-1. WFMR Stream Flows Between Water Year 2006 and Water Year 2017

The Decree also allocates natural inflow to LFR. The Decree confirms that LFR holds a senior water right for diversion from the WFMR dating back to the late 1800's. The original LFR diversion was lost with the construction of Cedar Springs Dam and the creation of Silverwood Lake. LFR now receives its water from SWP water supplies in exchange for WFMR supplies upstream of Silverwood Lake. LFR diversions come off the Mojave Siphon and are measured by USGS Gage 10260822 (Las Flores Ranch Release from the East Branch Aqueduct, near Hesperia, California). Review of gage data from 2010 through 2018 details variable water delivery to LFR (Figure 3.1-2). Flows diverted off of the Mojave Siphon can return to the WFMR via the diversion bypass canal off of the LFR diversion control structure, via a combination of ranch canals and ranch runoff channels that deliver water to numerous cattle watering ponds, and likely via some amount of groundwater seepage as these LFR water features recharge the sub-basin. From review of aerial imagery, under wet conditions and with ample water deliveries, these ranch runoff channels eventually converge and deliver overflows back to the WFMR. In some years (e.g., 2010), up to 18 and 19 cfs was delivered for a sustained amount of time; in other years, just over 10 cfs was delivered through the entire year. In 2011 and 2012, a negligible amount of water was delivered due to outages of the LFR diversion at the Mojave Siphon for necessary repairs. This also occurred for 3 months in 2013. During these times, DWR stored LFR's supplies in Silverwood Lake per the 1980 agreement and released the water to LFR in 2013 and 2014. In addition to deliveries from the diversion, the LFR has received wastewater disposal discharges from Crestline Sanitation District (CSD) since 1973 (CSD 2018). Disinfected secondary-23 recycled water¹ from CSD is used for flood irrigation on the LFR and provides groundwater recharge.

¹ Disinfected secondary-23 recycled water means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

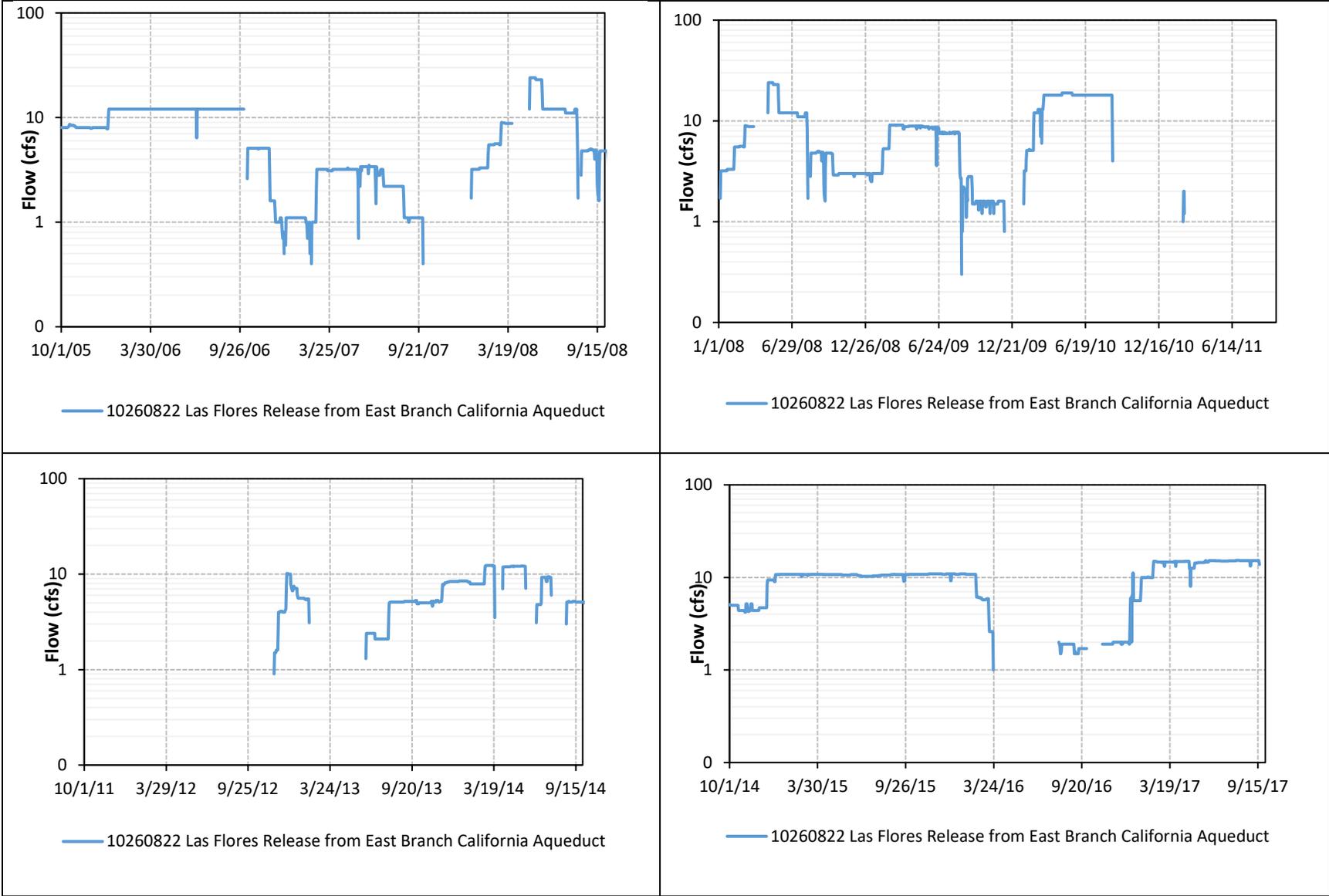


Figure 3.1-2: Las Flores Ranch Releases from the SWP Aqueduct from Water Year 2006 to Water Year 2018

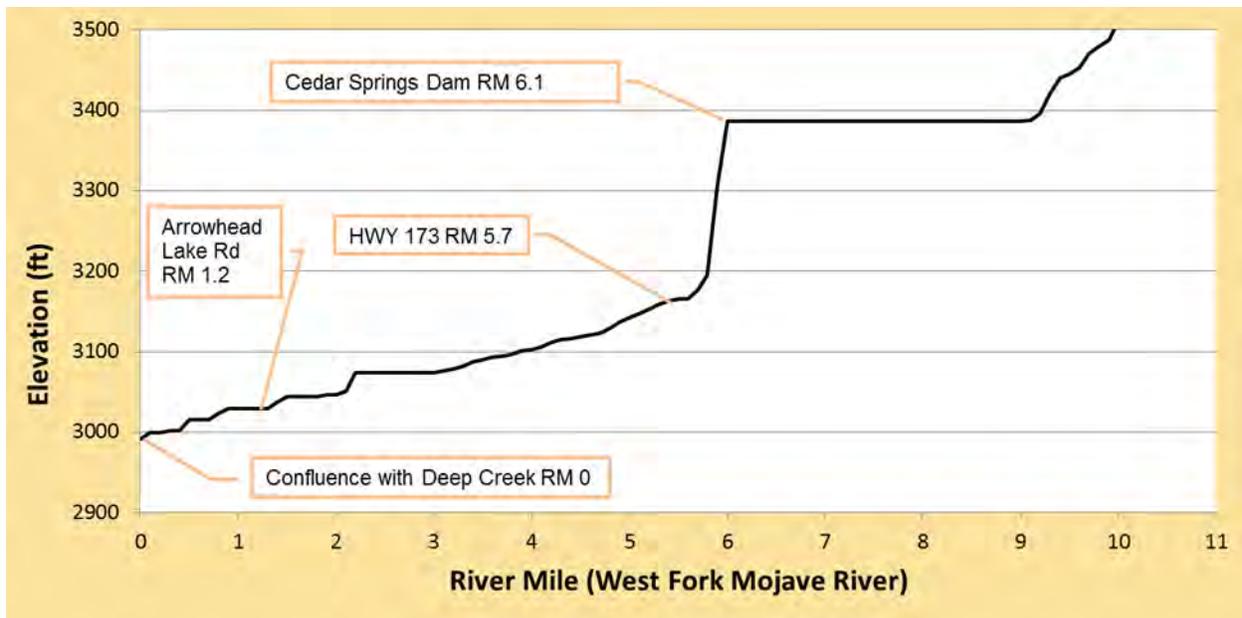
Several tributaries to the WFMR downstream of Silverwood Lake were identified through the data gathering process. Grass Valley Creek is a primary tributary toward the middle of the reach. A review of USGS Geographic Information System data identified a second primary tributary upstream from the confluence of Grass Valley Creek and the WFMR: Horsethief Creek. Horsethief Creek drains a long narrow canyon that combines with the WFMR from the west.

Publicly available aerial imagery was reviewed to assess the influence of all tributaries within the WFMR reach. Aerial images detailed flow in Grass Valley Creek and Horsethief Creek in multiple years. In Horsethief Creek, water was observed in the stream channel in all available images. Several other smaller tributaries were identified downstream of Grass Valley Creek. Geomorphologic features observed in aerial imagery indicate that the three small and unnamed tributaries downstream of Grass Valley Creek appear to contribute flow during runoff events; and in 2006 and 2009, a small amount of water was present in the imagery. During the aerial image assessment, features related to the LFR diversion were also observed conveying flow back to the WFMR. These LFR features included flow from LFR diversion bypass canal and ranch runoff channels draining overflowing cattle watering ponds.

Figure 3.1-1 shows flows measured at USGS gage 10260950 (WFMR above Mojave River Forks Reservoir, near Hesperia, California) at the downstream end of the WFMR reach. The gage measures releases from Cedar Springs Dam that do not go sub-surface before they reach the gage, as well as accretion and other flows entering the reach. Like USGS gage 10260820 at the upstream end of the reach, the USGS gage at the downstream end shows rare high flows with prolonged periods of no flow.

3.1.2 Geomorphology

Stream gradient profile information from the PAD was used to assess general geomorphological conditions. The stream is low-gradient through the reach at an average of approximately 0.4 percent from the confluence with Deep Creek to the bottom of the Cedar Springs Dam spillway. A small step of increased gradient is observable upstream of river mile 2.0 in the vicinity of the WFMR confluence with Grass Valley Creek (Figure 3.1-3).



Key:
 ft. = feet
 HWY = Highway
 Rd = Road
 RM = river mile

Figure 3.1-3. WFM Stream Gradient Profile

3.1.3 Amphibians and Fish

Based on the results of the database queries and literature review and information searches described above, four ESA-listed species including the federally endangered arroyo toad (*Anaxyrus californicus*), the federally threatened California red-legged frog (*Rana draytonii*; CRLF), the Southern California Distinct Population Segment (DPS) of the federally endangered southern mountain yellow-legged frog (*Rana muscosa*; SMYLF), and the federally endangered Mohave tui chub (*Gila bicolor ssp. Mohavensis*), and a special-status species, the Western Spadefoot (*Spea hammondi*), have records of occurrence within the vicinity of the WFM reach. Each of these is described separately below.

3.1.3.1 **Arroyo Toad**

The arroyo toad was listed as endangered on December 16, 1994 (59 Federal Register [FR] 64859). Critical habitat was designated on February 7, 2001 (66 FR 9414), with revisions on April 13, 2005 (70 FR 19562), and on February 9, 2011 (76 FR 7246). The Recovery Plan was issued on July 24, 1999 (USFWS 1999), and the results of a five-year review on August 17, 2009 (USFWS 2009a). On March 27, 2014, USFWS proposed to reclassify arroyo toad as threatened (79 FR 17106); however, USFWS later decided to withdraw its proposed rule on December 23, 2015, because the same types of threats that resulted in the original listing of the toad still existed and new threats were identified (80 FR 79805). No recovery actions specific to the Project boundary or the nearby area were identified in the Recovery Plan or five-year review.

Historically, arroyo toad populations occurred from Monterey County to Baja California, Mexico, mostly in coastal drainages, but also along inland draining streams (i.e., desert slopes) of the Transverse and Peninsular ranges south of the Santa Clara River in Los Angeles County (USFWS 2009a). Known extant populations of arroyo toad occur within about 75 percent of the original range (USFWS 2009a), concentrated at elevations from about 975 to 3,250 feet (Sweet and Sullivan 2005).

Critical habitat for arroyo toad has been designated in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties. The Desert Slope Recovery Unit includes critical habitat Sub-Unit 22a, located approximately 0.4 miles downstream of Silverwood Lake, including parts of Horsethief Creek, Deep Creek, and the WFMR (USFWS 2018b). Sub-Unit 22c, originally included in the October 13, 2009 revised critical habitat rule (74 FR 52612) to cover the WFMR upstream of Silverwood Lake, was removed in the final revised rule because habitat in the WFMR upstream of Silverwood Lake lacks essential habitat elements and does not meet the definition of critical habitat for the arroyo toad (76 FR 7245).

There are 16 CNDDDB records of arroyo toad in the vicinity of the WFMR reach on Silverwood Lake, Lake Arrowhead, and Cajon quadrangles (CDFW 2018a). These occurrences are associated with populations on the WFMR reach and its tributaries, Horsethief Creek, Deep Creek and tributaries (Kinley Creek and Grass Valley Creek), and Cajon Creek. Occurrence number 28 included at least 6 adults in 1995, 1 adult and 3 tadpoles in 2001, and 1 adult in 2008 found within Sub-Reach 6. Occurrence number 92 includes 1 individual killed on Highway 173 adjacent to Sub-Reach 5 in 2001, over 30 adults vocalizing, 12 individuals, 3 larvae and 2 egg masses in 2005, and 16 adults and 2 larvae in 2006. All of the individuals included in occurrence number 92 were within Sub-Reach 5. Occurrence number 94 includes multiple individuals collected between 1966 and 2006, within the floodplain area around Horsethief Creek and Sub-Reach 2 and Sub-Reach 3 of the WFMR reach (Figure 3.1-4).

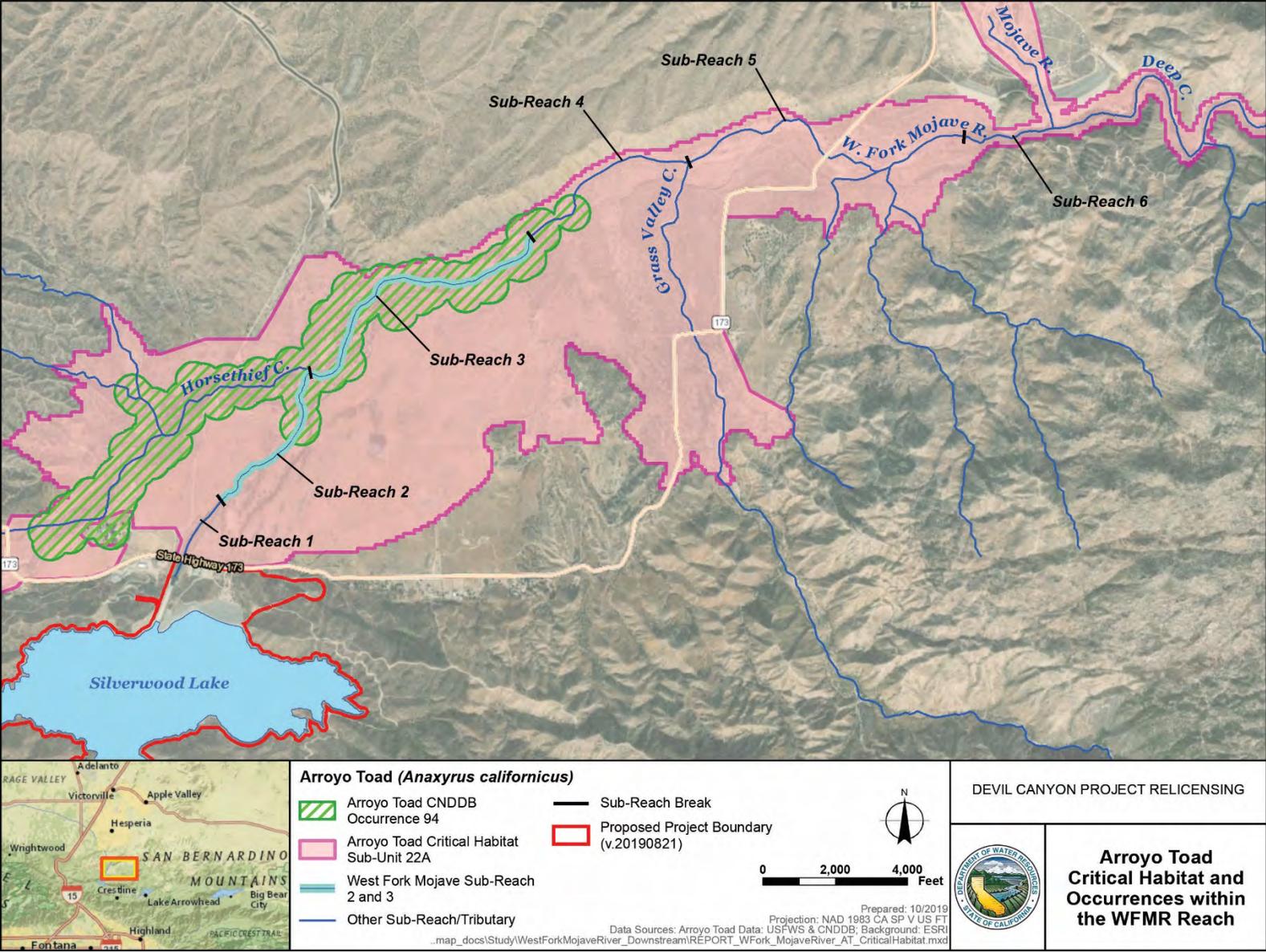


Figure 3.1-4. Arroyo Toad Critical Habitat and Occurrences within the WFMR Reach

The arroyo toad was formerly common in the area where Silverwood Lake was created, at Cedar Springs and Miller Canyon, and was also common in Deep Creek and Forks of the Mojave downstream to Victorville, before the USACE's Mojave River Forks Dam was constructed (Jennings and Hayes 1994). CDFW's California Wildlife Habitat Relationships (CWHR) system identifies a general habitat association of arroyo toad to two habitat types, Mixed Chaparral and Valley Foothill Riparian, as occurring within the vicinity of the WFMR reach (CDFW 2018b). Hitchcock and Fisher (2004) reported finding only one adult arroyo toad observed twice in the Silverwood Lake SRA 500 to 1,000 feet upstream of Silverwood Lake on the WFMR in 2003 and 2004, but described a "large, healthy population" at Little Horsethief Canyon, a tributary of the WFMR reach.

This species is documented within the WFMR reach (CDFW 2018a, Thomson et al. 2016) and is considered extant (CDFW 2018a). In addition, the WFMR reach north of the Highway 173 bridge is part of the designated critical habitat for this species.

3.1.3.2 California Red-Legged Frog

CRLF was listed as a threatened species on May 23, 1996 (61 FR 25813), and final critical habitat was designated on March 13, 2001 (66 FR 14626), with revisions on April 13, 2006 (71 FR 19244) and on March 17, 2010 (75 FR 12816). The Recovery Plan was issued on May 28, 2002 (USFWS 2002). A five-year review was initiated on May 25, 2011 (76 FR 30377). No recovery actions specific to the Project boundary or nearby area are identified in the Recovery Plan.

The historical range of CRLF extends through the Pacific slope drainages from Shasta County, California, to Baja California, Mexico, including the Coast Ranges and the west slope of the Sierra Nevada Range at elevations below 4,000 feet. The current range of this species is greatly reduced, with most remaining populations occurring along the coast from Marin County to Ventura County. Fellers (2005) indicated only two known extant populations in southern California: one in Riverside County on the Santa Rosa Plateau (Shaffer et al. 2004) and the other in Ventura County, both with few documented adults. Jennings and Hayes (1994) regarded populations of CRLF documented by museum records in San Bernardino County to be extinct. "Core areas" identified in the Recovery Plan (USFWS 2002) as watersheds where recovery efforts for CRLF should be focused included Core Area 30 (Forks of the Mojave), encompassing the upper Mojave River drainage, which is described as unoccupied (i.e., CRLF extirpated), but with potential for reestablishment of the species.

Designated CRLF critical habitat units include one unit in Los Angeles County (LOS-1, San Francisquito Creek) and three in Ventura County: VEN-1 (San Antonio Creek), VEN-2 (Piru Creek), and VEN-3 (Upper Las Virgenes Creek). There is no designated critical habitat in San Bernardino County.

The CNDDDB has two records of CRLF in the vicinity of the WFMR reach (CDFW 2018a). An old historical location (date unknown, occurrence number 14) is reported from the Mojave River Public Camp, about 3 miles northeast of where Silverwood Lake was later constructed (Silverwood Lake and Lake Arrowhead quadrangles). An

unknown number of CRLF were observed on West Fork City Creek (Harrison Mountain quadrangle) during a fish survey in 1982. Both occurrences are described in the CNDDDB report as “presumed extant,” and there are no recent sightings in either area (USFWS 2002). A population also occurred near Victorville further downstream on the Mojave River (USFWS 2002). The CWHR identifies a general habitat association of CRLF to the following habitat types occurring within the vicinity of the WFMR reach: Annual Grassland, Coastal Scrub, Mixed Chaparral, Montane Hardwood-Conifer, Montane Hardwood, and Valley Foothill Riparian (CDFW 2018b).

Information on occurrence number 14 is lacking. It is an historical observation described only as being at Mojave River Public Camp. Mojave River Public Camp is located adjacent to Grass Valley Creek and across Highway 173 from Sub-Reach 5. While this occurrence is listed as extant, no other occurrences of CRLF are described from the WFMR or its immediate vicinity, and it is likely that CRLF is extirpated from the region. USFWS (2002) states that CRLF is believed to be extirpated from the southern Transverse and Peninsular ranges. The WFMR reach is not within designated critical habitat for this species.

3.1.3.3 Southern Mountain Yellow-legged Frog, Southern California Distinct Population Segment

The Southern California DPS of mountain yellow-legged frog was listed as endangered on July 2, 2002 (67 FR 44382). At the time of the listing, all mountain yellow-legged frogs were considered a single species, *Rana muscosa*. Subsequently, Vredenburg et al. (2007) determined that separation into at least two species was warranted. The SMYLF (sometimes referred to as Sierra Madre yellow-legged frog), which retained the scientific name, *R. muscosa*, comprises the original Southern California DPS, as well as populations of this species complex in the Sierra Nevada mountain range, within and south of the South Fork Kings River. Populations in the Sierra Nevada, north of the South Fork Kings River, are classified as *R. sierrae* (Sierra Nevada yellow-legged frog). Critical habitat for SMYLF Southern California DPS was designated on September 14, 2006 (71 FR 54344) and the draft Recovery Plan was issued July 19, 2018 (USFWS 2018c). USFWS issued the results of a five-year review on July 13, 2012. No recovery actions specific to the Project or the WFMR reach area are identified in the Recovery Plan or five-year review.

In southern California, the SMYLF occurred historically in the San Jacinto, San Bernardino, San Gabriel, and Palomar Mountains at elevations ranging from 1,200 feet to 7,500 feet. Populations occurred in shaded streams on coastal slopes, as well as inland (desert) slopes, characterized by cool water fed by springs or snowmelt. Currently, fewer than 10 small populations are known to persist in this region, all within the San Bernardino National Forest and Angeles National Forest. Adult populations at most sites are precariously small (i.e., usually fewer than 5 and no more than 15 adults) (USFWS 2012). Only one population is known in the San Bernardino Mountains (East Fork City Creek), three in the San Jacinto Mountains (Fuller Mill Creek, Dark Canyon, and Tahquitz Creek) and five in the San Gabriel Mountains (Bear Gulch, Vincent Gulch, South Fork Big Rock Creek, Little Rock Creek, and Devil’s Canyon). Although additional

undiscovered populations are possible, USGS performed surveys of more than 200 locations throughout the historical range between 1998 and 2012, including at least 13 sites in the Mojave River watershed (e.g., on the WFMR, Deep Creek and tributaries, and tributaries of the East Fork of the WFMR) and sites along the coastal-facing slopes of the San Bernardino Mountains, finding only two populations not known at the time of listing (Backlin et al. 2003; USFWS 2012). These two new locations were both in the San Jacinto Mountains. Dark Canyon, which was known to be occupied in 1998 and 1999, was found to have individuals in 2003 (USFWS 2012). In 2009, one adult was found at Tahquitz Creek (USFWS 2012). Both of these locations are over 50 miles to the southeast of the WFMR reach. Critical habitat has been designated in Los Angeles, San Bernardino, and Riverside Counties, including some subunits that are currently unoccupied.

There are seven CNDDDB records of SMYLF in the vicinity of the WFMR reach, including records from Silverwood Lake, Lake Arrowhead, San Bernardino North, Harrison Mountain, and Devore quadrangles (CDFW 2018a). The 1947 record from the Silverwood Lake quadrangle is described as WFMR at Horsethief Canyon, near Silverwood Lake and Summit Valley; however, the exact location is unknown. This occurrence is described as “extirpated.” A second record, also from 1947 and “possibly extirpated,” is described as East Fork of the WFMR, 1.25 miles east of Cedar Springs Camp (3,300 feet elevation); based on this description, the location was at the future site of Silverwood Lake. Other occurrences were reported from Deep Creek (3 miles east of Lake Arrowhead), and streams in the Santa Ana River drainage, including Lytle Creek and City Creek. As indicated above, recent surveys by USGS have failed to find SMYLF at any sites within the Mojave River drainage. The CWHR identifies a general habitat association of SMYLF to three habitat types occurring within the vicinity of the WFMR reach: Montane Hardwood-Conifer, Montane Hardwood, and Sierran Mixed Conifer (CDFW 2018b).

There are no known recent records of SMYLF within the WFMR reach or vicinity and designated critical habitat for the species does not occur in the reach.

3.1.3.4 Mohave Tui Chub

The Mohave tui chub was listed as endangered on October 13, 1970 (35 FR 16047). Critical habitat has not been designated for this species. The Recovery Plan was issued on September 12, 1984 (USFWS 1984) and the results of a five-year review on February 4, 2009 (USFWS 2009b). No recovery actions specific to the proposed Project boundary or nearby area are identified in the Recovery Plan or five-year review.

Historically, the Mohave tui chub was the only fish species in the Mojave River, occurring in deep pools and sloughs. The Mohave tui chub was extirpated (including loss of genetically pure Mohave tui chub) from nearly all of its range by 1970 as a result of the introduction of the related arroyo chub (*Gila orcuttii*), a species which interbred and competed with Mohave tui chub. Other contributors to the Mohave tui chub extirpation include the introduction of other predaceous fish species and development of water projects which reduced flow in the Mojave River. Most attempts to establish new

populations, often in constructed ponds, have not been successful. All but one of the three known existing populations referenced in the five-year review (USFWS 2009b) represent introductions outside of the historical range. Few areas of the Mojave River remain suitable for the species, which would at minimum require elimination of arroyo chub.

There are five records of Mohave tui chub from the vicinity of the WFMR reach (CDFW 2018a). Occurrences from the WFMR at the present location of Silverwood Lake (1967), Mojave River Forks (1967), and Deep Creek 2 to 3 miles east of the Mojave River confluence (1931) are categorized as “extirpated.” Occurrences from an unnamed creek at Little Horsethief Ranch (1937) and Mojave River, 1 mile north of the State Fish Hatchery (1967), are “presumed extirpated.”

There are no known recent records of Mohave tui chub within the WFMR reach, where the species had likely already been extirpated by 1970 due to the spread of introduced arroyo chub. Designated critical habitat for the species does not occur in the reach.

3.1.3.5 Western Spadefoot

The western spadefoot is a California Species of Special Concern. Its range is located throughout the Central Valley and adjacent foothills. This species is usually common where it occurs, although the current distribution has been substantially reduced by conversion of native habitats to other land uses such as agriculture and development. The species is known to occur from near sea level to about 4,500 feet elevation (Jennings and Hayes 1994; Morey 2005); however, most populations are found below 3,300 feet (Morey 2005). Breeding habitats include vernal pools, vernal playas, rainwater pools, stock ponds, and pools in intermittent streams. Although most breeding sites dry seasonally, permanent ponds are occasionally used. Absence of fish is usually a prerequisite for successful breeding.

The distribution of western spadefoot in San Bernardino County is uncertain. Jennings and Hayes (1994) depict a verified, historical museum record of western spadefoot for southwest San Bernardino County (considered extirpated); however, other sources do not include the county within the species’ current range. USFWS (2005b) indicates no extant or extinct populations within San Bernardino County. HELIX (2014) did not include western spadefoot as a species potentially occurring in the Tapestry Project area north of Silverwood Lake. Aspen Environmental Group and Hunt & Associates Biological Consulting (2005) reported hearing a call that may have been of this species during the Horsethief Creek Bridge Replacement Surveys, but no verifying information was collected. The CNDDDB (CDFW 2018a) includes an occurrence with multiple records of adult and juvenile western spadefoot on Devils Canyon Road in the City of San Bernardino since 2011. These records are evidently associated with western spadefoot crossing the road to and from percolation basins, which provide breeding habitat. There are no other CNDDDB records from the vicinity of the WFMR reach. Western spadefoot is not known to occur within the WFMR reach.

3.1.4 Aquatic Invasive Species

The USFWS Fisheries Program defines AIS as “aquatic organisms that invade ecosystems beyond their natural, historic range and may harm native ecosystems or commercial, agricultural, or recreational activities.” Although most AIS are nonindigenous (i.e., exotic or non-native in origin), also included in this category are native species that grow out of control in their natural habitats due to excessive nutrients, warmer waters, or other factors. USGS maintains a list of AIS, including reported geographical locations (USGS 2018). This list was used to identify species that may occur within the WFMR reach.

3.1.5 Disturbance

Two general categories of stream channel disturbance are evident from review of readily available information. Ranching is present on both sides of the WFMR toward the upstream end of the reach. The proximity of the ranches to the stream channel increase the likelihood that cattle may regularly enter the river. Evidence of recreation in the vicinity included marked and unmarked established trails, rural roads, and an established campground. The Pacific Crest National Scenic Trail runs parallel to the WFMR and crosses Deep Creek at the confluence of the two streams. From review of aerial imagery, unmarked established trails and rural roads are evident and regular in the downstream portion of the reach. Several of these unmarked trails originate at Mojave River Fork Campground, which is within 0.5 miles of the WFMR.

3.2 SURVEY

3.2.1 West Fork Mojave River Reach Characterization

Based on existing information and field reconnaissance, DWR divided the WFMR reach into six sub-reaches based on channel form, the influence of major tributaries, the presence or absence of flow, and riparian composition, abundance and distribution. The six sub-reaches are:

1. Cedar Springs Dam Spillway Tailrace
2. WFMR above Horsethief Creek
3. WFMR below Horsethief Creek
4. WFMR above Grass Valley Creek
5. WFMR below Grass Valley Creek
6. WFMR Mature Riparian Corridor

Figure 3.2-1 provides the extent of each sub-reach, its position relative to tributaries in the vicinity of the WFMR reach, and identification of areas observed in the wet and in the dry.

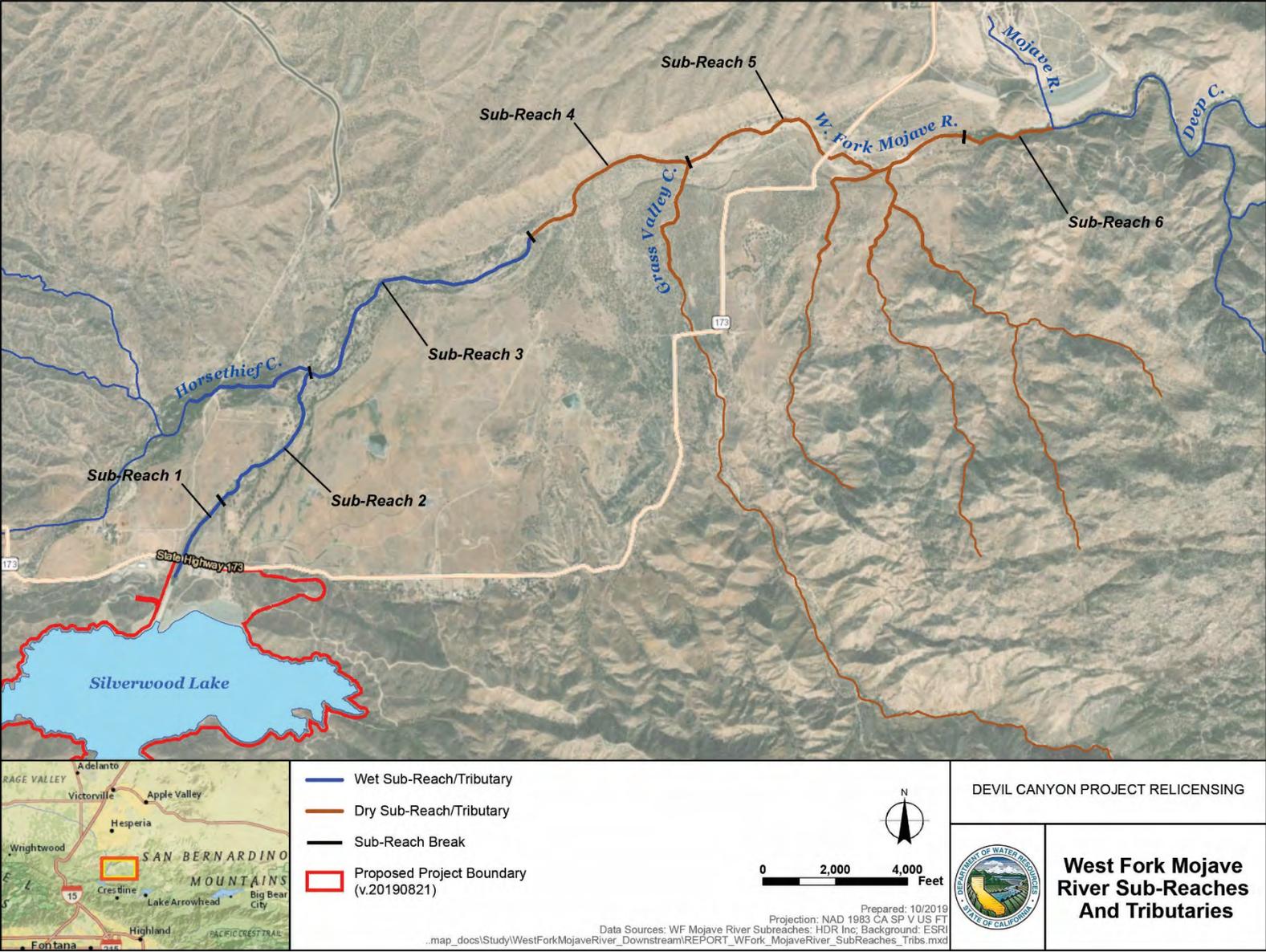


Figure 3.2-1. WFM Sub-Reaches 1 Through 6

3.2.1.1 Sub-Reach 1

Sub-Reach 1 is 0.5 miles long and begins immediately downstream of the Cedar Springs Dam concrete spillway and continues 0.5 miles downstream through a series of homogenous, long and wide flat-water sections. Wetted widths averaged 60 feet through the sub-reach and ranged from a minimum of 8.5 feet through a braided section at the top of the sub-reach to a maximum of 105 feet just downstream of Highway 173. Average OHW through the sub-reach was estimated at 180 feet. The stream in this sub-reach was confined to, and almost fully wetted between, the toes of each sloped bank. Less than 1 cfs of flow was observed at the bottom of the sub-reach with no apparent source of the flow observed at the upstream end (i.e., Cedar Springs Dam was not spilling and no releases from the Cedar Springs Dam low-level outlet). Based on observations made at accessible locations, the substrate was dominated by sand and small gravel with some medium to large cobble present within gradient breaks between the flat water sections. From observations made during this survey, the wetted channel in Sub-Reach 1 was generally bordered on both sides by large mats of common reed (*Phragmites australis*). A few narrow patches of willows and small deciduous trees were observed growing adjacent (upland) to the mats of common reed in several locations. Representative photos of Sub-Reach 1 are provided in Figure 3.2-2 and Figure 3.2-3.



Figure 3.2-2. WFMR, Near the Upstream End of Sub-Reach 1: Looking Northeast and Downstream



Figure 3.2-3. WFMR, Downstream End of Sub-Reach 1: Looking Southwest and Upstream

3.2.1.2 Sub-Reach 2

Sub-Reach 2 is 0.91 miles long and extends from the downstream end of Sub-Reach 1 to the confluence with Horsethief Creek. Within this sub-reach, the wetted stream was more complex than Sub-Reach 1, with small split channels and a variety of well-defined but shallow main channel pools, deep lateral scour pools, long low-gradient riffles, short high-gradient riffles, runs, and step runs. Less than 1 cfs was flowing through the sub-reach at the time of the survey. Wetted widths ranged from 8 feet in narrow riffle sections toward the downstream end of the sub-reach, to 60 feet in a wide pool upstream of a ford crossing. OHW channel widths ranged from 23 to 98 feet. Substrate within the flowing channel was primarily dominated by medium and large cobble, with sand as the subdominant substrate, though sand was dominant in some slow water habitat types. In a few locations, all substrate was comprised of medium and large cobble. Within OHWM, sand was typically dominant and cobble subdominant.

Riparian vegetation included mature cottonwood (*Populus fremontii*), ash (*Fraxinus* sp.) and willow (*Salix* sp.), and areas with willow and mule fat (*Baccharis salicifolia*) shrubs. Stands of mature ash were located toward the upstream end of the sub-reach and a few

lone western sycamore (*Platanus racemosa*) trees were located in several areas. Throughout much of the sub-reach, the water's edge was bordered by narrow patches of common reed with a mix of rushes (*Juncus* sp.) in some locations. Riparian vegetation abundance varied from dense to sparse throughout the sub-reach. Higher density riparian assemblages alternated from bank-to-bank, as the wetted stream meandered within the bankfull width. The lateral extent of the riparian zones fluctuated from 10 to 100 feet wide, and typically began at the water's edge or up to 20 feet from the water's edge. Representative photos of Sub-Reach 2 are provided in Figure 3.2-4 and Figure 3.2-5.



Figure 3.2-4. WFMR, Middle of Sub-Reach 2: Deep Lateral Scour Pool, Looking Southwest and Upstream



Figure 3.2-5. WFMR, Middle of Sub-Reach 2: Braided Low Gradient Riffle with Moderate Riparian Density and Some Mature Trees, Looking East and Downstream

3.2.1.3 Sub-Reach 3

Sub-Reach 3 is 1.6 miles long and consists of the approximately 1.5-mile section of the WFMR downstream of Horsethief Creek to just beyond the Hesperia Venture I (LFR) property boundary with USACE's property. Wetted widths ranged from 7 feet in narrow riffle sections toward the downstream end of the sub-reach, to 78 feet in a wide pool with a large beaver dam. OHW channel widths ranged from 27 to 123 feet. In this sub-reach, the OHW channels widened and the stream meandered through the bankfull channel between wider sandy gravel bars and steep or scoured banks. Much of the upstream half of the sub-reach consisted of long and shallow step-run and riffle complexes. Within the lower half of the sub-reach, habitat types were better defined with easily discernable step-runs, runs, and low and high-gradient riffles.

Many of the pools encountered throughout the sub-reach were either created or enhanced by beavers (*Castor canadensis*). Many of the pools consisted of abandoned beaver dams, with a few occupied dams present in the sub-reach. Nine beaver dams were documented within the sub-reach, and several other smaller dams were observed

on short splits off the primary channel. Two beaver lodges were observed in the vicinity of new dams in the upstream half of the sub-reach and one beaver was observed retreating into its lodge to avoid the DWR stream survey team. Pools without beaver dam influence were also documented throughout the sub-reach and included long and short main channel pools, a couple of long step pools, and one larger lateral scour pool armored by the roots of a mature cottonwood. At the time of the survey, stream flow from Horsethief Creek went subsurface through a sandy gravel bar at the confluence with the WFMR.

At the top of Sub-Reach 3, stream flows were similar to those in Sub-Reach 2, but appeared to increase slightly 700 feet downstream, though flow remained less than 1 cfs. Flowing water was observed through the remaining sub-reach. Approximately 0.25-mile upstream from the bottom of the sub-reach surface, flows began to decrease before going subsurface.

Substrate within the wetted width was dominated by sand and small gravel, with large cobble subdominant within the step-run riffle complexes located in the upper half of the sub-reach. Within the lower half of the sub-reach, small to large cobble were the dominant and subdominant substrate present in riffle habitats, whereas pools and runs generally maintained a sand and gravel composition. Between the water's edge and OHWM, substrate compositions generally consisted of sand and small gravel, with short sections of subdominant medium gravel, or small to large cobble.

Riparian vegetation consisted mostly of willow and mule fat shrubs with some lone mature willow, white alder (*Alnus rhombifolia*), cottonwood, ash and sycamore in some locations. Common reed was present throughout the sub-reach, but with more regularity in the downstream half. Rushes were infrequently observed and most often occurred in combination with patches of common reed throughout the sub-reach. Riparian abundance varied throughout the sub-reach, with moderate to dense riparian habitat being more common than in Sub-Reach 2. Mature riparian vegetation was typically limited to solitary trees in between large patches of willow and mule fat shrubs. Similar to conditions observed in Sub-Reach 2, higher density riparian assemblages tended to alternate from bank to bank as the wetted stream meandered within the bankfull width. The extent of the riparian zone fluctuated from 10 to 100 feet wide, and typically began at the water's edge, but in some instances began up to 50 feet from the water's edge.

Photos of Sub-Reach 2 depicting representative step-run riffle complex and beaver-enhanced pool habitat types in the upstream half of the sub-reach are provided in Figure 3.2-6 and Figure 3.2-7. A photo representative of step-run habitat in the downstream half of the sub-reach is provided in Figure 3.2-8.



Figure 3.2-6. WFMR, Upstream Half of Sub-Reach 3: Long Step-Run Riffle Complex with Moderate to Sparse Riparian of Willow and Mule Fat, Looking Northeast and Downstream



Figure 3.2-7. WFMR, Near the Midpoint of Sub-Reach 3: 605-Foot-Long Beaver Dam Pool, Moderate to Sparse Riparian of Willow and Mule Fat with Some Patches of Common Reed, Looking East and Downstream



Figure 3.2-8. WFMR, Downstream Half of Sub-Reach 3: Step Run Near Void of Riparian Vegetation on the North Bank and Moderate to Dense Riparian Set Back on the South Bank, Looking East and Downstream

3.2.1.4 Sub-Reach 4

Sub-Reach 4 is 1.0 mile long and extends from the subsurface zone at the bottom of Sub-Reach 3 to the confluence with Grass Valley Creek. Along the primary channel, low-flow channel width estimates ranged from 8.5 to 38.5 feet. OHW channel widths ranged from 13 to 129 feet. Sub-Reach 4 was dry during the survey, with the exception of two isolated pools at the upstream end, downstream of where flows went subsurface in Sub-Reach 3. Though dry, a variety of habitat types were identified including shallow pools, run-like sections, low-gradient riffles, and high-gradient riffles. Stream channels are braided through several sections with the primary channel likely alternating back and forth from year to year and after high-flow events. In addition to the braided sections, a couple of larger high-flow split channels were observed adjacent to longer bends in the primary channel. Dominant substrates within the primary channel was generally observed to be sand and small to medium gravel while small to large cobble was subdominant. Small areas of boulder-dominant riffles were also observed. Substrates within the OHW were sand-dominant and small gravel subdominant with medium gravel to large cobble subdominant in several locations.

Riparian vegetation in the sub-reach consisted predominantly of willow and mule fat shrubs. Small ashes were observed within a mix of willow and mule fat in several locations and common reed sparsely populated the primary channel in several other locations. The abundance and extent of riparian vegetation was noticeably less than that observed in Sub-Reach 2 and Sub-Reach 3. The same alternating bank pattern was observed, but riparian abundance typically fluctuated between sparse and near void. Moderate riparian abundance was still observed in several locations. The extent of riparian vegetation through the sub-reach typically ranged from 10 to 30 feet. Some wider extents were documented ranging from 40 to 70 feet, but the riparian vegetation was sparse.

Representative photos of Sub-Reach 4 depicting dry high-gradient habitat with coarse substrates and dry low-gradient, flat-water habitat with finer substrates are provided in Figure 3.2-9 and Figure 3.2-10.



Figure 3.2-9. WFMR, Middle of Sub-Reach 4: High Gradient Riffle Through Braided Section with Boulder and Large Cobble, Near Void to Moderate Riparian, Looking West and Upstream



Figure 3.2-10. WFMR, Middle of Sub-Reach 4: Step Pool-Like, Small to Large Gravel with Sand, Void to Sparse Riparian, Looking West and Upstream

3.2.1.5 Sub-Reach 5

Sub-Reach 5 is 1.9 miles long and extends from Grass Valley Creek downstream 1.75 miles to a point where mature riparian vegetation dominates the channel. Sub-Reach 5 was dry during the survey, thus all stream channel observations were made using geomorphic characteristics. Two small unnamed tributaries to the WFMR, downstream of Arrowhead Lake Road, were also dry.

Due to the influence of Grass Valley Creek flows, OHWM and bankfull widths within this sub-reach increase, primary channels widen and secondary channels and long split channels are larger. More established and larger braids off the primary channel sections were observed as compared to upstream sub-reaches. Low-flow channel width estimates ranged from 8 to 59 feet. OHW channel widths ranged from 11 to 134 feet. Similar to sections of Sub-Reach 4, the primary channel likely alternates back and forth between large split channels from year to year and after high-flow events. Immediately downstream of the confluence with Grass Valley Creek, the WFMR fans out and splits into a well-defined primary channel and large secondary channel. Intermediate splits and braids run between the primary and secondary channels before all channels come

together upstream of the Arrowhead Lake Road crossing. Downstream of Arrowhead Lake Road, the stream briefly fans out again and has intermediate splits, but the secondary channel is less defined. The smaller secondary channel and intermediate splits come together more quickly than upstream. Further downstream and through the rest of the sub-reach, the channel generally remains singular with several shorter sections having small splits.

When wetted, this sub-reach would generally consist of meandering flat water habitats with intermittent steps at increased gradients. Given the dry conditions, the distinction between runs and shallow pools was not easily discernable during the survey. Some pool-like depressions appeared in some locations within the sub-reach, generally along sharper bends in the stream. Substrate in low-gradient sections of the stream were typically sand-dominated, with small to medium gravel subdominant mid-channel. The OHWM maintained a similar composition. Medium gravel and small cobble were the dominant substrate in a few low-gradient sections through the sub-reach. Some locations had increased gradient, which would likely present as either high-gradient or low-gradient riffles.

Where present, riparian vegetation primarily consisted of willow and mule fat shrubs. Much of the sub-reach was void or near void of any riparian vegetation, with brief sections of moderate riparian abundance in a few locations in the lower 1.5 miles. Moderate riparian abundance was more regular in the upstream 0.25-mile of the sub-reach. Typically set back from the primary channel, mature lone sycamores were present throughout. The extent of riparian vegetation ranged from 8 to 60 feet.

Representative photos of Sub-Reach 5 are provided in Figure 3.2-11 and Figure 3.2-12. Figure 3.2-11 details conditions at the confluence of the primary channel and the main secondary split channel in the upstream end of the sub-reach. Similar conditions were observed at the confluences of other split sections through the sub-reach. Figure 3.2-12 details conditions of the singular channel toward the downstream end of the sub-reach, but is representative of other sections through the sub-reach where only one channel was present.



Figure 3.2-11. WFMR, Sub-Reach 5 Confluence of Primary and Secondary Channels Downstream of Grass Valley Creek: Run-Like in the Foreground and Two Riffles in the Background, Small to Large Gravel Dominant and Small Cobble Subdominant with Sand and Gravel Within OHW, Sparse Riparian, Looking West and Upstream



Figure 3.2-12. WFMR, Run-Like Flat Water Section in Sub-Reach 5 Downstream of Arrowhead Lake Road: Sand-Dominant and Small Gravel Subdominant, Void of Riparian, Looking West and Upstream

3.2.1.6 Sub-Reach 6

Sub-Reach 6 is 0.5 miles long and has a WFMR mature riparian corridor which is noticeably different from all other sub-reaches surveyed. This sub-reach includes the last 0.5 mile of the WFMR before reaching the confluence with Deep Creek at Saddle Dike Diversion Dam. Low-flow channel width estimates ranged from 8 to 23 feet. OHW channel widths ranged from 17 to 39 feet. The channel was dry during the survey and channel descriptions and typing were based on geomorphic characteristics. Toward the top of the sub-reach, the active channel is wide and shallow before funneling into a narrow canyon. Within the narrow canyon, the active channel becomes deeper, more entrenched and slightly narrower. Between run and glide-like flat water sections, and low-gradient riffle sections, dry pool-like features were present in multiple places. Pool-like features were usually present adjacent to bends in the stream or large fallen trees. No high-gradient sections were observed in the sub-reach.

Primary channel dominant substrates throughout the sub-reach were generally medium gravel to small cobble. In a few locations, sand and small gravel were the dominant substrate. Subdominant substrates through the sub-reach ranged from sand to medium gravel. Within the OHWM, sand was generally the dominant substrate and small gravel the subdominant. At some locations within OHWM this dominant/subdominant assemblage was inverted and in a few instances the dominant substrate was medium gravel.

No surface flow was observed within the sub-reach, though one isolated pool was encountered immediately before the confluence with Deep Creek. Deep Creek had active flow of 5.6 cfs at the time of the survey.

Riparian vegetation composition included mature willow and cottonwood trees throughout the entire sub-reach. Riparian vegetation abundance ranged from moderate to dense. Toward the narrowing section at the top of the sub-reach, the extent of riparian vegetation ranged from 20 to 60 feet on the southern bank and from 120 to approximately 300 feet on the northern bank. Willow shrubs occupied the understory below mature willow and cottonwood throughout this upper section of the sub-reach. Within the narrow section of the sub-reach, the extent of the riparian vegetation was confined to the steep canyon walls and limited understory riparian vegetation was present.

Representative photos of Sub-Reach 6 are provided in Figure 3.2-13 and Figure 3.2-14, and depict conditions through the wider, funneling section at the top of the sub-reach and conditions through the narrow canyon before the confluence with Deep Creek.



Figure 3.2-13. WFMR, Upstream End of Sub-Reach 6: Funneling Channel, Low-Gradient Riffle-Like, Sand Dominant and Small Gravel Subdominant, Moderate Riparian Vegetation Abundance, Looking East and Downstream



Figure 3.2-14. WFM, Narrow Section of Sub-Reach 6: Pool-Like Depression in the Foreground and Meandering Flat Water in the Background, Sand Dominant and Small Gravel Subdominant, Downstream of Arrowhead Lake Road, Mature Riparian Vegetation with Moderate Abundance, Looking East and Downstream

3.2.2 General Hydrology and Water Quality

A small amount of rain was in the forecast two weeks before the scheduled survey, which occurred on December 18, 2018 and December 20, 2018. Less than 0.1 inch of rain fell between December 5, 2018 and December 7, 2018. No rain occurred during the survey and daily conditions during the survey were clear and dry. Ambient air temperatures were in the mid- to high 30s °F in the morning and rose to mid-70s °F by the afternoon. Overnight temperatures remained in the range or low to mid-30s °F.

No spill events or MWA transfers occurred prior to or during the field survey effort. No water deliveries to LFR occurred during the field survey effort. No evidence of recent water deliveries was observed. The diversion valve box was inspected as was the bypass channel and portions of the ranch canals. Some stagnant water was observed low in the bottom of the valve box, approximately 10 feet below the lip of the bypass spill notch. No water was flowing out to the bypass channel or ranch canals and ranch pasture ponds were dry. One ranch canal was muddy.

Flowing water was observed in Sub-Reaches 1, 2, and 3. No stream flow was observed in the other sub-reaches. Of all the tributaries identified during the desktop portion of this assessment, only Horsethief Creek was wet and had flowing water. All other tributaries were dry.

Surface flows in Horsethief Creek were observed from a ranch road crossing on Vanhoops Holding LP property further upstream from the confluence with WFMR. Flow estimates were similar to that observed in the WFMR and less than 1 cfs. From in-field discussions with DWR personnel, flow was observed in Horsethief Creek during every instance they had accessed this crossing over 10 plus years (pers. comm., Evans 2018). At the confluence of Horsethief Creek and WFMR, all tributary flows appeared to go subsurface through a sandy gravel bar. A slight increase in surface flows in Sub-Reach 3 was observed during the field survey and is most likely elevated by ground water seepage from Horsethief Creek.

Water quality measurements were collected at four locations within the flowing stream (Table 3.2-1). Water temperatures were cold at all measurement locations. DO concentrations increased further downstream through the sub-reaches. At the downstream end of Sub-Reach 3, flow was seeping through a remnant beaver dam and DO measurements were surprisingly lower. Multiple measurements resulted in similar results.

Table 3.2-1. Stream Water Quality

Location	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
DS end of Sub-Reach 1	6.5	9.08	73.7
DS end of Sub-Reach 2	12.9	10.3	97.8
Middle of Sub-Reach 3	14	11.4 ¹	111 ¹
DS end of Sub-Reach 3	11.5 ²	7.6 ²	73 ²
Sub-Reaches 4, 5 and 6	Dry, except for a few isolated pools in Sub-Reaches 4 and 6		

Notes:

¹High measurements attributed to abundant algae in large beaver dam pool.

²Lower measurements attributed to seepage through remnant beaver dam immediately upstream.

Key

% = percent

DS = Downstream

*C = Degrees Celsius

mg/L = milligrams per liter

The three downstream reaches were essentially dry. Two small isolated pools were identified at the upstream end of Sub-Reach 4, just downstream of where stream flows went subsurface at the bottom of Sub-Reach 3. A third and larger isolated pool was located at the bottom of Sub-Reach 6 and was found upstream of the confluence with Deep Creek. Table 3.2-2 presents the dimensions and water quality for each isolated pool. The especially low DO levels in Pool 3 are likely the result of decaying vegetation observed throughout the pool. No isolated pools were identified in Sub-Reach 5.

Table 3.2-2. Isolated Pool Water Quality

Location		Dimensions (feet)		Depth (feet)		Water Quality		
		Length	Width	Mean	Max.	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)
US end of Sub-Reach 4	Pool 1	12	5.5	0.5	0.8	7.6	5.8	49
	Pool 2	8.5	3.2	0.1	0.3	11.5	6	54.5
DS end of Sub-Reach 6	Pool 3	150.5	19.8	0.4	5	4.3	2.32	17

Key:
% = percent
US = Upstream
DS = Downstream
Max. = Maximum
°C = Degrees Celsius
mg/L= milligrams per liter

3.2.3 Amphibians and Fish

No ESA-listed or special-status amphibian or fish species were observed during the survey; however, due to the late-December timing of the survey, it was expected that amphibian species would not be observed. Hibernating adult and juvenile American bullfrogs (*Lithobates catesbeianus*) were observed in Sub-Reach 2 and Sub-Reach 3, as discussed in Section 3.2.4.3. Chorus frog (*Pseudacris* sp.) vocalizations were heard in Sub-Reach 3. In addition, multiple unidentified minnows, as well as mosquitofish (*Gambusia affinis*), were observed in Sub-Reach 2 and Sub-Reach 3.

3.2.4 Aquatic Invasive Species

Evidence of four AIS species was observed during the survey. These species were the Asian clam (*Corbicula fluminea*), red swamp crayfish (*Procambarus clarkii*), American bullfrog, and Eurasian watermilfoil (*Myriophyllum spicatum*). Table 3.2-3 presents the sub-reaches where evidence of each AIS was observed. Species descriptions for each of the AIS observed during the survey are included below.

The Asian clam is a small freshwater mollusk, native to southern Asia, the eastern Mediterranean and the Southeast Asian islands to Australia. The species was first observed in the U.S. in 1938 in the Columbia River, and is believed to have been brought over by immigrants as food. Bait buckets, aquaculture, and intentional introductions for consumption are thought to be responsible for its spread (USGS 2018).

Table 3.2-3. Aquatic Invasive Species Observed During Survey

AIS	Sub-Reach 1	Sub-Reach 2	Sub-Reach 3	Sub-Reach 4	Sub-Reach 5	Sub-Reach 6
Asian clam		X	X	X	X	
Red swamp crayfish		X	X	X	X	
American bullfrog		X	X			
Eurasian watermilfoil		X	X			

3.2.4.1 Asian Clam

Asian clam is known to inhabit lakes, including Silverwood Lake, reservoirs and streams, often covering themselves in sandy sediments. These bivalves can cause serious structural damage, weakening dams and related structures. The species has a low tolerance to cold water, which causes fluctuations in population numbers. Additionally, the Asian clam exhibits sensitivity to salinity, drying, low pH and siltation (USGS 2018). Treatment methods include mechanical removal, barrier placement, and chemical and temperature alteration to water systems, although the effectiveness of these methods is still being tested (USGS 2018).

Asian clam shells (i.e., no live clams) were observed in Sub-Reach 2 through Sub-Reach 5, but were noticeably absent from Sub-Reach 1 and Sub-Reach 6. Additionally, while Asian clam shells were observed within Sub-Reach 2, they were absent from the upper 600 feet of this sub-reach. Abundance of Asian clam shells appeared to be lower in Sub-Reach 5 and Sub-Reach 4 and increased moving upstream into Sub-Reach 3 and Sub-Reach 2, where surface flows increased and became more permanent.

3.2.4.2 Red Swamp Crayfish

The red swamp crayfish is a dark red crustacean with extended claws and head. The first walking leg bears bright red rows of tubercles on its side margin and palm. Adults can grow as large as 4.7 inches and can weigh in excess of 1.75 ounces. Populations in the U.S. are the likely result of a release from aquaculture or aquarium trade (USGS 2018).

The life cycle of the red swamp crayfish is relatively short, with sexual maturity occurring as early as two months of age. Breeding takes place in the fall and females can produce up to 500 eggs. Egg production takes roughly six weeks, followed by a three-week incubation period and an additional eight-week maturation period. The red swamp crayfish demonstrates cyclic dimorphism, alternating between sexually active and inactive periods (USGS 2018).

This species inhabits freshwaters, including rivers, lakes, ponds, streams, canals, seasonally flooded swamps and marshes, and ditches with mud or sandy bottoms and plenty of organic debris. Additionally, the red swamp crayfish has been known to colonize rice fields, irrigation channels, and reservoirs. The species is an ecosystem engineer, primarily constructing simple burrows. The species is tolerant of a variety of water quality parameters including salinities less than 12 mg/L, pH from 5.8 to 10, DO levels greater than three parts per million, variable water temperatures, and variable pollution levels (USGS 2018).

It is possible that the species causes an assortment of environmental impacts, including but not limited to alteration of food web, bioaccumulation of toxic substances, community dominance, modification of physical-chemical habitat properties, consumption of native plants and algae, and predation on native species (USGS 2018). Management of this species includes draining small bodies of water, trapping, and the use of biocontrols. However, for larger populations, these methods can be expensive and unlikely to fully eradicate the species (Loureiro et. al. 2015).

Red swamp crayfish has not been reported to occur within the proposed Project boundary. The USGS location database, Nonindigenous Aquatic Species (NAS), reported an occurrence in Lake Arrowhead, San Bernardino County, in 1959, roughly 7 miles from the WFMR reach in the Willow Creek/Deep Creek watershed.

Exoskeletons of red swamp crayfish were observed in Sub-Reach 2 through Sub-Reach 5. As with the Asian clam, abundance of red swamp crayfish exoskeletons appeared to be lower in Sub-Reach 5 and Sub-Reach 4, and increased moving upstream into Sub-Reach 3 and Sub-Reach 2, where surface flows increased and became more permanent. Evidence of this species was not observed within the upper 600 feet of Sub-Reach 2.

3.2.4.3 American Bullfrog

The American bullfrog is the largest frog in North America (up to 8 inches snout to vent length). Native to eastern and central North America, American bullfrog was first introduced into California in the twentieth century as a food source, and further spread by fish stocking. The species is currently widespread and well-established in California, with populations found up to 6,000 feet elevation (Zeiner et al. 1988).

American bullfrogs are highly aquatic and closely associated with permanent or semi-permanent water bodies, including ponds, lakes, reservoirs, irrigation ditches, streams, and marshes, and are capable of dispersing long distances during wet periods (CDFW 2019). In California, breeding can occur as early as March and as late as July, depending on local conditions, but generally later than native amphibians in the same areas and over a longer period of time (Jones et al. 2005; Cook and Jennings 2007). Breeding sites are often characterized by abundant submerged aquatic or emergent vegetation. Individual clutches are large (10,000 to 20,000 eggs per female). Tadpoles are found in warm, shallow water, and grow to large sizes before metamorphosing, often in their second year (Jones et al. 2005). The presence of predatory fish,

particularly bass (*Micropterus* sp.) and sunfish (*Lepomis* sp.), is a good indicator of bullfrog habitat suitability. Larvae benefit by the presence of fish feeding on predatory aquatic insects that could have preyed upon bullfrog larvae; bullfrog larvae are generally avoided by fish (Kruse and Francis 1977; Werner and McPeck 1994; Adams et al. 2003).

Similar to most native frogs, American bullfrog is an opportunistic, gape-limited predator. However, this species grows to such a large size that a broad array of species are potential prey, particularly those closely associated with aquatic habitats, including smaller frogs, turtles, fish, and crayfish, as well as aerial insects, birds, and bats (Nafis 2013; CDFW 2019). American bullfrog has also been implicated in the spread of the chytrid fungus (*Batrachochytrium dendrobatidis*), the agent in the potentially fatal disease of frogs called chytridiomycosis, although several native species have also been shown to be carriers (Padgett-Flohr 2008; Fellers et al. 2011).

Treatment options for American bullfrog are limited to localized areas, as eradicating bullfrogs from large water bodies is currently infeasible. Currently, there are only a few methods for managing bullfrogs, including chemical control, bullfrog-specific traps, and hunting. Prevention remains the best means of management (Snow and Witmer 2010).

American bullfrog has not been reported to occur at the Project. NAS documented two American bullfrog occurrences within the Project vicinity. The first occurrence was reported at Yates Road Mojave River crossing at the Mojave Forks Regional County Park in 1989, roughly 3 miles downstream of the Project. The second reported bullfrog occurrence was in Deep Creek at the Mojave River Flood Control Dam in 1989, roughly 5.5 miles from the Project area (USGS 2018). American bullfrogs were also documented by surveys associated with investigations for the Horsethief Creek Bridge Replacement Project in 2004, characterized as a large breeding population in Horsethief Creek and in pools in the West Fork Mojave River between Cedar Springs Dam Spillway and Highway 173 (Aspen Environmental Group and Hunt & Associates Biological Consulting 2005). HELIX (2014) reports the continued presence of American bullfrog on the West Fork Mojave River downstream of the Project and in Horsethief Creek. This species was found in Sub-Reach 2 and Sub-Reach 3. A total of three individuals were observed hibernating within the WFMR during the survey.

3.2.4.4 Eurasian Watermilfoil

Eurasian watermilfoil grows submerged, rooted in mud or sand, with branching stems 12 to 20 feet long. Its leaves are feather-like and whorled in groups of three to six around the stem (Cal-IPC 2018; DiTomaso et al. 2013). In the early 1990s, it was present, but uncommon, in San Francisco Bay Area's ditches and lake margins, as well as in the Sacramento-San Joaquin Delta (SFEI 2014). Watermilfoil is now prevalent throughout California, including the Central Valley (Donaldson and Johnson 2002).

Establishment of Eurasian watermilfoil is dependent upon still water (Donaldson and Johnson 2002). Its reproduction is primarily vegetative via rhizomes, stem fragments, and axillary buds. The species can tolerate a range of environmental conditions,

including low light, nutrient variations, and near-freezing water temperatures (Cal-IPC 2018). The species is capable of creating its own habitat by trapping sediment and producing a favorable environment for further establishment (Cal-IPC 2018). The species can grow on sandy, silty, or rocky substrates.

Transport via boating equipment plays the largest role in contaminating new water bodies. A single stem fragment on a boat or boat trailer can spread the plant from lake to lake (Donaldson and Johnson 2002). Some treatment techniques for this species includes mechanical removal, herbicide treatment, benthic barriers, and tillage (Invasive Species Compendium 2014). Mechanical removal can help remove stem densities, but escaped stem fragments can drift and develop into new individuals (DiTomaso et al. 2013). The most effective technique is to prevent its spread to and establishment in new water bodies.

Eurasian watermilfoil is given a “high” invasive plant rating by the Cal-IPC, meaning “the species has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure” (Cal-IPC 2018).

Forty-five occurrences of Eurasian watermilfoil were recorded in Silverwood Lake by DWR near most of the recreation areas during its 2017 AIS Relicensing Study. In addition, Eurasian watermilfoil occurs within Arrowhead Hot Springs.

Eurasian watermilfoil was observed in Sub-Reach 2 and Sub-Reach 3, where water was present. It was found throughout Sub-Reach 3 and the majority of Sub-Reach 2, with the exception of the upper 600 feet of the sub-reach.

3.2.5 Other Observations and Disturbance

During the survey, man-made features and/or ranching or recreational disturbance were observed through all sub-reaches. Table 3.2-4 details the types of features or disturbance observed in each sub-reach. Evidence of off-highway vehicle disturbance was regularly present in all dry sub-reaches, but most evident in Sub-Reach 6, where a regularly used trail crosses back and forth across the stream. Two all-terrain vehicles were observed in Sub-Reach 6 during the survey. Regular evidence of cattle in the stream channel was observed in Sub-Reaches 2, 3, and 4. The downstream half of Sub-Reach 3 had the most regular evidence of cattle disturbance compared to the rest of three sub-reaches where it was observed. All other observations show regular human traffic throughout the WFMR reach. Rural and ranch roads and established trails in the vicinity are set back from the stream except for at two locations. At the top of Sub-Reach 1, a path has been worn from Highway 173 to the Cedar Springs Dam spillway plunge pool. In Sub-Reach 2, an established ford crosses the WFMR from LFR to the Vanhoops Holding LP. There are two observations not included in the table, but also notable. The first, adjacent to the ford crossing and set back from the channel is a large shaded deck structure on the west side of the WFMR. The second is a repurposed gate situated across WFMR at the boundary of the LFR property with USACE property.

Table 3.2-4. Disturbance in WFMR Reach

Location	Off-highway Vehicle Disturbance ¹	General Recreation ²	Established Ford ³	Remnant Structures ⁴	Cattle Disturbance ⁵	Rural/Ranch Roads ⁶	Trails ⁷
Sub-Reach 1		X					X
Sub-Reach 2						X	X
Sub-Reach 3						X	
Sub-Reach 4						X	X
Sub-Reach 5						X	X
Sub-Reach 6						X	

Notes:

¹Maintained wet crossing of the river

²Evidence of target shooting, hunting, fishing and urban artwork

³Abandoned bridge abutments and abandoned pumping infrastructure

⁴Observations of cattle tracks and dung

⁵Bare earth single-track trails

⁶Rural and ranch roads

⁷Regular human traffic

Key:

X = observations in the vicinity of stream channels

X = observation within or immediately adjacent to stream channels

3.2.6 Incidental Observations

In addition to the species described in Sections 3.2.2 and 3.2.3, several other species were directly observed or evidence of the species was observed during the survey. Table 3.2-5 provides the list of species observed or detected during the survey.

Table 3.2-5. Other Species Observations During WFMR Reconnaissance Survey

Common Name	Scientific Name	Notes
Mountain lion	<i>Puma concolor</i>	Scratch pile observed adjacent to Grass Valley Creek
Coyote	<i>Canis latrans</i>	Sign observed in several locations within WFMR reach, individual observed near reach
Striped skunk	<i>Mephitis mephitis</i>	Observed in Sub-Reach 2
Great blue heron	<i>Ardea herodias</i>	Observed in Sub-Reach 3
Red-tailed hawk	<i>Buteo jamaicensis</i>	Observed in Sub-Reach 4
Tadpole Physa	<i>Physella gyrina</i>	Observed in Sub-Reach 2, 3, 4, and 5
Gyraulus	<i>Gyraulus</i> sp.	Snail found in Sub-Reach 2, 3, 4, and 5

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4.0 REFERENCES

- Adams, M.J, C.A. Pearl, and R.B. Bury. 2003. Indirect facilitation of an anuran invasion by non-native fishes. *Ecology Letters* 6:1–9.
- Aspen Environmental Group and Hunt & Associates Biological Consulting. 2005. Arroyo toad survey and habitat evaluation along the Horsethief Creek and Check 66 Access Road for the Horsethief Creek Repairs Project. Prepared for DWR. October 2005.
- Backlin, A. R., C. J. Hitchcock, R. N. Fisher, M. L. Warburton, P. Trenham, S. A. Hathaway, and C. S. Brehme. 2003. Natural history and recovery analysis for Southern California Populations of the Mountain Yellow-Legged Frog (*Rana muscosa*), annual report. Prepared for Cal Fish and Wildlife (Contract # P0185110), Angeles National Forest, San Bernardino National Forest, Mount San Jacinto State Park, Coachella Valley Association of Governments, and BLM.
- California Department of Fish and Wildlife (CDFW). 2019. California's Invaders: American Bullfrog. Available online: <https://www.wildlife.ca.gov/Conservation/Invasives/Species/Bullfrog>. Accessed January 17, 2019.
- _____. 2018a. California Natural Diversity Database (CNDDDB). RareFind Version 5. Available online: <https://nrmsecure.dfg.ca.gov/cnddb/view/query.aspx>. Accessed November 14, 2018. California Department of Fish and Game, Biogeographic Data Branch. Sacramento, California.
- _____. 2018b. California Wildlife Habitat Relationships. California Wildlife Habitat Relationships (CWHR) System supported by the California Interagency Wildlife Task Group and maintained by the CDFW. Database Version 9.0.
- _____. 2013. California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol. Available online: <file:///C:/Users/mcarbiener/Downloads/AllRegionsAISDecontaminationProtocol102113.pdf>. October 16.
- California Invasive Plant Council (Cal-IPC). 2018. The California Invasive Plant Inventory Database. California Invasive Plant Council. Available online: <http://www.cal-ipc.org/plants/inventory/>. Accessed April 12, 2018.
- Cook, D.G. and M.R. Jennings. 2007. Microhabitat use of the California red-legged frog and introduced bullfrog in a seasonal marsh. *Herpetologica* 63: 430-440.
- Crestline Sanitation District (CSD). 2018. Final Wastewater Master Plan. Prepared by Dudek, Encinitas, California. September, 2018.

- DiTomaso, J.M., G.B. Kyser, S.R. Oneto, R.G. Wilson, S.N Orloff, L.W. Anderson, S.D. Wright, J.A. Roncoroni, T.L. Miller, T.S. Prather, C. Ransom, K.G. Beck, C. Duncan, K.A. Wilson, and J.J. Mann. 2013. Weed control in natural areas in the western United States: *Ceratophyllum demersum*: Coontail. Weed Research and Information Center, University of California. 544 pp. Available online: https://wric.ucdavis.edu/information/natural%20areas/wr_C/Ceratophyllum.pdf Accessed July 20, 2018.
- Donaldson, S. and W. Johnson. 2002. Eurasian watermilfoil. University of Nevada Cooperative Extension Serv. Circ. Fact Sheet 02-09. Reno, Nevada.
- Dudek and ICF. 2012. Draft Desert Renewable Energy Conservation Plan. Prepared for California Energy Commission. March.
- Evans, M.E. Senior Environmental Scientist-Engineering Branch, California Department of Water Resources, Southern Field Division, Pearblossom, California; in-person communication with T. DeGabriele, Senior Aquatic Scientist and M. Carbiener, Senior Biologist, HDR, Inc., Sacramento; December 19, 2018
- Fellers, G. M. 2005. *Rana draytonii* Baird and Girard, 1852, California red-legged frog. In: Lannoo, M. editor. Amphibian Declines: The conservation status of United States species. University of California Press. Berkeley, California. 1094 pp.
- Fellers, G.M., R.A. Cole, D.M. Reinitz, and P.M. Kleeman. 2011. Amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) in coastal and montane California, USA anurans. Herpetological Conservation and Biology 6:383-394.
- Graham, E. Manager, Las Flores Ranch, Hesperia. California; in-person communication with T. DeGabriele, Senior Aquatic Scientist, and M. Carbiener, Senior Biologist, HDR, Inc., Sacramento; December 17, 2018.
- HELIX Environmental Planning, Inc. 2014. Tapestry Project. Biological Technical Report. November 2014. 160 pp.
- Hitchcock, C.J. and R.N. Fisher. 2004. Surveys for arroyo toads (*Bufo californicus*) throughout the San Gabriel, San Bernardino, and San Jacinto Mountains, 2002-2003. U.S. Geological Survey report. 39 pp.
- Invasive Species Compendium. 2014. Available online: <http://www.cabi.org/isc/search/?q=&types=7,19&sort=DateDesc>. Accessed July 27, 2015. Last updated 2015.
- Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California.
- Jones, L.C., W.P. Leonard, and D.H. Olson, editors. 2005. Amphibians of the Pacific Northwest. Seattle Audubon Society, Seattle, Washington. 227 pp.

- Kruse, K.C. and M.G Francis. 1977. A predation deterrent in larvae of the bullfrog, *Rana catesbeiana*. Transactions of the American Fisheries Society 106:248–252.
- Loureiro, T., P.M.S.G. Anastacio, P.B. Araujo, C. Souty-Grosset and M. P. Almerao. 2015. Red swamp crayfish: biology, ecology and invasion- an overview. Nauplius 23.1. Available online: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-64972015000100002. Accessed: August 20, 2018.
- Morey, S.R. 2005. *Spea hammondi* (Baird, 1859, "1857") western spadefoot. In: Lannoo, M. (Editor). Amphibian Declines: The Conservation Status of United States Species. University of California Press, June 2005.
- Moyle, P.B. 2002. Inland Fishes of California. University of California Press, Ltd.
- Nafis, G. 2013. A guide to the amphibians and reptiles of California. Available online: <http://www.californiaherps.com/frogs/pages/l.catesbeianus.html>. Accessed July 27, 2015.
- Padgett-Flohr, G.E. 2008. Pathogenicity of *Batrachochytrium dendrobatidis* in two threatened California amphibians: *Rana draytonii* and *Ambystoma californiense*. Herpetological Conservation and Biology 3:182-191.
- San Francisco Estuary Institute (SFEI). 2014. Practical Guidebook to the Control of Invasive Aquatic and Wetland Plants of the San Francisco Bay-Delta Region Website. Available online: <<http://www.sfei.org/nis/index.html>>
- Shaffer, H.B., Fellers, G.M., Voss, S.R., Oliver, J.C., and Pauly, G. B. 2004. Species boundaries, phylogeography and conservation genetics of the red-legged frog (*Rana aurora/draytonii*) complex. Molecular Ecology 13: 2667-2677.
- Snow, N.P. and G. Witmer. 2010. American Bullfrogs as Invasive Species: A Review of the Introduction, Subsequent Problems, Management Options, and Future Directions. Proceeds of the 24th Vertebrate Pest Conference. University of California, Davis. Available online: <http://naldc.nal.usda.gov/download/49725/PDF>.
- Sweet, S. and Sullivan, B. K. 2005. In: Lannoo, M. editor. Amphibian declines: The conservation status of United States species. University of California Press. Berkeley, California. 1094 pp.
- Thomson, R.C., A.N. Wright, and H.B. Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Fish and Wildlife. University of California Press.
- United States Department of Interior, Fish and Wildlife Service (USFWS). 2019a. Information for Planning and Consultation (iPaC). Available online at: <https://ecos.fws.gov/ipac/>. Accessed February 4, 2019.

- _____. 2019b. Critical Habitat Mapper for Threatened and Endangered Species. Available online at: <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>. Accessed February 4, 2019.
- _____. 2018a. Species Biological Report for the southern California distinct population segment of the mountain yellow-legged frog. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. v + 32 pp.
- _____. 2018b. ECOS Environmental Conservation Online System: species profile for arroyo toad <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=D020>
- _____. 2018c. Draft recovery plan for the southern California distinct population segment of the mountain yellow-legged frog. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 18 pp.
- _____. 2012. Mountain yellow-legged frog (*Rana muscosa*) Southern California Distinct Population Segment, 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. July 13, 2012.
- _____. 2009a. Arroyo Toad (*Bufo californicus* (= *microscaphus*)) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office Ventura, California. August 17, 2009.
- _____. 2009b. Mohave tui chub (*Gila bicolor mohavensis* = *Siphaletes bicolor mohavensis*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California.
- _____. 2005. Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog. Available online: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/crf_survey_guidance_aug2005.pdf. Accessed November 2007.
- _____. 2002. Recovery plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. 173 pp.
- _____. 1984. Recovery plan for the Mohave tui chub (*Gila bicolor mohavensis*). U.S. Fish and Wildlife Service, Portland, Oregon. 56 pp.
- _____. 1999. Arroyo southwestern toad (*Bufo microscaphus californicus*) recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 119 pp.
- United States Geological Survey (USGS). 2018. Nonindigenous Aquatic Species. Available online: <https://nas.er.usgs.gov/default.aspx>. Accessed August 16, 2108. Last updated August 10, 2018. USGS, Gainesville, Florida.

- _____. 2001. Simulation of Ground-Water in the Mojave River Basin, California. Water-Resources Investigation Report 01-4002 Version 3. Prepared in cooperation with the Mojave Water Agency. 2001. USGS, Sacramento, California.
- Vredenburg, V.T., R. Bingham, R. Knapp, J.A.T. Morgan, C. Moritz, and D. Wake. 2007. Concordant molecular and phenotypic data delineate new taxonomy and conservation priorities for the endangered mountain yellow-legged frog. *Journal of Zoology* 217: 361–374.
- Werner E.E and M.A. McPeck. 1994. Direct and indirect effects of predators on two anuran species along an environmental gradient. *Ecology* 75:1368–1382.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1988. California's Wildlife: Guide to the California Statewide Wildlife Habitat Relationships System. State of California. The Resources Agency, Department of Fish and Game. Sacramento, California.

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Appendix H

NRCS Custom Soil Resource Report for the Silverwood Area

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United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for San Bernardino County, California, Mojave River Area; and San Bernardino National Forest Area, California

Silverwood Lake Area



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

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individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

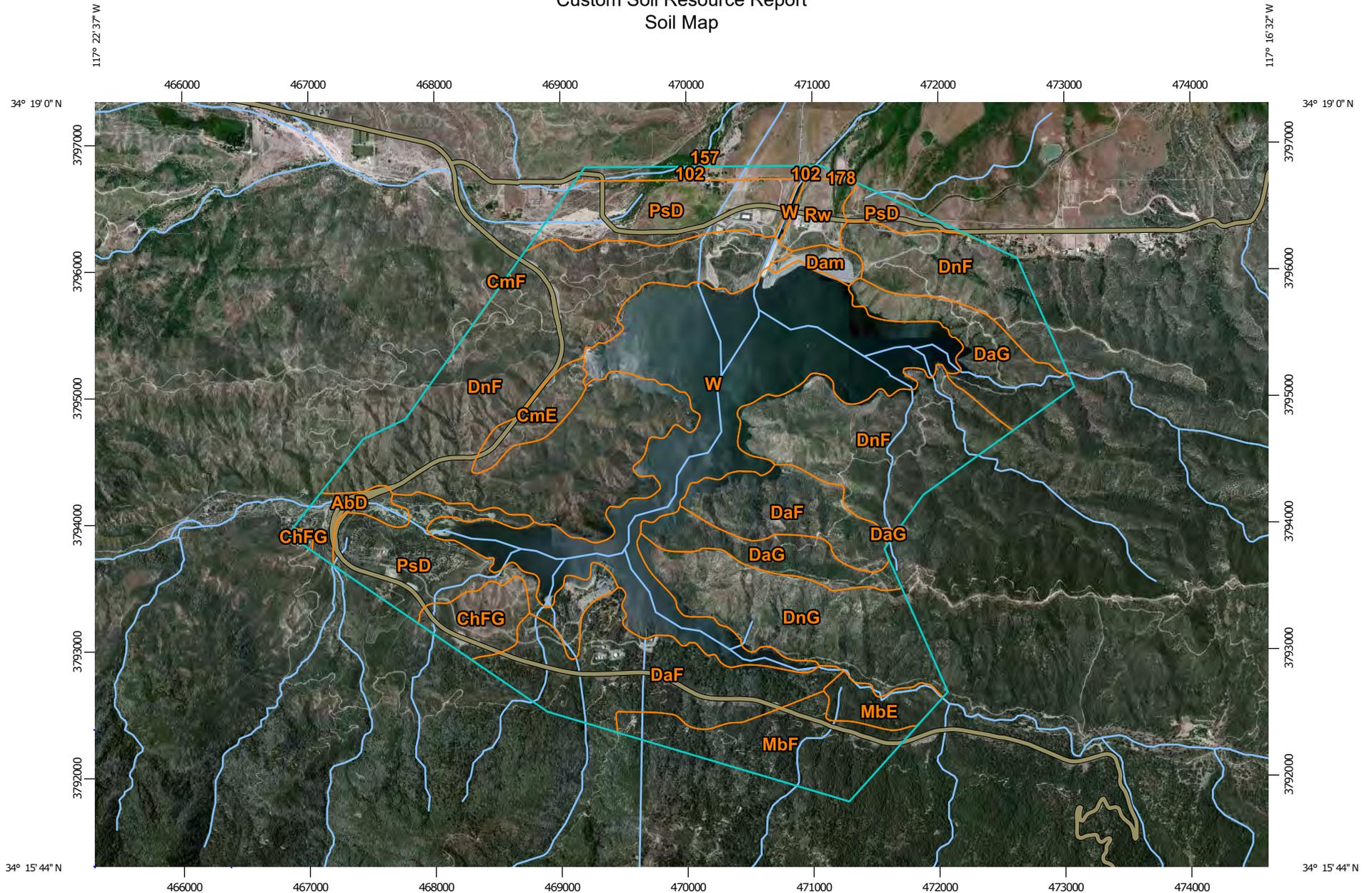
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

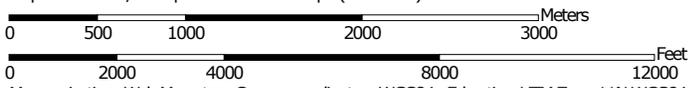
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:42,600 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
 Survey Area Data: Version 7, Sep 8, 2014

Soil Survey Area: San Bernardino National Forest Area, California
 Survey Area Data: Version 7, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—Jul 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

San Bernardino County, California, Mojave River Area (CA671)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
102	AVAWATZ-OAK GLEN ASSOCIATION, GENTLY SLOPING*	51.3	1.1%
157	RIVERWASH	0.7	0.0%
178	WATER	1.8	0.0%
Subtotals for Soil Survey Area		53.8	1.1%
Totals for Area of Interest		4,738.1	100.0%

San Bernardino National Forest Area, California (CA777)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AbD	Soboba-Hanford families association, 2 to 15 percent slopes	54.9	1.2%
ChFG	Typic Xerorthents, warm-Typic Haploxeralfs-Badland complex, 30 to 100 percent slopes	94.2	2.0%
CmE	Modesto-Osito families association, 15 to 30 percent slopes	68.4	1.4%
CmF	Osito-Modesto families association, 30 to 50 percent slopes	1.0	0.0%
DaF	Pacifico-Wapi families complex, 30 to 50 percent slopes	546.3	11.5%
DaG	Wapi-Pacifico families-Rock outcrop complex, 50 to 75 percent slopes	292.8	6.2%
Dam	Dams	30.3	0.6%
DnF	Trigo family-Lithic Xerorthents, warm complex, 30 to 50 percent slopes	1,499.6	31.6%
DnG	Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes	341.5	7.2%
MbE	Morical-Wind River families complex, 15 to 30 percent slopes	65.7	1.4%
MbF	Morical-Wind River families complex, 30 to 50 percent slopes	228.6	4.8%
PsD	Avawatz-Oak Glen, dry families association, 2 to 15 percent slopes	514.8	10.9%
Rw	Riverwash	57.4	1.2%

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San Bernardino National Forest Area, California (CA777)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water areas	888.7	18.8%
Subtotals for Soil Survey Area		4,684.3	98.9%
Totals for Area of Interest		4,738.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

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Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino County, California, Mojave River Area

102—AVAWATZ-OAK GLEN ASSOCIATION, GENTLY SLOPING*

Map Unit Setting

National map unit symbol: hkr6
Elevation: 3,400 to 5,200 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Avawatz and similar soils: 50 percent
Oak glen and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Avawatz

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 15 inches: sandy loam
H2 - 15 to 60 inches: loamy sand

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: COARSE LOAMY (R020XE003CA)

Description of Oak Glen

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

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Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 22 inches: sandy loam

H2 - 22 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: COARSE LOAMY (R020XE003CA)

Minor Components

Haploxerolls

Percent of map unit: 5 percent

Landform: Fan remnants

Xerofluvents

Percent of map unit: 5 percent

157—RIVERWASH

Map Unit Setting

National map unit symbol: hksz

Elevation: 650 to 4,000 feet

Mean annual precipitation: 3 to 6 inches

Mean annual air temperature: 59 to 66 degrees F

Frost-free period: 180 to 290 days

Farmland classification: Not prime farmland

Map Unit Composition

Riverwash: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Channels

Down-slope shape: Linear

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Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w

Minor Components

Villa

Percent of map unit: 5 percent

Victorville

Percent of map unit: 5 percent

178—WATER

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

San Bernardino National Forest Area, California

AbD—Soboba-Hanford families association, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: htr5
Elevation: 1,600 to 4,000 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Soboba family and similar soils: 50 percent
Hanford family and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Soboba Family

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: very cobbly loamy sand
H2 - 8 to 24 inches: very cobbly loamy sand
H3 - 24 to 60 inches: stratified very cobbly sand to very cobbly loamy fine sand

Properties and qualities

Slope: 2 to 10 percent
Percent of area covered with surface fragments: 3.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.67 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Description of Hanford Family

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope

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Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 60 inches: sandy loam

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Riverwash

Percent of map unit: 10 percent

Soboba family, nonskeletal

Percent of map unit: 10 percent

ChFG—Typic Xerorthents, warm-Typic Haploxeralfs-Badland complex, 30 to 100 percent slopes

Map Unit Setting

National map unit symbol: htrh
Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Typic xerorthents, warm, and similar soils: 35 percent
Typic haploxeralfs and similar soils: 30 percent
Badland: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Typic Xerorthents, Warm

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 30 inches: sandy loam
H3 - 30 to 34 inches: weathered bedrock

Properties and qualities

Slope: 40 to 70 percent
Depth to restrictive feature: 20 to 34 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B

Description of Typic Haploxeralfs

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 2 inches: gravelly sandy loam
H2 - 2 to 10 inches: gravelly sandy clay loam
H3 - 10 to 22 inches: gravelly loam
H4 - 22 to 39 inches: gravelly sandy loam
H5 - 39 to 43 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 39 to 43 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Description of Badland

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8e

CmE—Modesto-Osito families association, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: htrj
Elevation: 1,800 to 4,200 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Modesto family and similar soils: 40 percent
Osito family and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Modesto Family

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 28 inches: sandy clay loam
H3 - 28 to 50 inches: fine sandy loam
H4 - 50 to 54 inches: weathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 50 to 54 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Description of Osito Family

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 5 inches: coarse sandy loam
H2 - 5 to 13 inches: coarse sandy loam
H3 - 13 to 17 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 13 to 17 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

CmF—Osito-Modesto families association, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: htrk
Elevation: 1,800 to 4,200 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Osito family and similar soils: 40 percent
Modesto family and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Osito Family

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 5 inches: coarse sandy loam
H2 - 5 to 13 inches: coarse sandy loam
H3 - 13 to 17 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 13 to 17 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Description of Modesto Family

Setting

Landform: Hills

Custom Soil Resource Report

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 28 inches: loam
H3 - 28 to 50 inches: fine sandy loam
H4 - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 50 to 54 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

DaF—Pacífico-Wapi families complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: htrn
Elevation: 5,000 to 8,000 feet
Mean annual precipitation: 20 to 35 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Pacífico family and similar soils: 50 percent
Wapi family and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pacífico Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave

Custom Soil Resource Report

Across-slope shape: Convex

Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 3 inches: loamy coarse sand

H2 - 3 to 15 inches: loamy coarse sand

H3 - 15 to 19 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 15 to 19 inches to paralithic bedrock

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Description of Wapi Family

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 7 inches: loamy sand

H2 - 7 to 10 inches: gravelly loamy sand

H3 - 10 to 15 inches: weathered bedrock

H4 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 10 to 15 inches to paralithic bedrock; 15 to 19 inches to lithic bedrock

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 0.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

DaG—Wapi-Pacifico families-Rock outcrop complex, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: htrp
Elevation: 4,000 to 7,800 feet
Mean annual precipitation: 20 to 35 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Wapi family and similar soils: 35 percent
Pacifico family and similar soils: 30 percent
Rock outcrop: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wapi Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 7 inches: loamy sand
H2 - 7 to 10 inches: gravelly loamy sand
H3 - 10 to 15 inches: weathered bedrock
H4 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 10 to 15 inches to paralithic bedrock; 15 to 19 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Description of Pacifico Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 3 inches: loamy coarse sand
H2 - 3 to 15 inches: loamy coarse sand
H3 - 15 to 19 inches: weathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 15 to 19 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Description of Rock Outcrop

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8e

Dam—Dams

Map Unit Composition

Dam: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

DnF—Trigo family-Lithic Xerorthents, warm complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: htry

Elevation: 1,790 to 6,400 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 55 to 64 degrees F

Frost-free period: 150 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Trigo family and similar soils: 60 percent

Lithic xerorthents, warm, and similar soils: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trigo Family

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 3 inches: coarse sandy loam

H2 - 3 to 12 inches: coarse sandy loam

H3 - 12 to 16 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 12 to 16 inches to paralithic bedrock

Natural drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Custom Soil Resource Report

Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Description of Lithic Xerorthents, Warm

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Convex

Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 18 inches: gravelly sandy loam

H2 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 18 to 22 inches to lithic bedrock

Natural drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

DnG—Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: htrz

Elevation: 1,790 to 6,400 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 55 to 64 degrees F

Frost-free period: 150 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Trigo family and similar soils: 50 percent

Lithic xerorthents, warm, and similar soils: 20 percent

Minor components: 30 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trigo Family

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 3 inches: coarse sandy loam
H2 - 3 to 12 inches: coarse sandy loam
H3 - 12 to 16 inches: weathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 12 to 16 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Description of Lithic Xerorthents, Warm

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 18 inches: gravelly sandy loam
H2 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 18 to 22 inches to lithic bedrock
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.4 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Minor Components

Rock outcrop

Percent of map unit: 8 percent

Unnamed, shallow fine sandy loam soils

Percent of map unit: 8 percent

Springdale family

Percent of map unit: 7 percent

Ramona family

Percent of map unit: 7 percent

MbE—Morical-Wind River families complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: htsv

Elevation: 4,500 to 6,000 feet

Mean annual precipitation: 25 to 35 inches

Mean annual air temperature: 46 to 54 degrees F

Frost-free period: 120 to 175 days

Farmland classification: Not prime farmland

Map Unit Composition

Morical family and similar soils: 50 percent

Wind river family and similar soils: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morical Family

Setting

Landform: Mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 8 inches: loam

H2 - 8 to 50 inches: loam

H3 - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent

Custom Soil Resource Report

Depth to restrictive feature: 50 to 54 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Description of Wind River Family

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 19 inches: sandy loam
H2 - 19 to 34 inches: sandy loam
H3 - 34 to 45 inches: sandy loam
H4 - 45 to 49 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 45 to 49 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

MbF—Morical-Wind River families complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: htsw

Custom Soil Resource Report

Elevation: 4,500 to 6,000 feet
Mean annual precipitation: 25 to 35 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Morical family and similar soils: 40 percent
Wind river family and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morical Family

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 50 inches: loam
H3 - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 50 to 54 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Description of Wind River Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 19 inches: sandy loam
H2 - 19 to 34 inches: sandy loam
H3 - 34 to 45 inches: sandy loam

Custom Soil Resource Report

H4 - 45 to 49 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 45 to 49 inches to paralithic bedrock

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

PsD—Avawatz-Oak Glen, dry families association, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: htsz

Elevation: 3,200 to 6,000 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 55 to 64 degrees F

Frost-free period: 150 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Avawatz family and similar soils: 50 percent

Oak glen family, dry, and similar soils: 25 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Avawatz Family

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: gravelly loamy coarse sand

H2 - 8 to 24 inches: gravelly coarse sand

H3 - 24 to 60 inches: stratified gravelly loamy coarse sand to loamy coarse sand

Properties and qualities

Slope: 2 to 10 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.67 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Description of Oak Glen Family, Dry

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 14 inches: sandy loam
H2 - 14 to 23 inches: coarse sandy loam
H3 - 23 to 60 inches: loamy sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Wilshire family

Percent of map unit: 9 percent

Riverwash

Percent of map unit: 8 percent

Hodgson family

Percent of map unit: 8 percent

Rw—Riverwash

Map Unit Setting

National map unit symbol: htt3
Elevation: 1,600 to 6,000 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 46 to 64 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Riverwash: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 2 to 10 percent
Frequency of flooding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w

W—Water areas

Map Unit Composition

Water: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

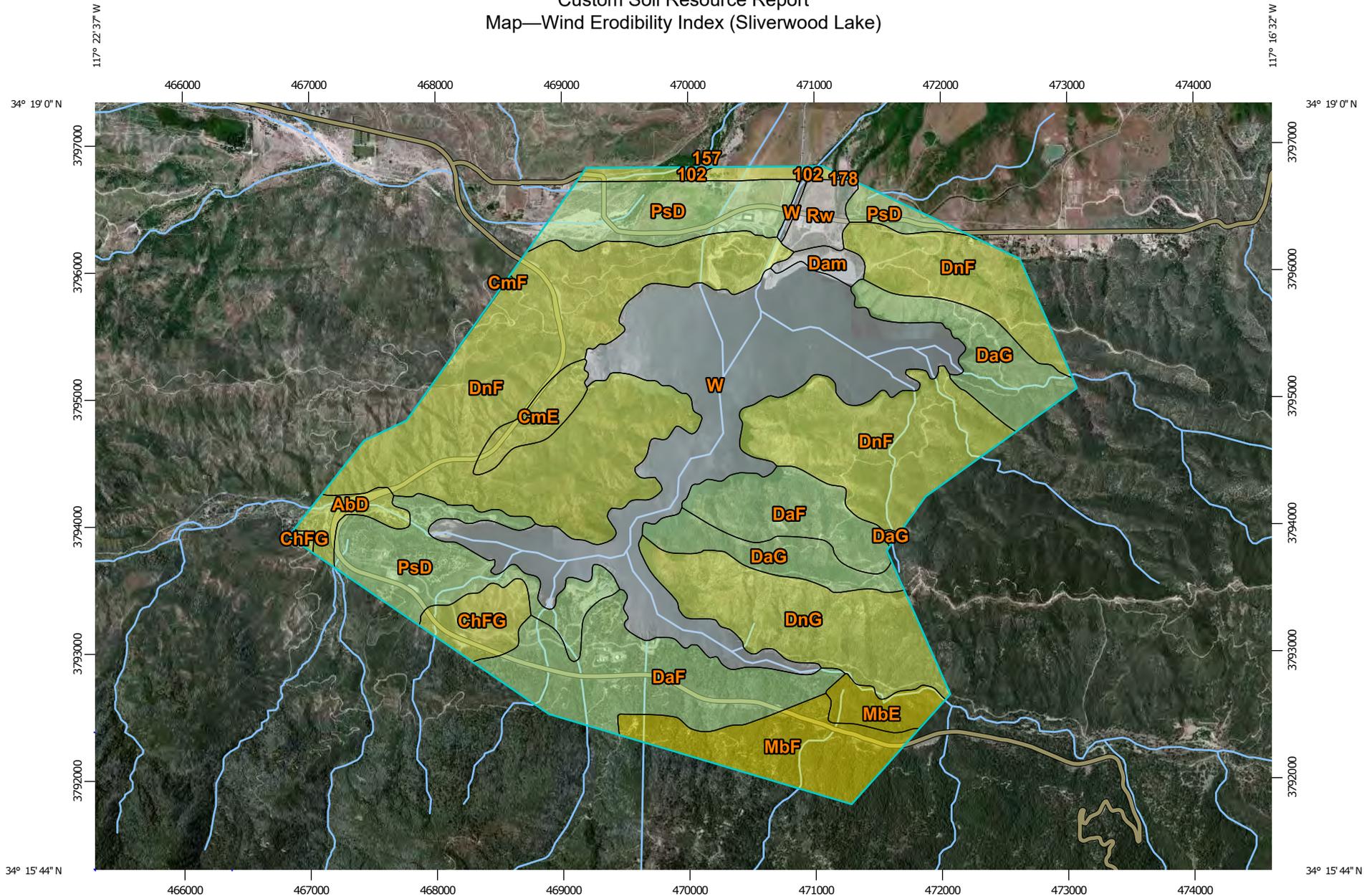
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

Wind Erodibility Index (Sliverwood Lake)

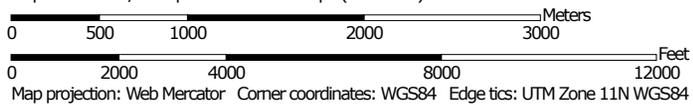
The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Custom Soil Resource Report

Map—Wind Erodibility Index (Sliverwood Lake)



Map Scale: 1:42,600 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)
 Area of Interest (AOI)

Soils

Soil Rating Polygons

	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Soil Rating Points

	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Soil Rating Lines

	0
	38
	48
	56
	86
	134
	160
	180
	220

Water Features

	Streams and Canals
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Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

Background

	Aerial Photography
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MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
 Survey Area Data: Version 7, Sep 8, 2014

Soil Survey Area: San Bernardino National Forest Area, California
 Survey Area Data: Version 7, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—Jul 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Index (Sliverwood Lake)

Wind Erodibility Index— Summary by Map Unit — San Bernardino County, California, Mojave River Area (CA671)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
102	AVAWATZ-OAK GLEN ASSOCIATION, GENTLY SLOPING*	86	51.3	1.1%
157	RIVERWASH		0.7	0.0%
178	WATER		1.8	0.0%
Subtotals for Soil Survey Area			53.8	1.1%
Totals for Area of Interest			4,738.1	100.0%

Wind Erodibility Index— Summary by Map Unit — San Bernardino National Forest Area, California (CA777)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
AbD	Soboba-Hanford families association, 2 to 15 percent slopes	86	54.9	1.2%
ChFG	Typic Xerorthents, warm-Typic Haploxeralfs-Badland complex, 30 to 100 percent slopes	86	94.2	2.0%
CmE	Modesto-Osito families association, 15 to 30 percent slopes	86	68.4	1.4%
CmF	Osito-Modesto families association, 30 to 50 percent slopes	86	1.0	0.0%
DaF	Pacifico-Wapi families complex, 30 to 50 percent slopes	134	546.3	11.5%
DaG	Wapi-Pacifico families-Rock outcrop complex, 50 to 75 percent slopes	134	292.8	6.2%
Dam	Dams		30.3	0.6%
DnF	Trigo family-Lithic Xerorthents, warm complex, 30 to 50 percent slopes	86	1,499.6	31.6%
DnG	Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes	86	341.5	7.2%
MbE	Morical-Wind River families complex, 15 to 30 percent slopes	56	65.7	1.4%
MbF	Morical-Wind River families complex, 30 to 50 percent slopes	56	228.6	4.8%

Custom Soil Resource Report

Wind Erodibility Index— Summary by Map Unit — San Bernardino National Forest Area, California (CA777)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
PsD	Avawatz-Oak Glen, dry families association, 2 to 15 percent slopes	134	514.8	10.9%
Rw	Riverwash		57.4	1.2%
W	Water areas		888.7	18.8%
Subtotals for Soil Survey Area			4,684.3	98.9%
Totals for Area of Interest			4,738.1	100.0%

Rating Options—Wind Erodibility Index (Sliverwood Lake)

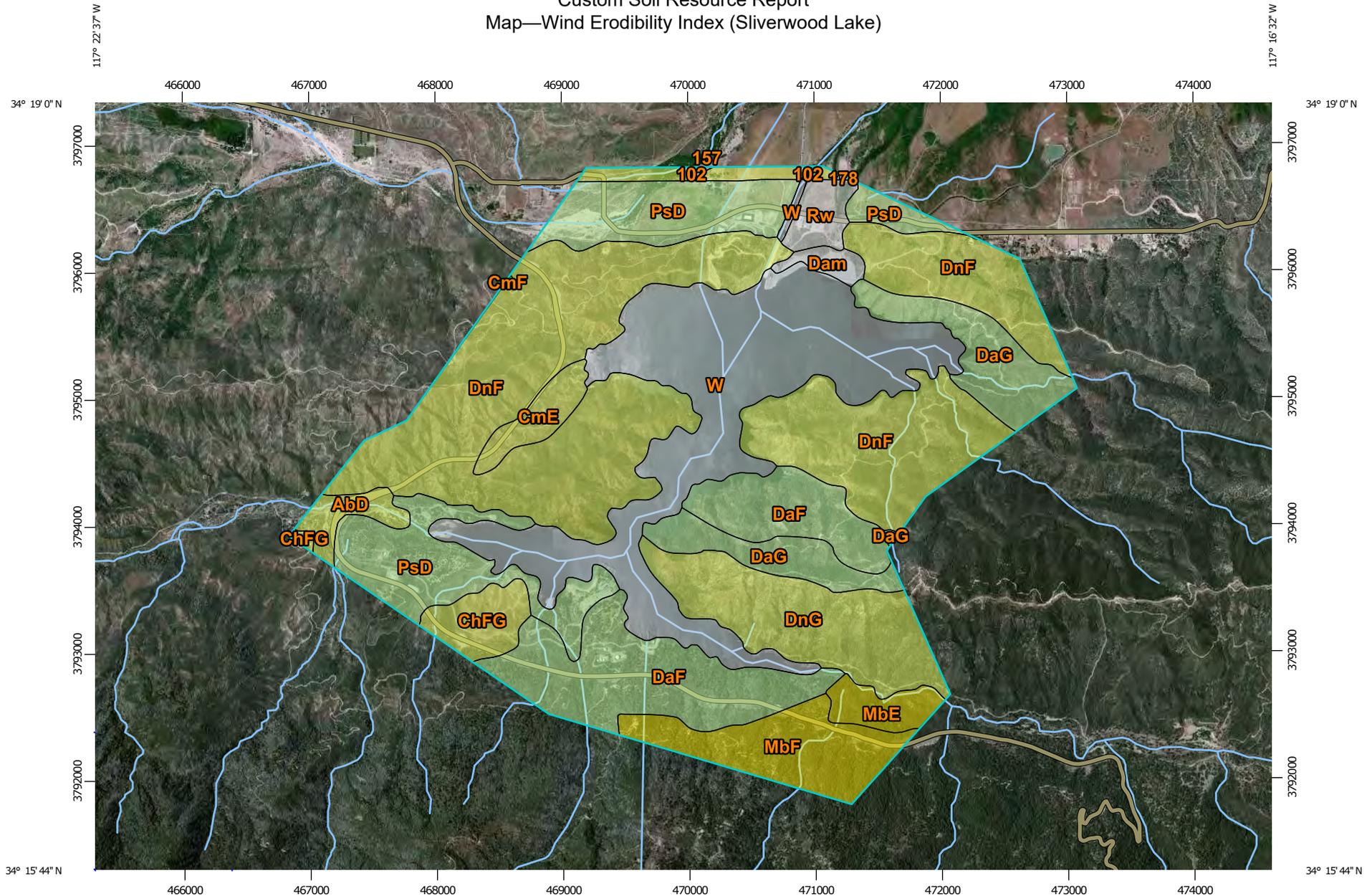
- Units of Measure:* tons per acre per year
- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* Higher

Wind Erodibility Index (Sliverwood Lake)

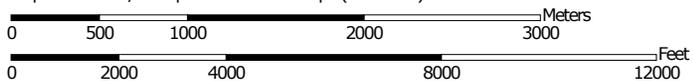
The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Custom Soil Resource Report

Map—Wind Erodibility Index (Sliverwood Lake)



Map Scale: 1:42,600 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Soil Rating Points

	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Soil Rating Lines

	0
	38
	48
	56
	86
	134
	160
	180
	220

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
 Survey Area Data: Version 7, Sep 8, 2014

Soil Survey Area: San Bernardino National Forest Area, California
 Survey Area Data: Version 7, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—Jul 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Index (Sliverwood Lake)

Wind Erodibility Index— Summary by Map Unit — San Bernardino County, California, Mojave River Area (CA671)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
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157	RIVERWASH		0.7	0.0%
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Totals for Area of Interest			4,738.1	100.0%

Wind Erodibility Index— Summary by Map Unit — San Bernardino National Forest Area, California (CA777)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
AbD	Soboba-Hanford families association, 2 to 15 percent slopes	86	54.9	1.2%
ChFG	Typic Xerorthents, warm-Typic Haploxeralfs-Badland complex, 30 to 100 percent slopes	86	94.2	2.0%
CmE	Modesto-Osito families association, 15 to 30 percent slopes	86	68.4	1.4%
CmF	Osito-Modesto families association, 30 to 50 percent slopes	86	1.0	0.0%
DaF	Pacifico-Wapi families complex, 30 to 50 percent slopes	134	546.3	11.5%
DaG	Wapi-Pacifico families-Rock outcrop complex, 50 to 75 percent slopes	134	292.8	6.2%
Dam	Dams		30.3	0.6%
DnF	Trigo family-Lithic Xerorthents, warm complex, 30 to 50 percent slopes	86	1,499.6	31.6%
DnG	Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes	86	341.5	7.2%
MbE	Morical-Wind River families complex, 15 to 30 percent slopes	56	65.7	1.4%
MbF	Morical-Wind River families complex, 30 to 50 percent slopes	56	228.6	4.8%

Custom Soil Resource Report

Wind Erodibility Index— Summary by Map Unit — San Bernardino National Forest Area, California (CA777)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
PsD	Avawatz-Oak Glen, dry families association, 2 to 15 percent slopes	134	514.8	10.9%
Rw	Riverwash		57.4	1.2%
W	Water areas		888.7	18.8%
Subtotals for Soil Survey Area			4,684.3	98.9%
Totals for Area of Interest			4,738.1	100.0%

Rating Options—Wind Erodibility Index (Sliverwood Lake)

Units of Measure: tons per acre per year
Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

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Appendix I

NRCS Custom Soil Resource Report for the Devil Canyon Area

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United States
Department of
Agriculture

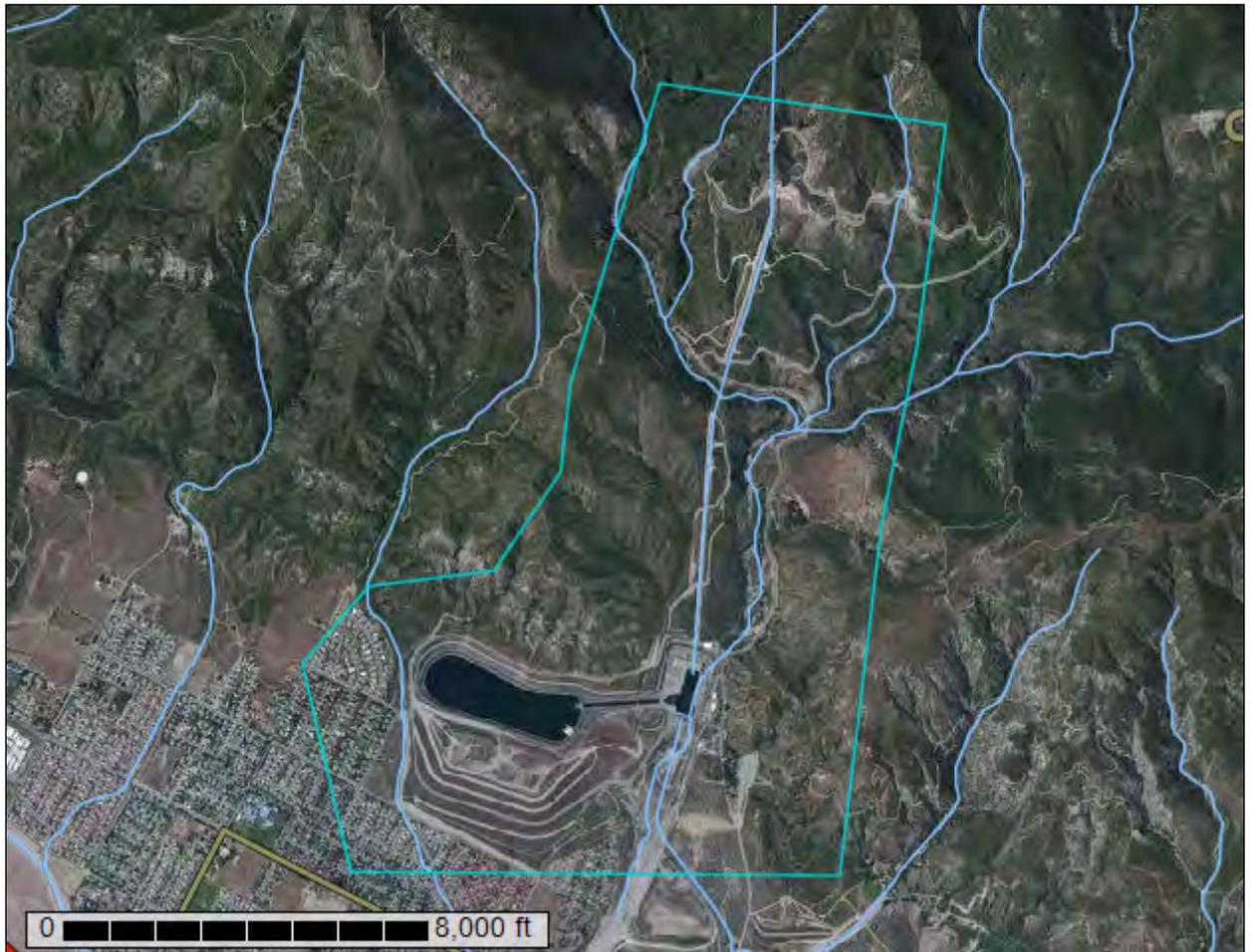
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for San Bernardino County Southwestern Part, California, and San Bernardino National Forest Area, California

Devil Canyon



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

Custom Soil Resource Report

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

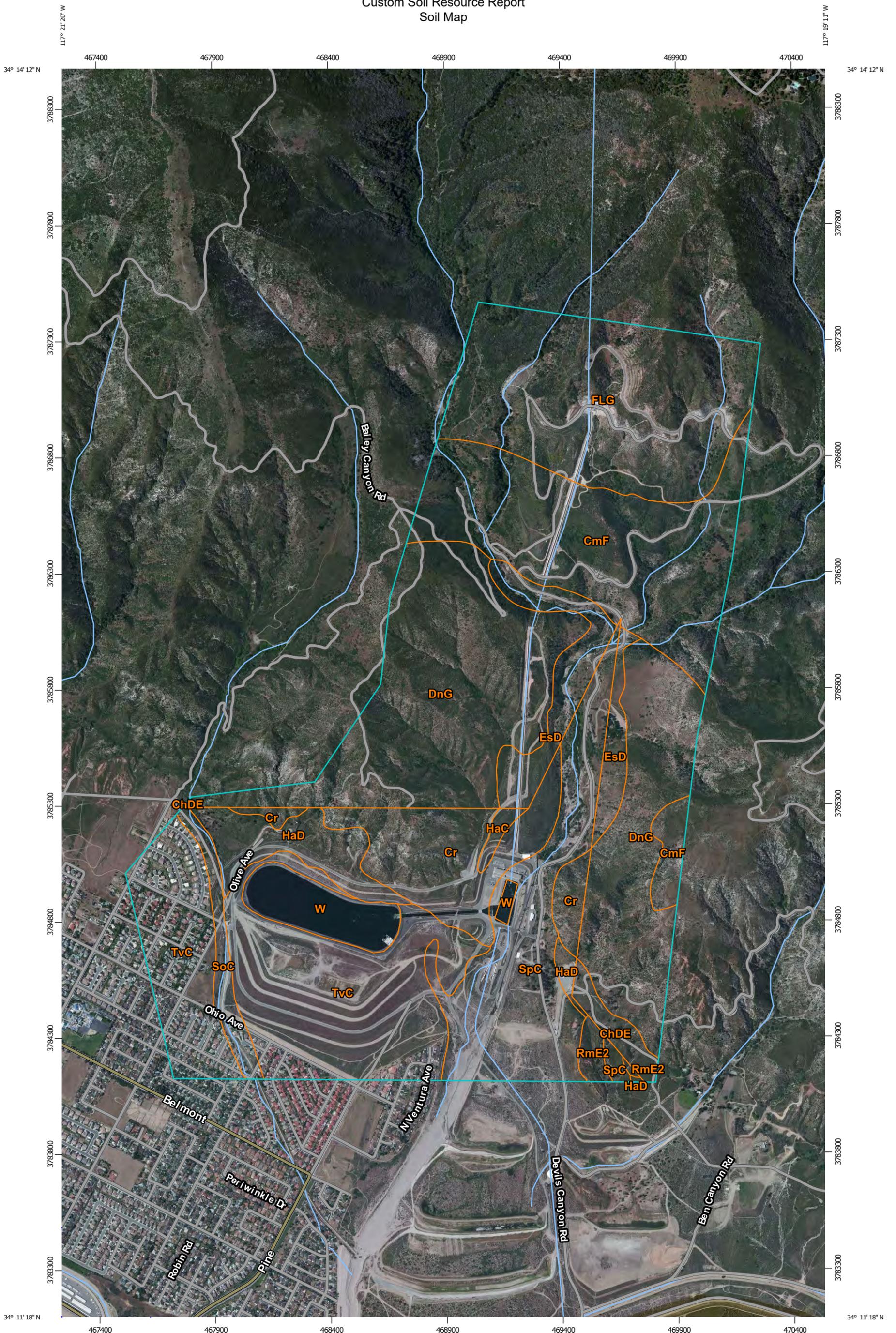
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:15,100 if printed on B portrait (11" x 17") sheet.

0 200 400 800 1200 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
 Survey Area Data: Version 7, Sep 3, 2015

Soil Survey Area: San Bernardino National Forest Area, California
 Survey Area Data: Version 7, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2010—Jun 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

San Bernardino County Southwestern Part, California (CA677)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cr	Cieneba-Rock outcrop complex, 30 to 50 percent slopes, MLRA 20	95.3	6.8%
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	4.6	0.3%
HaD	Hanford coarse sandy loam, 9 to 15 percent slopes	47.0	3.4%
RmE2	Ramona sandy loam, 15 to 30 percent slopes, eroded	7.2	0.5%
SoC	Soboba gravelly loamy sand, 0 to 9 percent slopes	21.2	1.5%
SpC	Soboba stony loamy sand, 2 to 9 percent slopes	136.0	9.7%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	233.5	16.7%
W	Water	38.0	2.7%
Subtotals for Soil Survey Area		582.8	41.7%
Totals for Area of Interest		1,398.8	100.0%

San Bernardino National Forest Area, California (CA777)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ChDE	Ramona family-Typic Xerorthents, warm association, 2 to 30 percent slopes	14.2	1.0%
CmF	Osito-Modesto families association, 30 to 50 percent slopes	201.6	14.4%
DnG	Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes	331.3	23.7%
EsD	Riverwash-Soboba families association, 2 to 15 percent slopes	60.4	4.3%
FLG	Springdale family-Lithic Xerorthents association, dry, 50 to 75 percent slopes	208.4	14.9%
Subtotals for Soil Survey Area		816.0	58.3%
Totals for Area of Interest		1,398.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly

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indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino County Southwestern Part, California

Cr—Cieneba-Rock outcrop complex, 30 to 50 percent slopes, MLRA 20

Map Unit Setting

National map unit symbol: 2tb7z
Elevation: 500 to 5,500 feet
Mean annual precipitation: 10 to 39 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 240 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Cieneba and similar soils: 60 percent
Rock outcrop: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cieneba

Setting

Landform: Mountain slopes, hillslopes
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, concave
Parent material: Residuum weathered from granite

Typical profile

A - 0 to 8 inches: sandy loam
C - 8 to 14 inches: sandy loam

Properties and qualities

Slope: 30 to 50 percent
Percent of area covered with surface fragments: 10.0 percent
Depth to restrictive feature: 12 to 20 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Description of Rock Outcrop

Setting

Landform: Ridges, mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

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Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Minor Components

Typic xerorthent, eroded

Percent of map unit: 5 percent

Typic xerorthent, moderately deep

Percent of map unit: 5 percent

HaC—Hanford coarse sandy loam, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hck3

Elevation: 150 to 900 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 250 to 280 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 12 inches: sandy loam

H2 - 12 to 60 inches: fine sandy loam, sandy loam, coarse sandy loam

H2 - 12 to 60 inches:

H2 - 12 to 60 inches:

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

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Frequency of flooding: Rare

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A

Minor Components

Greenfield, sandy loam

Percent of map unit: 10 percent

Tujunga, loamy sand

Percent of map unit: 5 percent

HaD—Hanford coarse sandy loam, 9 to 15 percent slopes

Map Unit Setting

National map unit symbol: hck4

Elevation: 150 to 900 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 250 to 280 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Hanford and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 12 inches: sandy loam

H2 - 12 to 60 inches: fine sandy loam, sandy loam, coarse sandy loam

H2 - 12 to 60 inches:

H2 - 12 to 60 inches:

Properties and qualities

Slope: 9 to 15 percent

Depth to restrictive feature: More than 80 inches

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Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Greenfield, sandy loam

Percent of map unit: 10 percent

Ramona, sandy loam

Percent of map unit: 5 percent

RmE2—Ramona sandy loam, 15 to 30 percent slopes, eroded

Map Unit Setting

National map unit symbol: hckl
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: sandy loam
H2 - 23 to 32 inches: loam
H3 - 32 to 54 inches: sandy clay loam, clay loam

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H3 - 32 to 54 inches: sandy loam, loam

H4 - 54 to 60 inches:

H4 - 54 to 60 inches:

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Minor Components

Greenfield, sandy loam

Percent of map unit: 10 percent

Monserate, sandy loam

Percent of map unit: 5 percent

SoC—Soboba gravelly loamy sand, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: hckt

Elevation: 30 to 4,200 feet

Mean annual precipitation: 10 to 20 inches

Mean annual air temperature: 61 to 63 degrees F

Frost-free period: 175 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Soboba and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Soboba

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

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Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 12 inches: gravelly loamy sand
H2 - 12 to 36 inches: very gravelly loamy sand
H3 - 36 to 60 inches: very stony sand

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Minor Components

Delhi, fine sand

Percent of map unit: 5 percent

Unnamed

Percent of map unit: 5 percent

Tujunga, gravelly loam

Percent of map unit: 3 percent

Unnamed

Percent of map unit: 2 percent
Landform: Drainageways

SpC—Soboba stony loamy sand, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hckv
Elevation: 10 to 4,200 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 210 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Soboba and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Soboba

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite

Typical profile

A - 0 to 10 inches: very stony loamy sand

C - 10 to 60 inches: very stony sand

Properties and qualities

Slope: 2 to 9 percent

Percent of area covered with surface fragments: 0.1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)

Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Minor Components

Hanford

Percent of map unit: 5 percent

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Tujunga, gravelly loamy coarse sand

Percent of map unit: 5 percent

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ramona

Percent of map unit: 5 percent

Landform: Alluvial fans, terraces

Landform position (three-dimensional): Tread

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Down-slope shape: Linear

Across-slope shape: Linear

TvC—Tujunga gravelly loamy sand, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: hcl2

Elevation: 10 to 1,500 feet

Mean annual precipitation: 10 to 25 inches

Mean annual air temperature: 59 to 64 degrees F

Frost-free period: 250 to 350 days

Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 36 inches: gravelly loamy sand

H2 - 36 to 60 inches: gravelly sand, gravelly loamy sand

H2 - 36 to 60 inches:

Properties and qualities

Slope: 0 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare

Frequency of ponding: None

Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Drainageways

Soboba, gravelly loamy sand

Percent of map unit: 5 percent

Delhi, fine sand

Percent of map unit: 5 percent

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

San Bernardino National Forest Area, California

ChDE—Ramona family-Typic Xerorthents, warm association, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: htrg
Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Ramona family and similar soils: 60 percent
Typic xerorthents, warm, and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona Family

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 18 inches: gravelly sandy loam
H3 - 18 to 48 inches: cobbly sandy clay loam
H4 - 48 to 60 inches: gravelly sandy loam
H5 - 60 to 70 inches: gravelly loamy coarse sand

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Description of Typic Xerorthents, Warm

Setting

Landform: Terraces

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Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 30 inches: sandy loam
H3 - 30 to 34 inches: weathered bedrock

Properties and qualities

Slope: 10 to 30 percent
Depth to restrictive feature: 20 to 34 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B

CmF—Osito-Modesto families association, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: htrk
Elevation: 1,800 to 4,200 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Osito family and similar soils: 40 percent
Modesto family and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Osito Family

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone

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Typical profile

H1 - 0 to 5 inches: coarse sandy loam
H2 - 5 to 13 inches: coarse sandy loam
H3 - 13 to 17 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 13 to 17 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Description of Modesto Family

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 28 inches: loam
H3 - 28 to 50 inches: fine sandy loam
H4 - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 50 to 54 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

DnG—Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: htrz
Elevation: 1,790 to 6,400 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Trigo family and similar soils: 50 percent
Lithic xerorthents, warm, and similar soils: 20 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trigo Family

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 3 inches: coarse sandy loam
H2 - 3 to 12 inches: coarse sandy loam
H3 - 12 to 16 inches: weathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 12 to 16 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Description of Lithic Xerorthents, Warm

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 18 inches: gravelly sandy loam
H2 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 18 to 22 inches to lithic bedrock
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Minor Components

Rock outcrop

Percent of map unit: 8 percent

Unnamed, shallow fine sandy loam soils

Percent of map unit: 8 percent

Springdale family

Percent of map unit: 7 percent

Ramona family

Percent of map unit: 7 percent

EsD—Riverwash-Soboba families association, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hts5
Elevation: 1,600 to 4,000 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 150 to 200 days

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Farmland classification: Not prime farmland

Map Unit Composition

Riverwash: 50 percent

Soboba family and similar soils: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Alluvial flats

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Properties and qualities

Slope: 2 to 10 percent

Frequency of flooding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w

Description of Soboba Family

Setting

Landform: Alluvial flats

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Concave

Across-slope shape: Convex

Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: very cobbly loamy sand

H2 - 8 to 24 inches: very cobbly sand

H3 - 24 to 60 inches: stratified very cobbly sand to very cobbly loamy fine sand

Properties and qualities

Slope: 5 to 15 percent

Percent of area covered with surface fragments: 3.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.67 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

FLG—Springdale family-Lithic Xerorthents association,dry, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: htsc
Elevation: 3,000 to 7,000 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Springdale family, dry, and similar soils: 40 percent
Lithic xerorthents, dry, and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Springdale Family, Dry

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 5 inches: gravelly loamy coarse sand
H2 - 5 to 25 inches: very gravelly loamy sand
H3 - 25 to 45 inches: very gravelly coarse sand
H4 - 45 to 49 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: 45 to 49 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A

Description of Lithic Xerorthents, Dry

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 18 inches: very gravelly loamy sand
H2 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 60 to 75 percent
Depth to restrictive feature: 18 to 22 inches to lithic bedrock
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

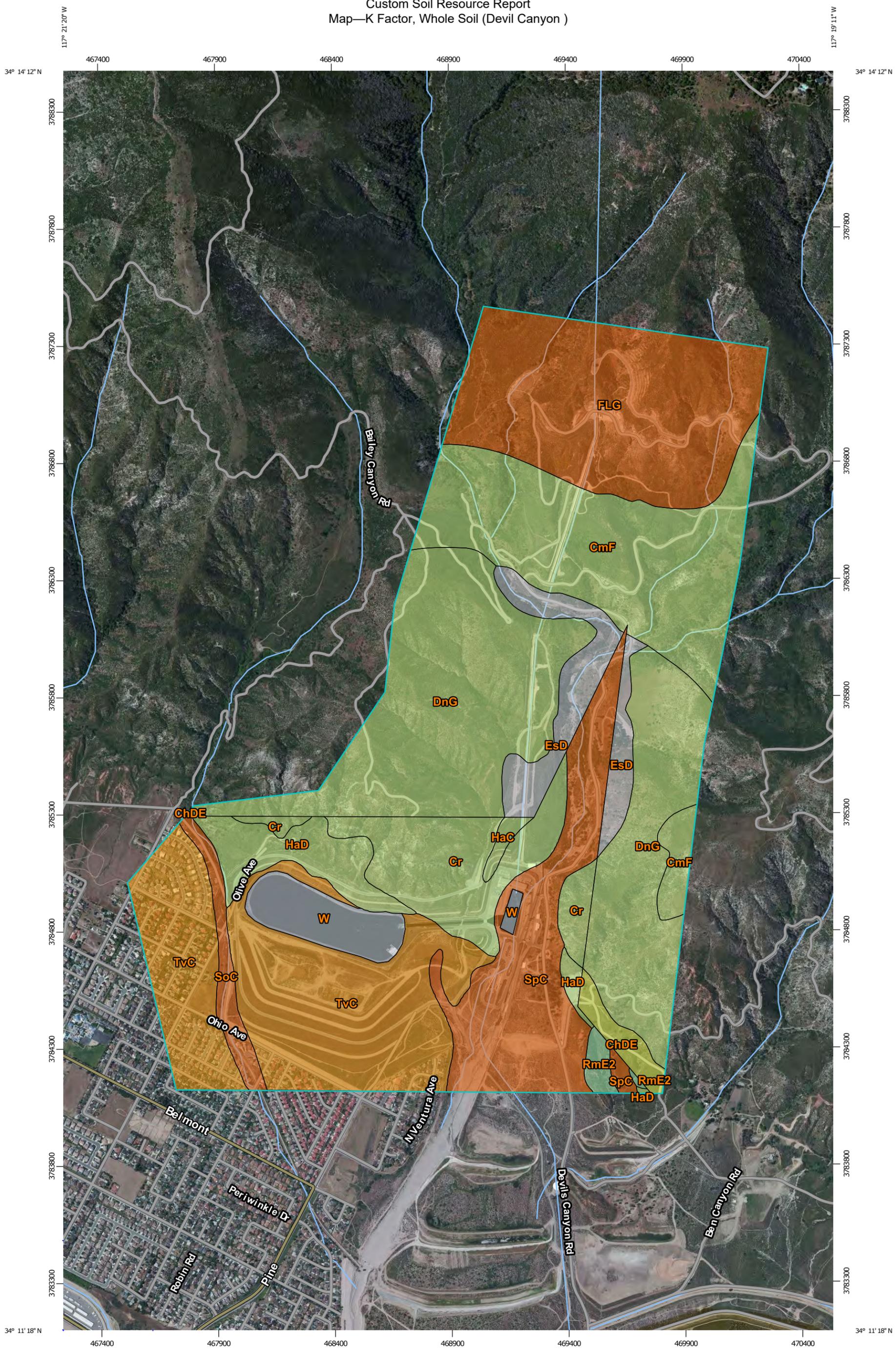
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil (Devil Canyon)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report
 Map—K Factor, Whole Soil (Devil Canyon)



Map Scale: 1:15,100 if printed on B portrait (11" x 17") sheet.

0 200 400 800 1200 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

-  .02
-  .05
-  .10
-  .15
-  .17
-  .20
-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  Not rated or not available

Soil Rating Lines

-  .02
-  .05
-  .10
-  .15
-  .17
-  .20

-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  Not rated or not available

Soil Rating Points

-  .02
-  .05
-  .10
-  .15
-  .17
-  .20
-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  Not rated or not available

Water Features

-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
 Survey Area Data: Version 7, Sep 3, 2015

Soil Survey Area: San Bernardino National Forest Area, California
 Survey Area Data: Version 7, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2010—Jun 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

Table—K Factor, Whole Soil (Devil Canyon)

K Factor, Whole Soil— Summary by Map Unit — San Bernardino County Southwestern Part, California (CA677)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cr	Cieneba-Rock outcrop complex, 30 to 50 percent slopes, MLRA 20	.24	95.3	6.8%
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	.24	4.6	0.3%
HaD	Hanford coarse sandy loam, 9 to 15 percent slopes	.24	47.0	3.4%
RmE2	Ramona sandy loam, 15 to 30 percent slopes, eroded	.28	7.2	0.5%
SoC	Soboba gravelly loamy sand, 0 to 9 percent slopes	.05	21.2	1.5%
SpC	Soboba stony loamy sand, 2 to 9 percent slopes	.05	136.0	9.7%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	.10	233.5	16.7%
W	Water		38.0	2.7%
Subtotals for Soil Survey Area			582.8	41.7%
Totals for Area of Interest			1,398.8	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
ChDE	Ramona family-Typic Xerorthents, warm association, 2 to 30 percent slopes	.20	14.2	1.0%
CmF	Osito-Modesto families association, 30 to 50 percent slopes	.24	201.6	14.4%
DnG	Trigo family-Lithic Xerorthents, warm complex, 50 to 75 percent slopes	.24	331.3	23.7%
EsD	Riverwash-Soboba families association, 2 to 15 percent slopes		60.4	4.3%
FLG	Springdale family-Lithic Xerorthents association,dry, 50 to 75 percent slopes	.05	208.4	14.9%

Custom Soil Resource Report

K Factor, Whole Soil— Summary by Map Unit — San Bernardino National Forest Area, California (CA777)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Subtotals for Soil Survey Area			816.0	58.3%
Totals for Area of Interest			1,398.8	100.0%

Rating Options—K Factor, Whole Soil (Devil Canyon)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix J

***DWR's Botanical Resources Study Comprehensive
Species Inventory***

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Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
ABICON	<i>Abies concolor</i>	white fir	Pinaceae - Pine Family	Native	tree	-	X	X	X	
ACEMAC	<i>Acer macrophyllum</i>	bigleaf maple	Sapindaceae - Soapberry Family	Native	tree	-		X	X	X
ACHMIL	<i>Achillea millefolium</i>	yarrow	Asteraceae - Sunflower Family	Native	perennial herb	-	X		X	
ACMAME	<i>Acmispon americanus</i>	American bird's foot trefoil	Fabaceae - Pea Family	Native	annual herb	-	X		X	X
ACMGLA	<i>Acmispon glaber</i>	deerweed	Fabaceae - Pea Family	Native	perennial herb	-	X	X		X
ACMSTR	<i>Acmispon strigosus</i>	strigose lotus	Fabaceae - Pea Family	Native	annual herb	-	X	X		X
ACOMIC	<i>Acourtia microcephala</i>	sacapaote	Asteraceae - Sunflower Family	Native	perennial herb	-	X	X		
ADEFAS	<i>Adenostoma fasciculatum</i>	chamise	Rosaceae - Rose Family	Native	shrub	-	X	X	X	X
AGEADE	<i>Ageratina adenophora</i>	Eupatory	Asteraceae - Sunflower Family	Invasive non-native (Moderate)	perennial herb	-		X		
AGORET	<i>Agoseris retrorsa</i>	spear leafed agoseris	Asteraceae - Sunflower Family	Native	perennial herb	-	X			
AGRCAP	<i>Agrostis capillaris</i>	colonial bentgrass	Poaceae - Grass Family	Non-native	perennial grass	-	X		X	
AGREXA	<i>Agrostis exarata</i>	spike bentgrass	Poaceae - Grass Family	Native	perennial grass	-	X		X	
AILALT	<i>Ailanthus altissima</i>	tree of heaven	Simaroubaceae - Quassia or Simarouba Family	Invasive non-native (Moderate)	tree	-		X		X
ALITRI	<i>Alisma triviale</i>	northern water plantain	Alismataceae - Water Plantain Family	Native	perennial herb (aquatic)	-	X		X	
ALLDIV	<i>Allophyllum divaricatum</i>	purple false gilia	Polemoniaceae - Phlox Family	Native	annual herb	-	X			
ALLINT	<i>Allophyllum integrifolium</i>	white false gilia	Polemoniaceae - Phlox Family	Native	annual herb	-	X			
ALNRHO	<i>Alnus rhombifolia</i>	white alder	Betulaceae - Birch Family	Native	tree	-		X	X	X
AMABLI	<i>Amaranthus blitoides</i>	prostrate pigweed	Amaranthaceae - Amaranth Family	Native	annual herb	-	X			
AMBACA	<i>Ambrosia acanthicarpa</i>	annual burweed	Asteraceae - Sunflower Family	Native	annual herb	-	X	X		
AMBPSI	<i>Ambrosia psilostachya</i>	western ragweed	Asteraceae - Sunflower Family	Native	perennial herb	-		X		X

Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
AMB SP.	<i>Ambrosia</i> sp.	ragweed species	Asteraceae – Sunflower Family	Native or Non-Native	annual	–	X			
AMSMEN	<i>Amsinckia menziesii</i>	fiddleneck	Boraginaceae – Borage Family	Native	annual herb	–		X	X	
ANTCAU	<i>Anthriscus caucalis</i>	bur chervil	Aplaceae - Carrot Family	Non-native	annual herb/vine	–	X		X	
AQUFOR	<i>Aquilegia formosa</i>	crimson columbine	Ranunculaceae - Buttercup Family	Native	perennial herb	–	X			
ARCGLAN	<i>Arctostaphylos glandulosa</i>	Eastwood manzanita	Ericaceae - Heath Family	Native	shrub	–	X	X	X	
ARCGLAU	<i>Arctostaphylos glauca</i>	big berry manzanita	Ericaceae - Heath Family	native	tree, shrub	–	X	X	X	X
ARCPUN	<i>Arctostaphylos pungens</i>	Mexican manzanita	Ericaceae - Heath Family	Native	shrub	–	X			
ARGMUN	<i>Argemone munita</i>	chicolote, prickly poppy	Papaveraceae – Poppy Family	Native	annual/perennial herb	–	X			
ARTCAL	<i>Artemisia californica</i>	California sagebrush	Asteraceae – Sunflower Family	Native	shrub	–		X	X	X
ARTDOU	<i>Artemisia douglasiana</i>	mugwort	Asteraceae – Sunflower Family	Native	perennial herb	–	X	X	X	X
ARTDRA	<i>Artemisia dracunculus</i>	herbaceous sagewort	Asteraceae – Sunflower Family	Native	perennial herb	–	X	X		
ARTLUD	<i>Artemisia ludoviciana</i>	mugwort, silver wormwood	Asteraceae – Sunflower Family	Native	perennial herb	–	X		X	
ARTTRI	<i>Artemisia tridentata</i>	big sagebrush	Asteraceae – Sunflower Family	Native	shrub	–	X			
ASCFAS	<i>Asclepias fascicularis</i>	narrow leaf milkweed	Apocynaceae - Dogbone family	Native	perennial herb	–	X		X	
AVEBAR	<i>Avena barbata</i>	slender wild oat	Poaceae – Grass Family	Invasive non-native (Moderate)	annual/perennial grass	–	X	X	X	X
AVEFAT	<i>Avena fatua</i>	wild oat	Poaceae – Grass Family	Invasive non-native (Moderate)	annual grass	–	X		X	
BACPIL	<i>Baccharis pilularis</i>	coyote brush	Asteraceae – Sunflower Family	Native	shrub	–	X		X	
BACSAL	<i>Baccharis salicifolia</i>	mule fat	Asteraceae – Sunflower Family	Native	shrub	–	X	X	X	X
BARORT	<i>Barbarea orthoceras</i>	American rocket	Brassicaceae – Mustard Family	Native	perennial herb	–	X			
BLOCRO	<i>Bloomeria crocea</i> var. <i>crocea</i>	common goldenstar	Themidaceae - Brodiaea Family	Native	perennial herb	–	X			
BOECAL	<i>Boechera californica</i>	California rockcress	Brassicaceae – Mustard Family	Native	perennial herb	–		X		X

Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
BOEPUL	<i>Boechera pulchra</i>	beautiful rockcress	Brassicaceae – Mustard Family	Native	perennial herb	–	X		X	
BOESPA	<i>Boechera sparsiflora</i>	sicklepod rockcress	Brassicaceae – Mustard Family	Native	perennial herb	–	X	X		
BRANIG	<i>Brassica nigra</i>	black mustard	Brassicaceae – Mustard Family	Invasive non-native (Moderate)	annual herb	–	X	X	X	X
BRATOU	<i>Brassica tournefortii</i>	Saharan mustard	Brassicaceae – Mustard Family	Invasive non-native (High)	annual herb	–	X			
BRICAL	<i>Brickellia californica</i>	California brickellbush	Asteraceae – Sunflower Family	Native	perennial herb	–		X		
BROELE-ELE	<i>Brodiaea elegans</i> ssp. <i>elegans</i>	harvest brodiaea	Themidaceae - Brodiaea Family	Native	perennial herb	–	X			
BROTER-KER	<i>Brodiaea terrestris</i> ssp. <i>kernensis</i>	Kern dwarf brodiaea	Themidaceae - Brodiaea Family	Native	perennial herb	–	X			
BRODIA	<i>Bromus diandrus</i>	ripgut brome	Poaceae – Grass Family	Invasive non-native (Moderate)	annual grass	–	X	X	X	X
BROHOR	<i>Bromus hordeaceus</i>	soft chess	Poaceae – Grass Family	Invasive non-native (Limited)	annual grass	–	X	X	X	
BROMAD	<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome	Poaceae – Grass Family	Invasive non-native (High)	annual grass	–	X	X	X	X
BROTEC	<i>Bromus tectorum</i>	cheat grass	Poaceae – Grass Family	Invasive non-native (High)	annual grass	–	X	X	X	X
BUTCAP	<i>Butia capitata</i>	pindo palm	Arecaceae - Palm Family	Non-native	tree	–		X		
CALMEN	<i>Calandrinia menziesii</i>	red maids	Montiaceae – Montia Family	Native	annual herb	–	X			
CALCIT	<i>Callistemon citrinus</i>	crimson bottlebrush	Myrtaceae - Myrtle Family	Non-native	tree/shrub	–		X		
CALDEC	<i>Calocedrus decurrens</i>	incense cedar	Cupressaceae – Cypress Family	Native	tree	–	X		X	X
CALPLU	<i>Calochortus plummerae</i>	Plummer's mariposa lily	Liliaceae - Lily Family	Native	perennial bulbiferous	CRPR 4.2	X	X		
CALMON	<i>Calyptidium monandrum</i>	common pussypaws	Montiaceae – Montia Family	Native	annual herb	–	X			
CALOCC-FUL	<i>Calystegia occidentalis</i> ssp. <i>fulcrata</i>	chaparral false bindweed	Convolvulaceae – Morning-Glory Family	Native	perennial herb	–	X			
CAMCON	<i>Camissonia contorta</i>	contorted sun cup	Onagraceae- Evening Primrose Family	Native	annual herb	–	X			
CAMINT	<i>Camissoniopsis intermedia</i>	intermediate suncup	Onagraceae- Evening Primrose Family	Native	annual herb	–	X	X		

Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
CAMPAL-PAL	<i>Camissoniopsis pallida</i> ssp. <i>pallida</i>	pale suncup	Onagraceae- Evening Primrose Family	Native	annual herb	-	X			
CAMROB	<i>Camissoniopsis robusta</i>	robust suncup	Onagraceae- Evening Primrose Family	Native	annual herb	-	X			
CAPBUR-PAS	<i>Capsella bursa-pastoris</i>	Shepherd's purse	Brassicaceae - Mustard Family	Non-native	annual herb	-	X			
CARFLE	<i>Cardamine flexuosa</i>	woodland bittercress	Brassicaceae - Mustard Family	Non-native	annual/perennial herb	-	X			
CAR SP.	<i>Cardamine</i> sp.	bittercress species	Brassicaceae - Mustard Family	Native	annual/perennial herb	-	X		X	
CARPYC	<i>Carduus pycnocephalus</i>	Italian thistle	Asteraceae - Sunflower Family	Invasive non-native (Moderate)	annual herb	-	X	X	X	
CARALM	<i>Carex alma</i>	sturdy sedge	Cyperaceae - Sedge Family	Native	perennial grasslike herb	-	X		X	
CARMUL	<i>Carex multicaulis</i>	forest sedge	Cyperaceae - Sedge Family	Native	perennial grasslike herb	-	X		X	
CARPRA	<i>Carex praegracilis</i>	black creeper	Cyperaceae - Sedge Family	Native	perennial grasslike herb	-	X		X	
CARSCH	<i>Carex schottii</i>	Schott's sedge	Cyperaceae - Sedge Family	Native	perennial grasslike herb	-	X		X	
CAR SP.	<i>Carex</i> sp.	sedge species	Cyperaceae - Sedge Family		perennial grasslike herb	-	X		X	
CASCHR	<i>Castilleja chromosa</i>	desert paintbrush	Orobanchaceae - Broomrape family	Native	shrub	-	X			
CASFOL	<i>Castilleja foliolosa</i>	woolly paintbrush	Orobanchaceae - Broomrape family	Native	perennial herb	-	X			
CASLIN	<i>Castilleja linariifolia</i>	desert paintbrush	Orobanchaceae - Broomrape family	Native	perennial herb	-	X			
CASMIN	<i>Castilleja miniata</i>	Scarlet paintbrush	Orobanchaceae - Broomrape family	Native	perennial herb	-	X			
CEACRA	<i>Ceanothus crassifolius</i>	hoaryleaf ceanothus	Rhamnaceae - Buckthorn Family	Native	shrub	-		X	X	
CEAINT	<i>Ceanothus integerimus</i>	deer brush	Rhamnaceae - Buckthorn Family	Native	shrub	-		X	X	
CEALEU	<i>Ceanothus leucodermis</i>	chaparral whitethorn	Rhamnaceae - Buckthorn Family	Native	shrub	-	X	X	X	X
CEAOLI	<i>Ceanothus oliganthus</i>	hairy ceanothus	Rhamnaceae - Buckthorn Family	Native	shrub	-	X			
CEAPAL	<i>Ceanothus palmeri</i>	Palmer ceanothus	Rhamnaceae - Buckthorn Family	Native	shrub	-	X			

Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
CEAPAU	<i>Ceanothus pauciflorus</i> [C. greggii]	Mojave ceanothus	Rhamnaceae – Buckthorn Family	Native	shrub	–	X			
CEAPER	<i>Ceanothus perplexans</i>	cupped leaf ceanothus	Rhamnaceae – Buckthorn Family	Native	shrub	–	X			
CENBEN	<i>Centaurea benedicta</i>	blessed thistle	Asteraceae – Sunflower Family	Non-native	annual herb	–	X			
CENMEL	<i>Centaurea melitensis</i>	Tocalote	Asteraceae – Sunflower Family	Invasive non-native (Moderate)	annual herb	–	X	X	X	X
CERDEM	<i>Ceratophyllum demersum</i>	coon's tail	Ceratophyllaceae-Hornwort Family	Native	perennial herb	–	X			
CEROCC	<i>Cercis occidentalis</i>	western redbud	Fabaceae – Pea Family	Native	tree/shrub	–	X			
CERBET	<i>Cercocarpus betuloides</i>	birchleaf mountain mahogany	Rosaceae – Rose Family	Native	shrub	–	X	X		X
CHAGLA	<i>Chaenactis glabriuscula</i>	yellow pincushion	Asteraceae – Sunflower Family	Native	annual herb	–	X			
CHA SP.	<i>Chaenactis</i> sp.	pin cushion species	Asteraceae – Sunflower Family	Native	annual or perennial herb	–	X			
CHA SP.	<i>Chamaesyce</i> sp.	sandmat species	Euphorbiaceae - Spurge Family	Native or Non-Native	annual or perennial herb	–		X		
CHEALB	<i>Chenopodium album</i>	lamb's quarters	Chenopodiaceae - Goosefoot Family	Non-native	annual herb	–	X	X		X
CHECAL	<i>Chenopodium californicum</i>	California goosefoot	Chenopodiaceae - Goosefoot Family	Native	perennial herb	–	X			
CHEPRA	<i>Chenopodium pratericola</i>	desert goosefoot	Chenopodiaceae - Goosefoot Family	Native	annual herb	–	X			
CHLPOM	<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	soap plant	Agavaceae – Century Plant Family	Native	perennial herb	–	X		X	
CHO SP.	<i>Chorizanthe</i> sp.	spine flower species	Polygonaceae – Buckwheat Family	Native	annual herb	–	X		X	X
CIROCC	<i>Cirsium occidentale</i>	western thistle	Asteraceae – Sunflower Family	Native	perennial herb	–	X			
CIRVUL	<i>Cirsium vulgare</i>	bull thistle	Asteraceae – Sunflower Family	Invasive non-native (Moderate)	perennial herb	–	X	X	X	
CISINC	<i>Cistus incanus</i>	hairy rock rose	Cistaceae - Rock-rose Family	Non-native	shrub	–		X		X
CLABOT	<i>Clarkia bottae</i>	punchbowl godetia	Onagraceae - Evening Primrose Family	Native	annual herb	–	X			

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CLAHET	<i>Clarkia heterandra</i>	California gaura	Onagraceae- Evening Primrose Family	Native	annual herb	-	X			
CLAPUR- QUA	<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	purple clarkia	Onagraceae- Evening Primrose Family	Native	annual herb	-	X			
CLARHO	<i>Clarkia rhomboidea</i>	diamond clarkia	Onagraceae - Evening Primrose Family	Native	annual herb	-	X			
CLAPAR	<i>Claytonia parviflora</i>	narrow leaved miner's lettuce	Montiaceae - Montia Family	Native	annual herb	-	X		X	X
CLAPER	<i>Claytonia perfoliata</i>	miner's lettuce	Montiaceae - Montia Family	Native	annual herb	-	X		X	
COLHET-AUS	<i>Collinsia heterophylla</i> var. <i>austromontana</i>	purple chinese houses	Plantaginaceae - Plantain Family	Native	annual herb	-	X			
COLPAR	<i>Collinsia parryi</i>	Parry's collinsia	Plantaginaceae - Plantain Family	Native	annual herb	-	X			
COLPAR	<i>Collinsia parviflora</i>	few flowered blue eyed mary	Scrophulariaceae - Figwort Family	Native	annual herb	-	X			
COLGRA	<i>Collomia grandiflora</i>	large-flowered collomia	Polemoniaceae - Phlox Family	Native	annual herb	-	X			
CONMAC	<i>Conium maculatum</i>	poison hemlock	Aplaceae - Carrot Family	Invasive non-native (Moderate)	perennial herb	-	X		X	
CONARV	<i>Convolvulus arvensis</i>	field bindweed	Convolvulaceae - Morning-Glory Family	Non-native	perennial herb, vine	-	X		X	
CORRIG-SET	<i>Cordylanthus rigidus</i> ssp. <i>setiger</i>	bristly bird's beak	Orobanchaceae - Broomrape family	Native	annual herb (hemiparasitic)	-	X			
CORFIL-FIL	<i>Corethrogyne filaginifolia</i> var. <i>filaginifolia</i>	common sandaster	Asteraceae - Sunflower Family	Native	perennial herb	-	X		X	
CORSEL	<i>Cortaderia selloana</i>	Uruguayan pampas grass	Poaceae - Grass Family	Invasive non-native (High)	perennial grass	-	X			
CRACON	<i>Crassula connata</i>	pigmy weed	Crassulaceae - Stonecrop Family	Native	annual herb	-	X	X		
CROCAL	<i>Croton californicus</i>	California croton	Euphorbiaceae - Spurge Family	Native	perennial herb	-		X		X
CROSET	<i>Croton setiger</i>	turkey-mullein	Euphorbiaceae - Spurge Family	Native	annual herb	-	X	X		X
CRYBAR- BAR	<i>Cryptantha barbiger</i> var. <i>barbiger</i>	bearded cryptantha	Boraginaceae - Borage Family	Native	annual herb	-	X		X	
CRYDEC	<i>Cryptantha decipiens</i>	gravel cryptantha	Boraginaceae - Borage Family	Native	annual herb	-	X			

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CRYINT	<i>Cryptantha intermedia</i>	common cryptantha	Boraginaceae – Borage Family	Native	annual herb	–	X	X	X	X
CRYMUR	<i>Cryptantha muricata</i>	pointed cryptantha	Boraginaceae – Borage Family	Native	annual herb	–	X	X	X	
CUSCAL-CAL	<i>Cuscuta californica</i> var. <i>californica</i>	California witch's hair	Convolvulaceae – Morning-Glory Family	Native	annual herb, vine	–		X		
CYNECH	<i>Cynosurus echinatus</i>	annual dogtail grass	Poaceae – Grass Family	Non-native	annual grass	–	X		X	
CYPERY	<i>Cyperus erythrorhizos</i>	red rooted cyperus	Cyperaceae - Sedge Family	Native	annual grasslike herb	–	X			
DATGLO	<i>Datisca glomerata</i>	durango root	Datisceae-Datisca Family	Native	perennial herb	–	X			
DATWRI	<i>Datura wrightii</i>	jimsonweed	Solanaceae - Nightshade Family	Native	perennial herb	–	X	X		X
DAUCAR	<i>Daucus carota</i>	Queen Anne's lace	Aplacaeae - Carrot Family	Non-native	perennial herb	–	X		X	
DELCAR	<i>Delphinium cardinale</i>	scarlet larkspur	Ranunculaceae - Buttercup Family	Native	perennial herb	–		X		X
DELPAR-PAR	<i>Delphinium parryi</i> ssp. <i>parryi</i>	Parry's larkspur	Ranunculaceae - Buttercup Family	Native	perennial herb	–	X			
DENRIG	<i>Dendromecon rigida</i>	bush poppy	Papaveraceae – Poppy Family	Native	shrub	–	X			
DESINC	<i>Descurainia incana</i>	Mountain tansy mustard	Brassicaceae – Mustard Family	Native	perennial herb	–	X			
DESPIN	<i>Descurainia pinnata</i>	western tansy mustard	Brassicaceae – Mustard Family	Native	annual herb	–	X			
DESSOP	<i>Descurainia sophia</i>	herb sophia	Brassicaceae – Mustard Family	Invasive non-native (Limited)	annual herb	–	X			
DICFOR	<i>Dicentra formosa</i>	Pacific bleedinghearts	Papaveraceae – Poppy Family	Native	perennial herb	–	X			
DICCAP	<i>Dichelostemma capitatum</i>	blue dicks	Themidaceae - Brodiaea Family	Native	perennial herb	–	X	X	X	
DIMSIN	<i>Dimorphotheca sinuata</i>	African daisy	Asteraceae – Sunflower Family	Non-native	annual herb	–		X		
DRAVER	<i>Draba verna</i>	spring draba	Brassicaceae – Mustard Family	Native	annual herb	–	X			
DRYGLA	<i>Drymocallis glandulosa</i>	sticky cinquefoil	Rosaceae – Rose Family	Native	perennial herb	–	X			
DUDLAN	<i>Dudleya lanceolata</i>	lance-leaved dudleya	Crassulaceae - Stonecrop Family	Native	perennial herb	–	X			
DUD SP.	<i>Dudleya</i> sp.	dudleya species	Crassulaceae - Stonecrop Family	Native	perennial herb	–	X			

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ECHCRU-GAL	<i>Echinochloa crus-galli</i>	Japanese millet	Poaceae – Grass Family	Non-native	annual grass	–	X			
EHRCHR	<i>Ehrendorferia chrysantha</i>	golden eardrops	Papaveraceae – Poppy Family	Native	perennial herb	–		X		
ELAANG	<i>Elaeagnus angustifolia</i>	Russian olive	Oleaceae - Olive Family	Invasive non-native (Moderate)	tree	–		X		
ELEPAR	<i>Eleocharis parishii</i>	Parish's spike rush	Cyperaceae - Sedge Family	Native	annual/perennial grasslike herb	–	X		X	
ELEMAR	<i>Eleocharis macrostachya</i>	common spikerush	Cyperaceae - Sedge Family	Native	perennial grasslike herb	–	X		X	
ELYCON	<i>Elymus condensatus</i>	giant wild rye	Poaceae – Grass Family	Native	perennial grass	–		X		X
ELYGLA	<i>Elymus glaucus</i>	blue wildrye	Poaceae – Grass Family	Native	perennial grass	–	X	X	X	
ELYLAN	<i>Elymus lanceolatus</i>	thick spiked wheatgrass	Poaceae – Grass Family	Native	perennial grass	–	X		X	
ELYMUL	<i>Elymus multisetus</i>	big squirreltail grass	Poaceae – Grass Family	Native	perennial grass	–	X			
ELYTRI	<i>Elymus triticoides</i>	beardless wild rye	Poaceae – Grass Family	Native	perennial grass	–	X		X	
EMMPEN-PEN	<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>	whispering bells	Boraginaceae – Borage Family	Native	annual herb	–	X	X		
ENCFAR	<i>Encelia farinosa</i>	brittlebush	Asteraceae – Sunflower Family	Native	shrub	–		X		
ENC SP.	<i>Encelia</i> sp.	brittlebush species	Asteraceae – Sunflower Family	Native	shrub	–	X			
EPHVIR	<i>Ephedra viridis</i>	green ephedra	Ephedraceae – Ephedra Family	Native	shrub	–	X			
EPIBRA	<i>Epilobium brachycarpum</i>	annual fireweed	Onagraceae- Evening Primrose Family	Native	annual herb	–	X			
EPICAN	<i>Epilobium canum</i>	California fushia	Onagraceae - Evening Primrose Family	Native	perennial herb	–	X	X		X
EPICIL	<i>Epilobium ciliatum</i>	willow herb	Onagraceae - Evening Primrose Family	Native	perennial herb	–	X		X	
EQUARV	<i>Equisetum arvense</i>	common horsetail	Equisetaceae - Horsetail Family	Native	fern	–	X		X	
ERIDEN-AUS	<i>Eriastrum densifolium</i> ssp. <i>austromontanum</i>	southern mountain eriastrum	Polemoniaceae - Phlox Family	Native	perennial herb	–	X			
ERISAP	<i>Eriastrum sapphirinum</i>	sapphire eriastrum	Polemoniaceae - Phlox Family	Native	annual herb	–		X		

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ERILIN	<i>Ericameria linearifolia</i>	interior goldenbush	Asteraceae – Sunflower Family	Native	shrub	–	X	X		
ERINAU	<i>Ericameria nauseosa</i>	rubber rabbitbrush	Asteraceae – Sunflower Family	Native	shrub	–	X	X	X	
ERIPIN	<i>Ericameria pinifolia</i>	pine bush	Asteraceae – Sunflower Family	Native	shrub	–	X	X		X
ERI SP.	<i>Ericameria</i> sp.	rabbitbrush species	Asteraceae – Sunflower Family	Native	shrub	–	X			
ERICAN	<i>Erigeron canadensis</i>	horseweed	Asteraceae – Sunflower Family	Native	annual herb	–	X			
ERIFOL-FOL	<i>Erigeron foliosus</i> var. <i>foliosus</i>	leafy fleabane	Asteraceae – Sunflower Family	Native	perennial herb/shrub	–	X			
ERITRI-TRI	<i>Eriodictyon trichocalyx</i> var. <i>trichocalyx</i>	hairy yerba santa	Boraginaceae – Borage Family	Native	shrub	–	X	X	X	X
ERIANG	<i>Eriogonum angulosum</i>	anglestem buckwheat	Polygonaceae – Buckwheat Family	Native	annual herb	–	X			
ERIDAV	<i>Eriogonum davidsonii</i>	Davidson buckwheat	Polygonaceae – Buckwheat Family	Native	annual herb	–	X			
ERIELO	<i>Eriogonum elongatum</i>	longstem buckwheat	Polygonaceae – Buckwheat Family	Native	perennial herb	–	X			
ERIFAS	<i>Eriogonum fasciculatum</i>	California buckwheat	Polygonaceae – Buckwheat Family	Native	shrub	–	X	X	X	X
ERIGRA- GRA	<i>Eriogonum gracile</i> var. <i>gracile</i>	slender wooly buckwheat	Polygonaceae – Buckwheat Family	Native	annual herb	–	X			
ERIMOL	<i>Eriogonum molestum</i>	pineland buckwheat	Polygonaceae – Buckwheat Family	Native	annual herb	–	X			
ERI SP.	<i>Eriogonum</i> sp.	annual buckwheat species	Polygonaceae – Buckwheat Family	Native	herb	–	X	X		
ERICON- CON	<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	golden yarrow	Asteraceae – Sunflower Family	Native	shrub	–	X	X		X
EROBOT	<i>Erodium botrys</i>	longbeak stork's bill	Geraniaceae – Geranium Family	Non-native	annual herb	–		X	X	X
EROCIC	<i>Erodium cicutarium</i>	red-stem filaree	Geraniaceae – Geranium Family	Invasive non-native (Limited)	annual herb	–	X	X	X	
EROMOS	<i>Erodium moschatum</i>	white stemmed filaree	Geraniaceae – Geranium Family	Non-native	annual herb	–		X		X
ESCCAL	<i>Eschscholzia californica</i>	California poppy	Papaveraceae – Poppy Family	Native	annual/perennial herb	–	X	X	X	
EUCCAM	<i>Eucalyptus camaldulensis</i>	red gum	Myrtaceae - Myrtle Family	Invasive non-native (Limited)	tree	–		X		
EUCGLO	<i>Eucalyptus globulus</i>	blue gum	Myrtaceae - Myrtle Family	Invasive non-native (Moderate)	tree	–		X	X	

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EUCCHR	<i>Eucrypta chrysanthemifolia</i>	common eucrypta	Boraginaceae – Borage Family	Native	annual herb	–		X		X
EULCAL	<i>Eulobus californicus</i>	California primrose	Onagraceae - Evening Primrose Family	Native	annual herb	–		X		
EUPALB	<i>Euphorbia albomarginata</i>	rattlesnake sandmat	Euphorbiaceae - Spurge Family	Native	perennial herb	–	X			
EUTOCC	<i>Euthamia occidentalis</i>	western goldenrod	Asteraceae – Sunflower Family	Native	perennial herb	–	X			
FESARU	<i>Festuca arundinacea</i>	tall fescue	Poaceae – Grass Family	Non-native	perennial grass	–	X		X	
FESMIC	<i>Festuca microstachys</i>	small fescue	Poaceae – Grass Family	Native	annual grass	–	X			
FESMYU	<i>Festuca myuros</i>	annual fescue	Poaceae – Grass Family	Invasive non-native (Moderate)	annual grass	–	X	X	X	X
FESPER	<i>Festuca perennis</i>	rye grass	Poaceae – Grass Family	Invasive non-native (Moderate)	annual/perennial grass	–	X		X	
FESRUB	<i>Festuca rubra</i>	red fescue	Poaceae – Grass Family	Native	perennial grass	–	X			
FICCAR	<i>Ficus carica</i>	common fig	Moraceae - Mulberry Family	Invasive non-native (Moderate)	tree	–		X		
FRACAL-CUS	<i>Frangula californica</i> ssp. <i>cuspidata</i>	California coffeeberry	Rhamnaceae – Buckthorn Family	Native	shrub	–		X		X
FRACAL-URS	<i>Frangula californica</i> ssp. <i>ursina</i>	California coffeeberry	Rhamnaceae – Buckthorn Family	Native	shrub	–	X		X	
FRAUHD	<i>Fraxinus uhdei</i>	shamel ash	Oleaceae - Olive Family	Non-native	tree	–	X			
FRAVEL	<i>Fraxinus velutina</i>	Arizona ash	Oleaceae - Olive Family	Native	tree	–	X		X	
FRECAL	<i>Fremontodendron californicum</i>	California flannelbush	Malvaceae - Mallow Family	Native	shrub	–	X	X		X
GALANG	<i>Galium angustifolium</i>	Narrowleaf bedstraw	Rubiaceae - Madder Family	Native	perennial herb	–	X			
GALAPA	<i>Galium aparine</i>	common bedstraw	Rubiaceae - Madder Family	Native	annual herb	–	X			X
GALPOR-POR	<i>Galium porrigens</i> var. <i>porrigens</i>	climbing bedstraw	Rubiaceae - Madder Family	Native	vine/shrub	–	X			X
GAY SP.	<i>Gayophytum</i> sp.	groundsmoke species	Onagraceae - Evening Primrose Family	Native	annual herb	–	X			
GILCAP-ABR	<i>Gilia capitata</i> ssp. <i>abrotanifolia</i>	ball gilia	Polemoniaceae - Phlox Family	Native	annual herb	–	X			X
GILINC	<i>Gilia inconspicua</i>	shy gilia	Polemoniaceae - Phlox Family	Native	annual herb	–	X			

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HAZSQU	<i>Hazardia squarrosa</i>	saw-toothed goldenbush	Asteraceae – Sunflower Family	Native	shrub	–		X		X
HELANN	<i>Helianthus annuus</i>	common sunflower	Asteraceae – Sunflower Family	Native	perennial herb	–		X		
HELCUR	<i>Heliotropium curassavicum</i>	alkali heliotrope	Boraginaceae – Borage Family	Native	perennial herb	–		X		
HESWHI	<i>Hesperoyucca whipplei</i>	chaparral yucca	Agavaceae – Century Plant Family	Native	shrub	–	X	X	X	X
HETGRA	<i>Heterotheca grandiflora</i>	telegraph weed	Asteraceae – Sunflower Family	Native	annual / perennial herb	–	X	X		X
HORMUR	<i>Hordeum murinum</i>	Mediterranean barley	Poaceae – Grass Family	Invasive non-native (Moderate)	annual grass	–	X	X	X	
HOSCRA-CRA	<i>Hosackia crassifolia</i> var. <i>crassifolia</i>	Broad leaved lotus	Fabaceae – Pea Family	Native	perennial herb	–	X			
HOSOBL	<i>Hosackia oblongifolia</i>	narrow leaved lotus	Fabaceae – Pea Family	Native	perennial herb	–	X			
HYP SP.	<i>Hypericum</i> sp.	st. johnswort species	Hypericaceae- St. Johnswort Family	Native or Non-Native	annual herb or shrub	–	X		X	
HYPGLA	<i>Hypochaeris glabra</i>	smooth cat's ear	Asteraceae – Sunflower Family	Invasive non-native (Limited)	annual herb	–	X	X		
ISO. SP	<i>Isocoma</i> sp.	goldenbush species	Asteraceae – Sunflower Family	Native	shrub	–	X			
JUGCAL	<i>Juglans californica</i>	southern California black walnut	Juglandaceae - Walnut Family	Native	tree	CRPR 4.2	X	X		X
JUGREG	<i>Juglans regia</i>	English walnut	Juglandaceae - Walnut Family	Non-native	tree	–	X			
JUNBAL	<i>Juncus balticus</i>	Baltic rush	Juncaceae - Rush Family	Native	perennial grasslike herb	–	X		X	
JUNBUF	<i>Juncus bufonius</i>	common toad rush	Juncaceae - Rush Family	Native	annual grasslike herb	–	X		X	
JUNEFF	<i>Juncus effusus</i>	bog rush	Juncaceae - Rush Family	Native	perennial grasslike herb	–	X		X	
JUNMAC	<i>Juncus macrophyllus</i>	longleaf rush	Juncaceae - Rush Family	Native	annual grasslike herb	–	X		X	
JUNMEX	<i>Juncus mexicanus</i>	Mexican rush	Juncaceae - Rush Family	Native	perennial grasslike herb	–		X	X	X
JUNRUG	<i>Juncus rugulosus</i>	wrinkled rush	Juncaceae - Rush Family	Native	perennial grasslike herb	–	X		X	
JUN SP.	<i>Juncus</i> sp.	rush species	Juncaceae - Rush Family	Native	perennial grasslike herb	–	X		X	
JUNXIP	<i>Juncus xiphioides</i>	iris leaved rush	Juncaceae - Rush Family	Native	perennial grasslike herb	–	X		X	

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JUNCAL	<i>Juniperus californica</i>	California juniper	Cupressaceae – Cypress Family	Native	shrub	–	X			
JUNI SP.	<i>Juniperus</i> sp. (planted ornamental)	juniper species	Cupressaceae – Cypress Family	Non-native	shrub	–		X		
KECCOR	<i>Keckiella cordifolia</i>	heart leaved penstemon	Plantaginaceae - Plantain Family	Native	shrub	–		X		X
KECTER-TER	<i>Keckiella ternata</i> var. <i>ternata</i>	blue-stemmed keckiella	Plantaginaceae - Plantain Family	Native	shrub	–	X	X		X
LACSER	<i>Lactuca serriola</i>	prickly lettuce	Asteraceae – Sunflower Family	Non-native	annual herb	–	X	X		
LAGRAM	<i>Lagophylla ramosissima</i>	common hareleaf	Asteraceae – Sunflower Family	Native	annual herb	–	X			
LAMAMP	<i>Lamium amplexicaule</i>	henbit	Lamiaceae – Mint Family	Non-native	annual herb	–	X		X	X
LASGRA	<i>Lasthenia gracilis</i>	needle goldfields	Asteraceae – Sunflower Family	Native	annual herb	–	X			
LATLAT	<i>Lathyrus latifolius</i>	perennial sweet pea	Fabaceae – Pea Family	Non-native	perennial herb	–	X		X	X
LATVES-VES	<i>Lathyrus vestitus</i> var. <i>vestitus</i>	common Pacific pea	Fabaceae – Pea Family	Native	perennial herb	–	X			
LEMMIN	<i>Lemna minuta</i>	least duckweed	Araceae- Arum Family	Native	perennial herb	–	X		X	
LEPOBL	<i>Lepidium (oblongum)</i>	veiny peppergrass	Brassicaceae – Mustard Family	Native	annual herb	–	X			
LEPCAM	<i>Lepidium campestre</i>	English pepper grass	Brassicaceae – Mustard Family	Non-native	annual/perennial herb	–	X			
LEPLAT	<i>Lepidium latifolium</i>	broadleaved pepperweed	Brassicaceae – Mustard Family	Invasive non-native (High)	perennial herb	–	X		X	
LEP SP.	<i>Lepidium</i> sp.	English pepperweed species	Brassicaceae – Mustard Family	Native or Non-Native	annual/perennial herb	–	X			
LEPVIR-MEN	<i>Lepidium virginicum</i> var. <i>menziesii</i>	Robinson's pepper grass	Brassicaceae – Mustard Family	Native	annual herb	–	X			
LEPSQU	<i>Lepidospartum squamatum</i>	scalebroom	Asteraceae – Sunflower Family	Native	shrub	–	X	X		
LEPCIL	<i>Leptosiphon ciliatus</i>	wiskerbrush	Polemoniaceae - Phlox Family	Native	annual herb	–	X			
LEPLIN	<i>Leptosiphon liniflorus</i>	narrowflower flaxflower	Polemoniaceae - Phlox Family	Native	annual herb	–	X			
LESGLA	<i>Lessingia glandulifera</i>	valley vinegar weed	Asteraceae – Sunflower Family	Native	annual herb	–	X			
LILHUM-OCE	<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily	Liliaceae- Lily Family	Native	perennial herb (bulb)	CRPR 4.2	X			

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LINCAL	<i>Linanthus californicus</i>	prickly phlox	Polemoniaceae - Phlox Family	Native	shrub	-		X		X
LOGGAL	<i>Logfia gallica</i>	daggerleaf cottonrose	Asteraceae - Sunflower Family	Non-native	annual herb	-		X		
LOMCAL	<i>Lomatium californicum</i>	California lomatium	Apiaceae - Carrot Family	Native	perennial herb	-	X		X	
LOMDIS	<i>Lomatium dissectum</i>	fern leaved lomatium	Apiaceae - Carrot Family	Native	perennial herb	-	X			
LONINT	<i>Lonicera interrupta</i>	honeysuckle	Caprifoliaceae - Honeysuckle Family	Native	vine/shrub	-	X		X	
LONSUB	<i>Lonicera subspicata</i> var. <i>denudata</i>	chaparral honeysuckle	Caprifoliaceae - Honeysuckle Family	Native	shrub	-		X		X
LUPBIC	<i>Lupinus bicolor</i>	bicolored lupine	Fabaceae - Pea Family	Native	annual/perennial herb	-	X	X	X	X
LUPCON	<i>Lupinus concinnus</i>	bajada lupine	Fabaceae - Pea Family	Native	annual herb	-	X		X	
LUPHIR	<i>Lupinus hirsutissimus</i>	stinging lupine	Fabaceae - Pea Family	Native	annual herb	-		X		
LUPLAT	<i>Lupinus latifolius</i>	broad leaved lupine	Fabaceae - Pea Family	Native	perennial herb	-	X		X	
LUPSPA	<i>Lupinus sparsiflorus</i>	Coulter's lupine	Fabaceae - Pea Family	Native	annual herb	-	X			
LYSARV	<i>Lysimachia arvensis</i>	scarlet pimpernel	Myrsinaceae - Myrsine Family	Non-native	annual herb	-		X	X	
MADELE	<i>Madia elegans</i>	common madia	Asteraceae - Sunflower Family	Native	annual herb	-	X			
MADGRA	<i>Madia gracilis</i>	grassy tarweed	Asteraceae - Sunflower Family	Native	annual herb	-	X			X
MALFAS	<i>Malacothamnus fasciculatus</i> var. <i>fasciculatus</i>	chaparral mallow	Malacothamnus - Mallow Family	Native	shrub	-	X	X		X
MAL SP.	<i>Malacothrix</i> sp.	desert dandelion species	Asteraceae - Sunflower Family	Native	annual or perennial herb	-	X			
MALLAU	<i>Malosma laurina</i>	laurel sumac	Anacardiaceae - Sumac Family	Native	shrub	-		X		X
MARMAC	<i>Marah macrocarpa</i>	chilicothe	Cucurbitaceae - Gourd Family	Native	perennial herb, vine	-	X	X		X
MARVUL	<i>Marrubium vulgare</i>	white horehound	Lamiaceae - Mint Family	Invasive non-native (Limited)	perennial herb	-		X		
MATDIS	<i>Matricaria discoidea</i>	pineapple weed	Asteraceae - Sunflower Family	Native	annual herb	-	X		X	
MEDPOL	<i>Medicago polymorpha</i>	California burclover	Fabaceae - Pea Family	Invasive non-native (Limited)	annual herb	-		X	X	X

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MELAZE	<i>Melia azedarath</i>	china berry tree	Meliaceae - Mahogany Family	Non-native	tree	-		X		
MELCAL	<i>Melica californica</i>	California melicgrass	Poaceae - Grass Family	Native	perennial grass	-	X			
MELIMP	<i>Melica imperfecta</i>	coast range melic	Poaceae - Grass Family	Native	perennial grass	-	X	X		X
MELIND	<i>Melilotus indicus</i>	sourclover	Fabaceae - Pea Family	Non-native	annual herb	-	X	X		X
MELOFF	<i>Melilotus officinalis</i>	yellow sweetclover	Fabaceae - Pea Family	Non-native	annual/biennial herb	-	X			
MEL	<i>Melilotus</i> sp.	sweet clover species	Fabaceae - Pea Family	Non-native	annual/biennial herb	-	X			
MANSPI	<i>Mentha spicata</i>	spearmint	Lamiaceae - Mint Family	Non-native	perennial herb	-	X		X	
MIMAN	<i>Mimulus androsaceus</i>	rockjasmine monkeyflower	Phrymaceae - Lopseed Family	Native	annual herb	-	X			
MIMAU-PUB	<i>Mimulus aurantiacus</i> var. <i>pubescens</i>	sticky monkeyflower	Phrymaceae - Lopseed Family	Native	shrub	-	X	X	X	X
MIMBIG-BIG	<i>Mimulus bigelovii</i> var. <i>bigelovii</i>	Bigelow's monkeyflower	Phrymaceae - Lopseed Family	Native	annual herb	-	X			
MIMCAR	<i>Mimulus cardinalis</i>	scarlet monkeyflower	Phrymaceae - Lopseed Family	Native	perennial herb	-	X	X		
MIMFLO	<i>Mimulus floribundus</i>	Many flowered monkeyflower	Phrymaceae - Lopseed Family	Native	annual herb	-	X			
MIMGUT	<i>Mimulus guttatus</i>	seep spring monkey flower	Phrymaceae - Lopseed Family	Native	annual/perennial herb (rhizomatous)	-	X	X		X
MIMPAR	<i>Mimulus parishii</i>	Parish's monkeyflower	Phrymaceae - Lopseed Family	Native	annual herb	-	X			
MIMPIL	<i>Mimulus pilosus</i>	Downy monkeyflower	Phrymaceae - Lopseed Family	Native	perennial herb	-	X			
MIM SP.	<i>Mimulus</i> sp.	monkey flower species	Phrymaceae - Lopseed Family	Native	perennial herb	-	X			
MUHERG	<i>Muhlenbergia rigens</i>	deergrass	Poaceae - Grass Family	Native	perennial grass	-	X			
MYRCLE	<i>Myriopteris clevelandii</i>	Cleveland's lip fern	Pteridaceae-Maidenhair Fern Family	Native	fern	-	X			
NASOFF	<i>Nasturtium officinale</i>	watercress	Brassicaceae - Mustard Family	Native	perennial herb (aquatic)	-	X			
NEMPED	<i>Nemophila pedunculata</i>	littlefoot nemophila	Boraginaceae - Borage Family	Native	annual herb	-	X			

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NEROLE	<i>Nerium oleander</i>	oleander	Apocynaceae - Dogbone family	Non-native	tree	-		X		
NICATT	<i>Nicotiana attenuata</i>	coyote tobacco	Solanaceae - Nightshade Family	Native	annual herb	-	X			
NICGLA	<i>Nicotiana glauca</i>	tree tobacco	Solanaceae - Nightshade Family	Invasive non-native (Moderate)	shrub	-		X		X
OENCAL-CAL	<i>Oenothera californica</i> ssp. <i>Californica</i>	California evening primrose	Onagraceae- Evening Primrose Family	Native	perennial herb	-	X			
OENELA	<i>Oenothera elata</i>	evening primrose	Onagraceae - Evening Primrose Family	Native	perennial herb	-	X			
OPULIT	<i>Opuntia littoralis</i>	coast prickly pear	Cactaceae - Cactus Family	Native	shrub (stem succulent)	-		X		
OPUFIC-IND	<i>Opuntia ficus-indica</i>	mission prickly-pear	Cactaceae - Cactus Family	Non-native	shrub (stem succulent)	-		X		
OROBUL	<i>Orobanche bulbosa</i>	chaparral broomrape	Orobanchaceae - Broomrape family	Native	perennial herb (parasitic)	-	X			
OROFAS	<i>Orobanche fasciculata</i>	clustered broomrape	Orobanchaceae - Broomrape family	Native	perennial herb (parasitic)	-	X			
OSMBER	<i>Osmorhiza berteroi</i>	sweet cicely	Aplaceae - Carrot Family	Native	perennial herb	-	X		X	
PASSMI	<i>Pascopyrum smithii</i>	western wheatgrass	Poaceae - Grass Family	Native	perennial grass	-	X			
PECLIN	<i>Pectocarya linearis</i>	narrow-toothed pectocarya	Boraginaceae - Borage Family	Native	annual herb	-	X	X		
PECPEN	<i>Pectocarya penicillata</i>	sleeping combseed	Boraginaceae - Borage Family	Native	annual herb	-	X			
PECSET	<i>Pectocarya setosa</i>	round-nut pectocarya	Boraginaceae - Borage Family	Native	annual herb	-	X			
PELMUC	<i>Pellaea mucronata</i>	bird's foot fern	Pteridaceae- Maidenhair Fern Family	Native	fern	-	X	X		X
PENSET	<i>Pennisetum setaceum</i>	fountain grass	Poaceae - Grass Family	Invasive non-native (Moderate)	perennial grass	-		X		
PENCEN	<i>Penstemon centranthifolius</i>	scarlet bugler	Plantaginaceae - Plantain Family	Native	perennial herb	-	X	X		X
PENSPE	<i>Penstemon spectabilis</i>	showy penstemon	Plantaginaceae - Plantain Family	Native	perennial herb	-	X	X	X	X
PENSPE-SPE	<i>Penstemon spectabilis</i> var. <i>spectabilis</i>	showy penstemon	Plantaginaceae - Plantain Family	Native	perennial herb	-	X			
PERMAC	<i>Persicaria maculosa</i>	spotted ladythumb	Polygonaceae - Buckwheat Family	Non-native	annual herb	-	X			

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PHABRA	<i>Phacelia brachyloba</i>	short lobed phacelia	Boraginaceae – Borage Family	Native	annual herb	–	X	X		
PHACIC	<i>Phacelia cicutaria</i>	caterpillar phacelia	Boraginaceae – Borage Family	Native	annual herb	–	X	X		X
PHADIS	<i>Phacelia distans</i>	common phacelia	Boraginaceae – Borage Family	Native	annual herb	–	X	X		X
PHAMIN	<i>Phacelia minor</i>	wild canterbury bells	Boraginaceae – Borage Family	Native	annual herb	–		X		
PHA SP.	<i>Phalaris</i> sp.	canarygrass species	Poaceae – Grass Family	Native or Non-Native	annual grass	–		X	X	
PHOCAN	<i>Phoenix canariensis</i>	Canary island date palm	Arecaceae – Palm Family	Invasive non-native (Limited)	tree	–		X		
PHOLEU	<i>Phoradendron leucarpum</i>	big leaf mistletoe	Viscaceae – Mistletoe Family	Native	shrub (parasitic)	–	X		X	X
PINATT	<i>Pinus attenuata</i>	knobcone pine	Pinaceae - Pine Family	Native	tree	–	X			
PINJEF	<i>Pinus jeffreyi</i>	Jeffrey pine	Pinaceae - Pine Family	Native	tree	–	X		X	
PINMON	<i>Pinus monophylla</i>	singleleaf pinyon pine	Pinaceae - Pine Family	Native	tree	–	X			
PINPON	<i>Pinus ponderosa</i>	Ponderosa pine	Pinaceae - Pine Family	Native	tree	–	X		X	
PIT SP.	<i>Pittosporum</i> sp.	leaf box species	Pittosporaceae - Pittosporum Family	Non-native (ornamental)	shrub	–	X	X		
PLACAN	<i>Plagiobothrys canescens</i>	Valley popcornflower	Boraginaceae – Borage Family	Native	annual herb	–	?	X	X	
PLACOL-CAL	<i>Plagiobothrys collinus</i> var. <i>californicus</i>	California popcornflower	Boraginaceae – Borage Family	Native	annual herb	–	X			
PLAHIS	<i>Plagiobothrys hispidulus</i>	harsh popcorn flower	Boraginaceae – Borage Family	Native	annual herb	–	X		X	
PLALAN	<i>Plantago lanceolata</i>	English plantain	Plantaginaceae - Plantain Family	Invasive non-native (Limited)	perennial herb	–	X		X	
PLARAC	<i>Platanus racemosa</i>	western sycamore	Platanaceae – Sycamore Family	Native	tree	–	X	X	X	X
POAANN	<i>Poa annua</i>	annual bluegrass	Poaceae – Grass Family	Non-native	annual grass	–	X		X	
POABUL	<i>Poa bulbosa</i>	bulbos bluegrass	Poaceae – Grass Family	Non-native	perennial grass	–	X		X	
POAPRA	<i>Poa pratensis</i>	Kentucky bluegrass	Poaceae – Grass Family	Non-native	perennial grass	–	X		X	
POAPRA	<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky bluegrass	Poaceae – Grass Family	Invasive non-native (Limited)	perennial grass	–	X			

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POASEC	<i>Poa secunda</i>	pine bluegrass	Poaceae – Grass Family	Native	perennial grass	–	X		X	
POLAVI	<i>Polygonum aviculare</i>	prostrate knotweed	Polygonaceae – Buckwheat Family	Non-native	annual/perennial herb	–	X			
POLINT	<i>Polypogon interruptus</i>	ditch rabbitsfoot grass	Poaceae – Grass Family	Non-native	perennial grass	–	X			
POLMON	<i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	Poaceae – Grass Family	Invasive non-native (Limited)	annual grass	–	X	X		
POLIMB	<i>Polystichum imbricans</i>	cliff sword fern	Dryopteridaceae - Wood Fern Family	Native	fern	–	X		X	
POPFRE-FRE	<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	Salicaceae – Willow Family	Native	tree	–	X	X	X	
PRUARM	<i>Prunus armeniaca</i>	apricot	Rosaceae – Rose Family	Non-native	tree	–	X			
PRUILI-ILI	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i>	holly leaf cherry	Rosaceae – Rose Family	Native	tree/shrub	–	X	X		X
PRUVIR	<i>Prunus virginiana</i> var. <i>demissa</i>	western choke cherry	Rosaceae – Rose Family	Native	tree/shrub	–	X			
PSECAL	<i>Pseudognaphalium californicum</i>	ladies' tobacco	Asteraceae – Sunflower Family	Native	annual/perennial herb	–	X			X
PSELUT	<i>Pseudognaphalium luteoalbum</i>	jersey cudweed	Asteraceae – Sunflower Family	Non-native	annual herb	–	X	X		
PSETRA	<i>Pseudognaphalium stramineum</i>	cottonbatting plant	Asteraceae – Sunflower Family	Native	perennial herb	–	X			
PSEMAC	<i>Pseudotsuga macrocarpa</i>	bigcone spruce	Pinaceae - Pine Family	Native	tree	–	X			
PTEAQU	<i>Pteridium aquilinum</i>	western brackenfern	Dennstaedtiaceae-Braken Fern Family	Native	fern	–	X		X	
QUEAGR	<i>Quercus agrifolia</i>	coast live oak	Fagaceae – Oak Family	Native	tree	–	X	X	X	X
QUEBER	<i>Quercus berberidifolia</i>	inland scrub oak	Fagaceae – Oak Family	Native	tree	–	X		X	X
QUECHR	<i>Quercus chrysolepis</i>	gold cup live oak	Fagaceae – Oak Family	Native	tree	–	X	X	X	X
QUEKEL	<i>Quercus kelloggii</i>	California black oak	Fagaceae – Oak Family	Native	tree	–	X		X	
QUEWIS-FRU	<i>Quercus wislizeni</i> var. <i>frutescens</i>	bush interior live oak	Fagaceae – Oak Family	Native	shrub	–	X	X		X
QUEWIS-WIS	<i>Quercus wislizeni</i> var. <i>wislizeni</i>	interior live oak	Fagaceae – Oak Family	Native	tree	–	X		X	X
RHACRO	<i>Rhamnus crocea</i>	spiny redberry	Rhamnaceae – Buckthorn Family	Native	shrub	–		X		

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RHAILI	<i>Rhamnus ilicifolia</i>	hollyleaf redberry	Rhamnaceae – Buckthorn Family	Native	shrub	–	X	X		
RHUARO	<i>Rhus aromatica</i>	skunk bush	Anacardiaceae – Sumac Family	Native	shrub	–	X			
RHUOVA	<i>Rhus ovata</i>	sugar bush	Anacardiaceae – Sumac Family	Native	shrub	–	X	X	X	X
RIBIND	<i>Ribes indecorum</i>	white flowering currant	Grossulariaceae - Currant Family	Native	shrub	–	X		X	
RICCOM	<i>Ricinus communis</i>	castorbean	Euphorbiaceae - Spurge Family	Invasive non-native (Limited)	shrub	–		X		
ROBPSE	<i>Robinia pseudoacacia</i>	black locust	Fabaceae – Pea Family	Invasive non-native (Limited)	tree	–	X	X		X
RORPAL	<i>Rorippa palustris</i>	bog yellow cress	Brassicaceae – Mustard Family	Native	annual/perennial herb	–	X		X	
ROSCAL	<i>Rosa californica</i>	rose	Rosaceae – Rose Family	Native	shrub	–	X	X	X	
ROSWOO	<i>Rosa woodsii</i>	Wood's Rose	Rosaceae – Rose Family	Native	shrub	–	X		X	
ROSOFF	<i>Rosmarinus officinalis</i>	Rosemary	Lamiaceae – Mint Family	Non-native	shrub	–	X		X	
RUBURS	<i>Rubus ursinus</i>	California blackberry	Rosaceae – Rose Family	Native	vine/shrub	–	X		X	
RUMCRI	<i>Rumex crispus</i>	curly dock	Polygonaceae – Buckwheat Family	Invasive non-native (Limited)	perennial herb	–	X		X	X
RUMSAL	<i>Rumex salicifolius</i>	willow dock	Polygonaceae – Buckwheat Family	Native	perennial herb	–	X		X	
SALEXI	<i>Salix exigua</i>	narrowleaf willow	Salicaceae – Willow Family	Native	tree/shrub	–	X	X	X	
SALGOO	<i>Salix gooddingii</i>	Goodding's black willow	Salicaceae – Willow Family	Native	tree	–	X	X	X	
SALLAE	<i>Salix laevigata</i>	red willow	Salicaceae – Willow Family	Native	tree	–	X		X	
SALLASIA	<i>Salix lasiandra</i>	Pacific willow	Salicaceae – Willow Family	Native	tree	–	X	X	X	
SALLASIO	<i>Salix lasiolepis</i>	arroyo willow	Salicaceae – Willow Family	Native	tree	–	X	X	X	X
SAL AUS	<i>Salsola australis</i>	Russian thistle	Chenopodiaceae - Goosefoot Family	Invasive non-native (Limited)	annual/perennial herb	–	X	X		
SALTRA	<i>Salsola tragus</i>	Prickly Russian thistle	Chenopodiaceae - Goosefoot Family	Invasive non-native (Limited)	annual/perennial herb	–	X	X		
SALSPL-SPL	<i>Saltugilia splendens</i> ssp. <i>splendens</i>	splendid gilia	Polemoniaceae - Phlox Family	Native	annual herb	–	X			

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SALAPI	<i>Salvia apiana</i>	white sage	Lamiaceae – Mint Family	Native	shrub	–	X	X		X
SALCOL	<i>Salvia columbariae</i>	chia sage	Lamiaceae – Mint Family	Native	annual herb	–	X	X	X	X
SALLEU	<i>Salvia leucophylla</i>	purple sage	Lamiaceae – Mint Family	Native	shrub	–		X		X
SALMEL	<i>Salvia mellifera</i>	black sage	Lamiaceae – Mint Family	Native	shrub	–		X		X
SAMNIG-CAE	<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry	Adoxaceae – Elderberry Family	Native	shrub	–	X	X	X	X
SANTUB	<i>Sanicula tuberosa</i>	tuberous sanicle	Apocynaceae - Dogbone family	Native	perennial herb	–	X			
SAPOFF	<i>Saponaria officinalis</i>	bouncing bet	Caryophyllaceae - Pink Family	Invasive non-native (Limited)	perennial herb	–	X		X	
SCHARA	<i>Schismus arabicus</i>	Arabian schismus	Poaceae – Grass Family	Invasive non-native (Limited)	annual grass	–	X	X		
SCHBAR	<i>Schismus barbatus</i>	common mediterranean grass	Poaceae – Grass Family	Invasive non-native (Limited)	annual grass	–		X	X	
SCHACU	<i>Schoenoplectus acutus</i>	common tule	Cyperaceae - Sedge Family	Native	perennial grasslike herb	–	X		X	
SCUSIP	<i>Scutellaria siphocampyloides</i>	curve flowered skullcap	Lamiaceae – Mint Family	Native	perennial herb	–	X			
SENVUL	<i>Senecio vulgaris</i>	common groundsel	Asteraceae – Sunflower Family	Non-native	annual herb	–	X	X	X	
SILGAL	<i>Silene gallica</i>	small-flower catchfly	Caryophyllaceae - Pink Family	Non-native	annual herb	–		X		
SILMAR	<i>Silybum marianum</i>	blessed milk thistle	Asteraceae – Sunflower Family	Invasive non-native (Limited)	annual/perennial herb	–		X	X	X
SISIRI	<i>Sisymbrium irio</i>	London rocket	Brassicaceae – Mustard Family	Invasive non-native (Moderate)	annual herb	–	X			
SISLOE	<i>Sisymbrium loeselii</i>	small tumbleweed mustard	Brassicaceae – Mustard Family	Non-native	annual herb	–	X			
SISORI	<i>Sisymbrium orientale</i>	Indian hedge mustard	Brassicaceae – Mustard Family	Non-native	annual/perennial herb	–		X		X
SISBEL	<i>Sisyrinchium bellum</i>	western blue-eyed grass	Iridaceae - Iris Family	Native	perennial herb	–	X			
SOLAME	<i>Solanum americanum</i>	American black nightshade	Solanaceae - Nightshade Family	Native	annual/perennial herb	–		X		
SOLDOU	<i>Solanum douglasii</i>	Douglas's nightshade	Solanaceae - Nightshade Family	Native	perennial herb	–		X		
SOLA SP.	<i>Solanum</i> sp.	nightshade species	Solanaceae - Nightshade Family	Native or Non-Native	perennial herb or shrub	–		X		

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SOLXA	<i>Solanum xanti</i>	chaparral nightshade	Solanaceae - Nightshade Family	Native	perennial herb	-	X			X
SOLI SP.	<i>Solidago</i> sp.	goldenrod species	Asteraceae - Sunflower Family	Native	perennial herb	-	X			
SONOLE	<i>Sonchus oleraceus</i>	common sow thistle	Asteraceae - Sunflower Family	Non-native	annual herb	-	X		X	
SPAJUN	<i>Spartium junceum</i>	Spanish broom	Fabaceae - Pea Family	Invasive non-native (High)	shrub	-		X	X	X
SPHAMB	<i>Sphaeralcea ambigua</i>	desert mallow	Malvaceae - Mallow Family	Native	perennial herb	-	X			
STAALB	<i>Stachys albens</i>	white hedge nettle	Lamiaceae - Mint Family	Native	perennial herb	-	X			
STENEG	<i>Stellaria neglecta</i>	common chickweed	Caryophyllaceae - Pink Family	Non-native	annual herb	-	X		X	
STEEXI	<i>Stephanomeria exigua</i>	small wirelettuce	Asteraceae - Sunflower Family	Native	annual herb	-	X			X
STICOR	<i>Stipa coronata</i>	crested needle grass	Poaceae - Grass Family	Native	perennial grass	-	X			
STIMIL-MIL	<i>Stipa miliacea</i> var. <i>miliacea</i>	smilo grass	Poaceae - Grass Family	Invasive non-native (Limited)	annual grass	-		X	X	X
STI SP.	<i>Stipa</i> sp.	needlegrass species	Poaceae - Grass Family	Native	perennial grass	-	X		X	
STISPE	<i>Stipa speciosa</i>	desert needle grass	Poaceae - Grass Family	Native	perennial grass	-	X			
TAMPAR	<i>Tamarix parviflora</i>	small flower tamarisk	Tamaricaceae - Tamarisk Family	Invasive non-native (High)	tree/shrub	-		X		
TAMRAM	<i>Tamarix ramosissima</i>	saltcedar	Tamaricaceae - Tamarisk Family	Invasive non-native (High)	tree	-	X	X		
TANPAR	<i>Tanacetum parthenium</i>	feverfew	Asteraceae - Sunflower Family	Non-native	perennial herb	-	X		X	
TAROFF	<i>Taraxacum officinale</i>	common dandelion	Asteraceae - Sunflower Family	Non-native	perennial herb	-	X		X	
TETCOM	<i>Tetradymia comosa</i>	cotton thorn	Asteraceae - Sunflower Family	Native	shrub	-	X	X		X
THAFEN	<i>Thalictrum fendleri</i>	Fendler's meadow rue	Ranunculaceae - Buttercup Family	Native	perennial herb	-	X			
THYCUR	<i>Thysanocarpus curvipes</i>	fringed pod	Brassicaceae - Mustard Family	Native	annual herb	-	X			X
TOXDIV	<i>Toxicodendron diversilobum</i>	western poison oak	Anacardiaceae - Sumac Family	Native	vine/shrub	-	X	X	X	X
TRITER	<i>Tribulus terrestris</i>	puncture vine	Zygophyllaceae - Caltrop Family	Non-native	annual herb	-	X			X

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TRILAN	<i>Trichostema lanatum</i>	woolly bluecurls	Lamiaceae – Mint Family	Native	shrub	–	X	X		X
TRILANC	<i>Trichostema lanceolatum</i>	vinegar weed	Lamiaceae – Mint Family	Native	annual herb	–	X			
TRIPAR	<i>Trichostema parishii</i>	Parish's bluecurls	Lamiaceae – Mint Family	Native	shrub	–	X			
TRICIL	<i>Trifolium ciliolatum</i>	tree clover	Fabaceae – Pea Family	Native	annual herb	–	X			
TRIGRA	<i>Trifolium gracilentum</i>	graceful clover	Fabaceae – Pea Family	Native	annual herb	–	X			
TRIHIR	<i>Trifolium hirtum</i>	rose clover	Fabaceae – Pea Family	Invasive non-native (Moderate)	annual herb	–	X	X	X	X
TRIMIC	<i>Trifolium microcephalum</i>	hairy clover	Fabaceae – Pea Family	Native	annual herb	–	X		X	
TRI SP.	<i>Trifolium sp.</i>	clover species	Fabaceae – Pea Family	Native or Non-Native	annual/perennial herb	–	X		X	
TRIWILL	<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae – Pea Family	Native	annual herb	–	X			
TYPDOM	<i>Typha domingensis</i>	southern cattail	Typhaceae – Cattail Family	Native	perennial herb	–	X	X	X	X
TYPLAT	<i>Typha latifolia</i>	broad-leaved cattail	Typhaceae – Cattail Family	Native	perennial herb (aquatic)	–	X		X	
ULMPAR	<i>Ulmus parvifolia</i>	chinese elm	Ulmaceae - Elm Family	Non-native	tree	–	X		X	
ULMPUM	<i>Ulmus pumila</i>	Siberian elm	Ulmaceae - Elm Family	Non-native	tree	–	X	X		X
UMBCAL	<i>Umbellularia californica</i>	bay laurel	Lauraceae - Laurel Family	Native	tree	–	X	X	X	X
UROLIN	<i>Uropappus lindleyi</i>	silver puffs	Asteraceae – Sunflower Family	Native	annual herb	–	X	X		
URTDIO	<i>Urtica dioica</i>	stinging nettle	Urticaceae	Native	perennial herb	–	X	X	X	X
VERTHA	<i>Verbascum thapsus</i>	common mullein	Scrophulariaceae – Figwort Family	Invasive non-native (Limited)	perennial herb	–	X		X	X
VERANA-AQU	<i>Veronica anagallis-aquatica</i>	water speedwell	Plantaginaceae - Plantain Family	Non-native	perennial herb	–	X			
VER SP.	<i>Veronica sp.</i>	speedwell species	Plantaginaceae - Plantain Family	Native or Non-Native	perennial herb	–		X		
VICAME-AME	<i>Vicia americana ssp. americana</i>	American vetch	Fabaceae – Pea Family	Native	perennial herb, vine	–	X		X	X
VINMAJ	<i>Vinca major</i>	periwinkle	Apocynaceae - Dogbone family	Invasive non-native (Moderate)	perennial herb	–	X		X	

Species Code	Scientific Name	Common Name	Family	Nativity ¹	Lifeform	Status ²	Silverwood Lake	Devil Canyon Facility	Riparian-Wetland Observation	Forest Lands Observation
VIOPUR-PUR	<i>Viola purpurea ssp. purpurea</i>	goosefoot violet	Violaceae - Violet Family	Native	perennial herb	-	X			
VIO SP.	<i>Viola sp.</i>	violet species	Violaceae - Violet Family	Native	perennial herb	-	X			
VITGIR	<i>Vitis girdiana</i>	desert wild grape	Vitaceae - Grape Family	Native	vine/shrub	-	X	X	X	

¹California Invasive Plant Council (Cal-IPC) Ratings: High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

²California Native Plant Society (CNPS) California Rare Plant Ranking (CRPR) system 4.2 = Watch List. Plants with a CRPR of 4 are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. 0.2 = Threat Ranking of Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat).

Appendix K

ESA Consultation History

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COMMONLY USED TERMS, ACRONYMS & ABBREVIATIONS

Action Agency	The agency authorizing, funding, or carrying out an action
Action Area	The area within the proposed Project boundary and the West Fork Mojave River and adjacent areas downstream of Cedar Springs Dam
Application for New License	Application for a New License Major Project – Existing Dam for the Devil Canyon Project Relicensing, FERC Project Number 14797
CAJ	Cajon
DEV	Devore
DWR	California Department of Water Resources
ESA	Endangered Species Act
FE	Federal endangered
FERC	Federal Energy Regulatory Commission
FP	California fully protected
FT	Federal threatened
HES	Hesperia
LAR	Lake Arrowhead
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
PAD	Pre-Application Document
PM&E measures	Protection, Mitigation, and Enhancement measures, which are operation and management activities to: (1) protect resources against impacts from continued operation and maintenance of the Project; (2) mitigate any impacts from continued operation and maintenance of the Project (if the resource cannot be fully protected); and (3) enhance resources affected by continued Project operation and maintenance
Project	Devil Canyon Project Relicensing, FERC Project Number 14797
Proposed Action	The issuance of a new license to DWR for the Project with the changes proposed by DWR in its Application for New License
Relicensing Participants	Federal and State agencies, local governments, Indian tribes, non-governmental organizations, businesses, and unaffiliated

	members of the public that have participated in the Devil Canyon Project relicensing
SBN	San Bernardino North
SE	California State endangered
SSC	California State species of concern
SWL	Silverwood Lake
USFWS	U.S. Department of the Interior, Fish and Wildlife Service

INTRODUCTION

The California Department of Water Resources (DWR) has prepared this Endangered Species Act (ESA) Consultation History as an appendix to Section 5.4.3 of Exhibit E of its Application for a New License Major Project – Existing Dam (Application for New License) from the Federal Energy Regulatory Commission (FERC) for the Devil Canyon Project Relicensing, FERC Project Number 14797 (Project). As discussed below, this ESA Consultation History has been prepared for a consultation that is required between FERC and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) relating to ESA-listed species that are known or have the potential to be affected by the Project.

Under Section 7 of the ESA, a federal agency is required to ensure that actions they authorize, fund, or carry out do not jeopardize the existence of any species listed under the ESA, or destroy or adversely modify designated critical habitat of any listed species. Section 7 also requires consultation by the federal “Action Agency” (the agency authorizing, funding, or carrying out the action) with the appropriate regulatory agency(ies): USFWS for terrestrial and freshwater species and/or the National Marine Fisheries Service (NMFS) for marine species.

For the purposes of these ESA consultations:

- FERC is the Action Agency.
- The Proposed Action is the issuance of a new license to DWR for the Project with the changes proposed by DWR in its Application for New License.
- The Action Area is the area within the proposed Project boundary (as proposed by DWR in its Application for New License) and the West Fork Mojave River and adjacent areas downstream of Cedar Springs Dam. Under the ESA, the Action Area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 Code of Federal Regulations Section 402.02). The downstream extent of the Action Area is defined as the point where the effects of the Proposed Action are no longer measurable.

Since no ESA-listed species or their habitat under NMFS jurisdiction are located within the Action Area, FERC is not required to consult with NMFS. As such, this appendix is specific to consultations involving USFWS.

Generally, Section 5.4.3 of Exhibit E of DWR’s Application for New License provides the basis upon which consultation may be conducted between FERC and USFWS. This appendix provides additional information on the ESA consultation history regarding the Proposed Action, ESA-listed species potentially affected by the Proposed Action, and a

list of meetings DWR conducted during which ESA terrestrial-related items were discussed.

ESA Consultation History for the Proposed Action

Beginning in mid-2015, approximately 12 months prior to filing its Notice of Intent (NOI) and Pre-Application Document (PAD), DWR began to meet with Relicensing Participants to familiarize them with the Project and its operations. During these meetings, DWR also discussed with Relicensing Participants the relicensing process; identified issues significant to the Relicensing Participants; and collaboratively developed study proposals, including for species listed as threatened and endangered under the ESA.

As discussed in Section 5.4.3 of Exhibit E, DWR identified 13 species within the Action Area that are listed as federal endangered (FE) or federal threatened (FT) and have the potential to be affected by the Proposed Action. These include one fish, three amphibians, four birds, one mammal, and four plants. Each of these species, and information regarding their status, habitat associations, and known occurrences within or near the Action Area, is listed in Table 1. No candidate or proposed species were identified.

Table 1. ESA-Listed Species Potentially Affected by the Proposed Action

Common Name (<i>Scientific Name</i>)	Status	Habitat Associations	Known Historical or Recent Occurrences in Project Vicinity Quadrangles
Mohave Tui Chub (<i>Siphateles [Gila] bicolor mohavensis</i>)	FE SE FP	Fish endemic to Mojave River drainage in deep pools and sloughs, and introduced at a few locations outside of the historical range	SWL, LAR, CAJ, and HES quadrangles, including historical records at the current location of Silverwood Lake, but no recent records; almost certainly extirpated from the Mojave River
Arroyo Toad (<i>Anaxyrus [=Bufo] californicus</i>)	FE SSC	Breeds in low-gradient perennial and seasonal streams; terrestrial habitat is within associated riparian and adjacent upland areas	SWL, LAR, and CAJ quadrangles, including historical records at the current location of Silverwood Lake; includes recent records in Cajon Wash and Mojave River drainages downstream of the Project, and in the West Fork Mojave River/Horsethief Creek

**Table 1. ESA-Listed Species Potentially Affected by the Proposed Action
(continued)**

Common Name (<i>Scientific Name</i>)	Status	Habitat Associations	Known Historical or Recent Occurrences in Project Vicinity Quadrangles
California Red-legged Frog (<i>Rana draytonii</i>)	FT SSC	Largely aquatic except during dispersal, summer aestivation, and foraging in riparian areas; breeds in still or slow-moving water, but not in large lakes or reservoirs	SWL, LAR, and HAM quadrangles; no recent records
Southern Mountain Yellow-legged Frog (<i>Rana muscosa</i>)	FE SE	Highly aquatic in moderate to high elevation mountain streams, permanent ponds, and lakes, particularly where fish have not been introduced; believed to be largely extirpated in the San Bernardino Mountains	SWL, LAR, SBN, HAM, and DEV quadrangles, including historical records in the current location of Silverwood Lake; only one site with recent records (City Creek in HAM quadrangle)
California Condor (<i>Gymnogyps californianus</i>)	FE SE FP	Soaring bird that seeks carrion in open habitats and nests mostly in cavities on escarpments and in hollows of old growth conifers	None; species is wide-ranging and could fly over the area
Coastal California Gnatcatcher (<i>Polioptila californica californica</i>)	FT SSC	Non-migratory songbird associated with coastal sage scrub and chaparral in coastal California to Baja California, Mexico, mostly below 2,000 feet elevation	SBN and DEV quadrangles; recent occurrences within Santa Ana River drainage
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	FE SE	Migratory songbird breeding in dense riparian habitat and adjacent chaparral in river valleys from interior northern California to Baja California, Mexico	SBN, HAM, and DEV quadrangles; recent occurrences within Santa Ana River drainage
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	FE SE	Migratory songbird breeding in dense riparian thickets along streams and wetlands	CAJ and HAM quadrangles; recent occurrences within Santa Ana River drainage
San Bernardino Merriam's Kangaroo Rat (<i>Dipodomys merriami parvus</i>)	FE SSC	Found in alluvial scrub habitat on floodplains and adjacent uplands within San Bernardino, Menifee, and San Jacinto Valleys	DEV, SBN, and HAM quadrangles; recent occurrences within Santa Ana River drainage
Slender-horned Spineflower (<i>Dodecahema leptoceras</i>)	FE SE	Annual herb found on floodplain terraces and sandy benches with alluvial fan scrub vegetation at about 660 to 2,300 feet elevation	SBN and DEV quadrangles; recent occurrences within Santa Ana River drainage

**Table 1. ESA-Listed Species Potentially Affected by the Proposed Action
 (continued)**

Common Name (<i>Scientific Name</i>)	Status	Habitat Associations	Known Historical or Recent Occurrences in Project Vicinity Quadrangles
Nevin’s Barberry (<i>Berberis nevinii</i>)	FE SE	Perennial native to chaparral and in washes with scattered occurrences in Riverside, Los Angeles, and San Bernardino Counties at 1,400 to 2,000 feet elevation; known occurrences include transplants outside of natural range	HAM quadrangle (extirpated); Project is likely outside of species range, where occurrences would be limited to transplants
Santa Ana River Woolly-star (<i>Eriastrum densiflorum</i> ssp. <i>sanctorum</i>)	FE SE	Perennial sub-shrub found on infrequently flooded, open, sandy, high alluvial terraces mostly in the Santa Ana River drainage at 500 to 2,000 feet elevation	DEV quadrangle; recent occurrences within Santa Ana River drainage
Thread-leaved Brodiaea (<i>Brodiaea filifolia</i>)	FT SE	Perennial herb in moderately wet to occasionally moist grasslands, on floodplains or associated with vernal pools at 100 to 2,500 feet elevation	SBN quadrangle; recent occurrences within Santa Ana River drainage

Note:
 No federal candidates or proposed species were identified, and none of these species is listed by the U.S. Department of Agriculture, Forest Service as sensitive.

Key:
 U.S. Geological Survey 7.5 minute topographic quadrangles:

- CAJ = Cajon
- DEV = Devore
- HAM = Harrison Mountain
- HES = Hesperia
- LAR = Lake Arrowhead
- SBN = San Bernardino North
- SWL = Silverwood Lake

- Status:
- FE = Federal endangered
 - FT = Federal threatened
 - FP = California fully protected
 - SE = California State endangered
 - SSC = California State species of special concern

For a full discussion of study results and pre-relicensing consultation with USFWS, refer to Section 5.4.3 of Exhibit E.

USFWS was specifically notified of and invited to each Relicensing Participant meeting. USFWS has participated in some of the meetings during which ESA terrestrial-related items were discussed. The meetings in which USFWS staff participated, and the documents that were made available to USFWS staff, are listed below.

1. July 8, 2015. DWR contacted Ken Corey, Assistant Field Supervisor, and Scott Sobiech, Deputy Field Supervisor, to notify USFWS of the upcoming relicensing process, and request information in the form of a Pre-PAD Questionnaire.
2. September 1, 2015. Karin Cleary-Rose and Rosemary Burk (USFWS representatives) were present for DWR's initial Agency Outreach Meeting to describe the Project, the relicensing plan and process, and additional items.
3. August 1, 2016. DWR filed with FERC and distributed to USFWS the NOI and PAD. The PAD described existing, relevant, and reasonably available information regarding ESA-listed species, and other potentially affected resources. The PAD also described the studies DWR proposed to conduct to supplement existing, relevant, and reasonably available information regarding the Project and potentially affected resources.
4. September 30, 2016. FERC initiated informal consultation with USFWS as required under Section 7 of the ESA and the interagency cooperation regulations in 50 Code of Federal Regulations Part 402, and designated DWR as FERC's non-federal representative for carrying out informal consultation pursuant to Section 7 of the ESA.
5. September 1, 2017. DWR submitted to USFWS the *Survey Report ESA-Listed Bird Species, Southwestern Willow Flycatcher and Least Bell's Vireo Habitat Evaluations*, in accordance with reporting requirements associated with USFWS permit number TE 009015-4, which was issued to Cereus Environmental employee Jason Berkley. Mr. Berkley conducted all five protocol southwestern willow flycatcher surveys with the assistance of HDR Engineering, Inc. employees (Adam Lockyer and Aaron Newton), who also conducted the eight least Bell's vireo surveys.
6. April 17, 2018. Jenness McBride (USFWS representative) was present for DWR's Protection, Mitigation, and Enhancement (PM&E) meeting with Relicensing Participants to initiate discussion of PM&E measures.
7. April 10, 2019. DWR filed with FERC and distributed to USFWS and agencies its Draft Application for New License.

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Appendix L

ESA-Listed Species Within Project Vicinity

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Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status ¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
Delhi Sands Flower-loving Fly <i>Rhaphiomidas terminatus abdominalis</i>	FE	Insect endemic to the Colton Dunes Ecosystem from Colton to Mira Loma in southwestern San Bernardino County and adjacent Riverside County. Associated with wild buckwheat (<i>Eriogonum fasciculatum</i>), croton (<i>Croton californicus</i>) and telegraph weed (<i>Heterotheca grandiflora</i>) (58 FR 49881). Currently, extant in only three Recovery Units: Ontario, Jurupa and Colton.	None	No – Project is outside of known range	Recovery Plan (2019, 1997a) 5-Year Review (2008)
Mohave Tui Chub <i>Siphateles [Gila] bicolor mohavensis</i>	FE, SE, FP	Fish endemic to Mojave River and major tributaries in deep pools and slough-like habitat. Most populations in the species' natural range were extirpated by 1970. Populations have been established in a few ponds and spring-fed pools outside of the historical range (Soda Springs, Lark Seep at China Lake Naval Air Weapons Station, and Camp Cady Wildlife Area).	Silverwood Lake, Lake Arrowhead, Cajon, and Hesperia	Unlikely – occurred historically, but almost certainly extirpated from the Mojave River	Recovery Plan (1984) 5-Year Review (2009h)
Santa Ana Sucker <i>Catostomus santaanae</i>	FT	Fish restricted to the Los Angeles, San Gabriel, and Santa Ana river systems. Fish also occurs in the Santa Clara River, but this population is not part of the ESA listing. In some areas, it hybridizes with introduced Owen sucker (<i>C. fumeiventris</i>). Found mostly in permanent streams less than 25 feet wide and with coarse substrates. Designated critical habitat occurs in the Santa Ana River, San Gabriel River, and Big Tujunga Creek in the Los Angeles River basin.	Harrison Mountain	No – Project is outside of species range, which does not include the Mojave River drainage	Recovery Plan (2017b) 5-Year Review (2011b)
Arroyo Toad <i>Anaxyrus [Bufo] californicus</i>	FE, SSC	Amphibian that breeds in low-gradient, shallow slow-moving perennial and seasonal streams; forages and aestivates in associated riparian habitat; and may venture into adjacent uplands. Found from Monterey County, California, to Baja California, Mexico, in coastal streams and some inland draining streams.	Silverwood Lake, Lake Arrowhead, and Cajon	Yes	Recovery Plan (1999a) 5-Year Review (2009b)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status ¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
California Red-legged Frog <i>Rana draytonii</i>	FT, SSC	Amphibian that is largely aquatic except during dispersal, summer aestivation, and foraging in riparian areas. Breeds in still or slow-moving water with emergent and overhanging vegetation, including emergent wetlands, ponds, small lakes, and low-gradient stream reaches with permanent pools. Found historically from Shasta County to Baja California, Mexico, but there are few known surviving populations in southern California. Elevations ranging from near sea level to about 5,200 feet with all current sightings below 3,500 feet. Currently not found in San Bernardino County.	Silverwood Lake, Lake Arrowhead, and Harrison Mountain	Unknown – occurred historically, but may be extirpated	Recovery Plan (2002a) 5-Year Review (initiated 2018)
Southern Mountain Yellow-legged Frog <i>Rana muscosa</i>	FE, SE	Amphibian that is highly aquatic and associated with moderate- to high-elevation mountain streams, permanent ponds, and lakes, particularly where fish have not been introduced. Occurs in the Sierra Nevada within and south of the South Fork Kings River and in separate populations in southern California, where it occurred historically in the San Jacinto, San Bernardino, San Gabriel, and Palomar Mountains at elevations ranging from 1,200 to 7,500 feet. Currently, the species is considered extant in 10 small populations outside the Project boundary (Devil's Canyon in the San Gabriel Mountains, Little Rock Creek, Big Rock Creek, Vincent Gulch, Bear Gulch, City Creek, Dark Canyon, Fuller Mill Creek, Hall Canyon, and Tahquitz Canyon) across three mountain ranges.	Silverwood Lake, Lake Arrowhead, San Bernardino North, Harrison Mountain, and Devore	Unlikely – occurred historically, but almost certainly extirpated	Recovery Plan (2018) 5-Year Review (2019)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status ¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
Mojave Desert Tortoise <i>Gopherus agassizii</i>	FT, ST	A large, terrestrial, burrowing turtle found in the Mojave and Sonoran Deserts; the Mojave population includes those turtles north and west of the Colorado River in the Mojave Desert in California. Species also occurs in Nevada, Arizona, and southwestern Utah. Habitats are primarily in creosote bush (<i>Larrea tridentata</i>) flats, less frequently on sloping ground in salt desert scrub and alluvial fans.	None	No – Project is outside of species range ¹	Recovery Plan (2011a) 5-Year Review (2010d)
California Condor <i>Gymnogyps californianus</i>	FE, SE, FP	Very large, soaring bird that seeks carrion in open habitats and nests mostly in cavities on escarpments and in hollows of old growth conifers. Wild populations are supplemented by captive breeding and releases.	None	Unknown – species is wide-ranging and could fly over	Recovery Plan (1996) Supplemental Finding for Recovery Plan (2019) 5-Year Review (2013a)
Coastal California Gnatcatcher <i>Polioptila californica californica</i>	FT, SSC	Non-migratory songbird associated with coastal sage scrub and less often in chaparral in coastal California to Baja California, Mexico. Mostly found below 2,000 feet elevation.	San Bernardino North and Devore	Unknown – most of the Project area is outside of species range	Recovery Plan (none) 5-Year Review (2010b)
Least Bell's Vireo <i>Vireo bellii pusillus</i>	FE, SE	Migratory songbird found during the breeding season in dense, riparian habitat where willows are dominant and adjacent chaparral in river valleys. Found historically from interior northern California to northwestern Baja California, Mexico.	San Bernardino North, Harrison Mountain, Devore	Possible, although higher elevation than expected range and no observations during Project relicensing studies.	Recovery Plan (1998) 5-Year Review (2006)
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	FE, SE	Migratory songbird found during the breeding season in dense, riparian thickets along streams and wetlands. Range includes southern California from Kern County south.	Cajon and Harrison Mountain	Possible, although no records and no observations during Project relicensing studies.	Recovery Plan (2002b) 5-Year Review (2017a)

¹ In addition to information in the Recovery Plan, the species range is based on information in Gernano et al. (1994) and Nussear et al. (2009)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
San Bernardino Merriam's Kangaroo Rat <i>Dipodomys merriami parvus</i>	FE, SSC	Heteromyid (primarily seed-eating with fur-lined cheek pouches) rodent in Riversidean alluvial fan scrub vegetation associated with alluvial floodplains and adjacent uplands within San Bernardino, Menifee and San Jacinto valleys. Existing populations concentrated along upper Santa Ana River, Lytle Creek, Cajon Creek, Cable Creek, San Jacinto River, and Bautista Creek.	Devore, San Bernardino North, and Harrison Mountain	Unlikely – most of the Project area is outside of species range. Critical habitat has been designated in the vicinity near the Devil Canyon Powerplant.	Recovery Plan (none) 5-Year Review (2009i)
Stephen's Kangaroo Rat <i>Dipodomys stephensi</i>	FE, ST	Heteromyid rodent found in sparsely vegetated grassland and coastal sage scrub, associated with gravelly soils and sparse shrub cover. Found within San Jacinto Valley and adjacent areas of Riverside and San Diego Counties, and formerly in southwestern San Bernardino County.	None	No – Project is outside of species range	Recovery Plan (1997b) 5-Year Review (2011c)
Slender-horned Spineflower <i>Dodecahema leptoceras</i>	FE, SE	Annual herb (Family Polygonaceae) found on floodplain terraces and sandy benches, areas that flood infrequently. Occurrences are associated with alluvial fan scrub (about 660 to 2,300 feet elevation).	San Bernardino North and Devore	Unlikely – most of the Project area is outside of species range and no observations during Project relicensing studies.	Recovery Plan (none) 5-Year Review (2010e)
Cushenbury Buckwheat <i>Eriogonum ovalifolium</i> var. <i>vineum</i>	FE	Perennial herb (Family Polygonaceae) endemic to carbonate substrates in the northern San Bernardino Mountains in Mojavean desert scrub and pinyon-juniper woodland (4,550-7,800 feet elevation).	None	No – Project is outside of species range	Recovery Plan (1997c) 5-Year Review (2009g)
Southern Mountain Buckwheat <i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	FT	Perennial herb (Family Polygonaceae) endemic to pebble plain habitat and occasionally gravelly, lower montane coniferous forest in the northern San Bernardino Mountains, with all known occurrences within 10 miles of Big Bear Lake (5,750 to 9,400 feet elevation).	None	No – Project is outside of species range	Recovery Plan (none) 5-Year Review (2015b)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status ¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
Cushenbury Oxytheca <i>Oxytheca [Acanthoscyphus] parishii var. goodmaniana</i>	FE	Annual herb (Family Polygonaceae) endemic to carbonate rock substrates on dry slopes (usually in loose scree or talus) of the northern San Bernardino Mountains in pinyon-juniper woodlands (4,000 to 7,800 feet elevation).	None	No – Project is outside of species range	Recovery Plan (1997c) 5-Year Review (2009a)
Bear Valley Sandwort <i>Eremogone [Arenaria] ursina</i>	FT	Perennial herb (Family Caryophyllaceae) endemic to pebble plain habitat and occasionally dry slopes in pinyon-juniper woodland in the northern San Bernardino Mountains; known only from vicinity of Big Bear and Baldwin Lakes (5,850 to 6,500 feet elevation).	None	No – Project is outside of species range	Recovery Plan (none) 5-Year Review (2015a)
Nevin's Barberry <i>Berberis nevinii</i>	FE, SE	Perennial (evergreen) shrub (Family Berberidaceae) native to chaparral and adapted to the natural fire regime for this habitat (also in washes). Endemic to southern California in scattered occurrences in Riverside, Los Angeles, and San Bernardino Counties (mostly 1,400 to 1,700 feet elevation, rarely to 2,000 feet).	Harrison Mountain (extirpated)	Unlikely – Project is likely outside of species range, where occurrences would be limited to transplants. No observations during Project relicensing studies.	Recovery Plan (none) 5-Year Review (2009c)
Braunton's Milk-vetch <i>Astragalus brauntonii</i>	FE	Perennial herb (Family Fabaceae) associated with carbonate substrates (or downwash sites below carbonate substrates) in chaparral and coastal sage scrub where shrubs are sparse. Appears after fire or mechanical soil disturbance, but short-lived. Known only from small disjunct areas in Simi Hills, Santa Monica Mountains, and Santa Ana Mountains in Ventura, Los Angeles, and Orange Counties (800 to 2,100 feet elevation).	None	No – Project is outside of species range	Recovery Plan (1999b) 5-Year Review (2009d)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status ¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
Santa Ana River Woolly-star <i>Eriastrum densiflorum</i> ssp. <i>Sanctorum</i>	FE, SE	Perennial sub-shrub (Family Polemoniaceae) found on infrequently flooded, open, sandy, high-alluvial terraces. Endemic to the Santa Ana River drainage and a disjunct occurrence on Lytle Creek in San Bernardino County, California (500 to 2,000 feet elevation).	Devore	Unlikely – most of the Project area is outside of species range and no observations during Project relicensing studies.	Recovery Plan (none) 5-Year Review (2010c)
Ash-gray Paintbrush <i>Castilleja cinerea</i>	FT	Perennial hemiparasitic herb (Family Orobanchaceae) endemic to pebble plain habitat and occasionally in forest meadows, mixed coniferous forest (in clay openings), and pinyon-juniper woodland in the northern San Bernardino Mountains; known only from the vicinity of Big Bear Lake in the San Bernardino Mountains (5,900 to 10,900 feet elevation).	None	No – Project is outside of species range	Recovery Plan (none) 5-Year Review (2013b)
San Diego Ambrosia <i>Ambrosia pumila</i>	FE	Perennial herb (Family Asteraceae) found on sandy loam or clay soils, mostly on upper terraces of rivers. Often in disturbed areas, sometimes in alkaline conditions in chaparral, coastal scrub, valley and foothill grassland, and vernal pools in western Riverside County (including Santa Ana River watershed), western San Diego County, and northwest Baja California, Mexico (65 to 1,350 feet elevation).	None	No – Project is outside of species range	Recovery Plan (none) 5-Year Review (2010a)
Parish's Daisy <i>Erigeron parishii</i>	FT	Perennial herb (Family Asteraceae) endemic to carbonate substrates (occasionally granitic substrates) in the San Bernardino Mountains in pinyon woodlands, pinyon-juniper woodlands and blackbush scrub vegetation communities (3,842 to 6,400 feet elevation).	None	No – Project is outside of species range	Recovery Plan (1997c) 5-Year Review (2009f)

Appendix L. ESA-Listed Species Assessed for Potential Occurrence in the Project Vicinity					
Common Name Scientific Name	Status¹	Habitat Associations	Known Occurrences in Project Vicinity Quadrangles	Occurrence in Project Vicinity	USFWS 5-Year Reviews and Recovery Plans
Thread-leaved Brodiaea <i>Brodiaea filifolia</i>	FT, SE	Perennial herb (Family Themidaceae) associated with moderately wet to occasionally moist conditions in grassland, on floodplains, or associated with vernal pools (100 to 2,500 feet elevation).	San Bernardino North	Unlikely – most of the Project area is outside of species range and no observations during Project relicensing studies.	Recovery Plan (none) 5-Year Review (2009e)

¹Federal and State Status: FE = federal endangered, FT = federal threatened, SE = California State endangered, ST = California State threatened, FP = California State fully protected, SSC = California State species of special concern. No federal candidates or proposed species were identified, and none of these species are listed by Forest Service as sensitive.

- Germano, D.J., R.B. Bury, T.C. Esque, T.H. Fritz, and P.A. Medica. 1994. Range and habitats of the desert tortoise. In: R.B. Bury and D.J. Germano, editors. *Biology of North American Tortoises*. National Biology Survey Technical Report Series, Fish and Wildlife Research 13.
- Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona. U.S. Geological Survey Open-File Report 2009-1102. 18 pp.
- United States Fish and Wildlife Service (USFWS). 2019a. Recovery plan amendment for recovery plan for Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*). U.S. Fish and Wildlife Service, Carlsbad, California. October 4, 2019.
- _____. 2019b. Supplemental Finding for the Recovery Plan for the California condor (*Gymnogyps californianus*) U.S. Fish and Wildlife Service, Sacramento, California. September 2019. 6pp.
- _____. 2019c. Mountain yellow-legged frog [Southern California Distinct Population Segment] (*Rana muscosa*), 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. May 6, 2019.
- _____. 2018. Draft recovery plan for the southern California distinct population segment of the mountain yellow-legged frog. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. July 19, 2018. 18 pp.
- _____. 2017a. Notice of 12-month petition finding and 5-year review for southwestern willow flycatcher (*Empidonax traillii extimus*). U.S. Fish and Wildlife Service, Arizona Ecological Services, Phoenix, Arizona. December 29, 2017.
- _____. 2017b. Recovery plan for the Santa Ana sucker (*Catostomus santaanae*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. February 16, 2017. 92 pp.
- _____. 2015a. *Eremogone ursina* (Bear Valley sandwort) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 14, 2015.
- _____. 2015b. *Eriogonum kennedyi* var. *austromontanum* (Southern Mountain wild buckwheat) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. May 8, 2015.
- _____. 2014. Southwestern willow flycatcher (*Empidonax traillii extimus*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Arizona Ecological Services, Phoenix, Arizona. August 15, 2014.
- _____. 2013a. California condor (*Gymnogyps californicus*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Pacific Southwest Region. June 4, 2013.
- _____. 2013b. *Castilleja cinerea* (ash-gray paintbrush) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. March 27, 2013.
- _____. 2011a. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

- _____. 2011b. Santa Ana sucker (*Catostomus santaanae*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. March 10, 2011.
- _____. 2011c. Stephen's kangaroo rat (*Dipodomys stephensi*) 5-year review, short form, Carlsbad Fish and Wildlife Office, Carlsbad, California. July 22, 2011.
- _____. 2010a. *Ambrosia pumila* (San Diego ambrosia) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. July 15, 2010.
- _____. 2010b. Coastal California gnatcatcher (*Polioptila californica californica*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. September 29, 2010.
- _____. 2010c. *Eriastrum densifolium* subsp. *sanctorum* (Santa Ana River woolly-star) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. October, 29, 2010.
- _____. 2010d. Mojave Population of the desert tortoise (*Gopherus agassizii*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Desert Tortoise Recovery Office, Reno, Nevada. September 30, 2010.
- _____. 2010e. Sender-horned spineflower (*Dodecahema leptoceras*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. October 1, 2010.
- _____. 2009a. *Acanthoscyphus* (*Oxytheca*) *parishii* var. *goodmaniana* (Cushenbury oxytheca) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 13, 2009.
- _____. 2009b. Arroyo Toad (*Bufo californicus* (=microscaphus)) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office Ventura, California. August 17, 2009.
- _____. 2009c. *Berberis nevinii* (Nevin's barberry) 5-year Review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 14, 2009.
- _____. 2009d. Braunton's milk-vetch (*Astragalus brauntonii*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. February 4, 2009.
- _____. 2009e. *Brodiaea filifolia* (thread-leaved brodiaea) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 13, 2009.
- _____. 2009f. *Erigeron parishii* (Parish's daisy) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 13, 2009.
- _____. 2009g. *Eriogonum ovalifolium* var. *vineum* (Cushenbury buckwheat) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 13, 2009.
- _____. 2009h. Mohave tui chub (*Gila bicolor mohavensis* = *Siphaletes bicolor mohavensis*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. February 4, 2009.
- _____. 2009i. San Bernardino kangaroo rat (*Dipodomys merriami parvus*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. August 14, 2009.

- _____. 2008. Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) 5-year review: summary and evaluation. US Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. March 31, 2008.
- _____. 2006. Least Bell's vireo (*Vireo bellii pusillus*) 5-year Review: summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. September 26, 2006.
- _____. 2002a. Recovery plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. 173 pp.
- _____. 2002b. Southwestern Willow Flycatcher Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 210 pp.
- _____. 1999a. Arroyo southwestern toad (*Bufo microscaphus californicus*) recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 119 pp.
- _____. 1999b. Recovery plan for six plants from the mountains surrounding the Los Angeles Basin. U.S. Fish and Wildlife Service, Portland, Oregon. 63 pp.
- _____. 1998. Draft recovery plan for the least Bell's vireo (*Vireo bellii pusillus*). U.S. Fish and Wildlife Service, Portland, Oregon.
- _____. 1997a. Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U. S. Fish and Wildlife Service, Portland, Oregon. 51 pp.
- _____. 1997b. Draft recovery plan for the Stephen's kangaroo rat (*Dipodomys stephensi*). U.S. Fish and Wildlife Service, Portland, Oregon, 71 pp.
- _____. 1997c. San Bernardino Mountains carbonate plants draft recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 55 pp.
- _____. 1996. Recovery plan for the California condor. U.S. Fish and Wildlife Service, Portland, Oregon. 62 pp.
- _____. 1984. Recovery plan for the Mohave tui chub (*Gila bicolor mohavensis*). U.S. Fish and Wildlife Service, Portland, Oregon. 56 pp.

Appendix M

Dam Safety Letter

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Richard Sandoval, P.E.
Chief, South Surveillance and Facility Performance Branch
Dam Safety Services
Division of Operations and Maintenance
1416 Ninth St, Rm 631-6
Sacramento, CA 94236

November 8, 2019

Dear Mr. Sandoval,

The subject of this letter is with regard to a request from the United States Forest Service (USFS) to modify the appearance of selected rock fill dams such that the dam blends into the surrounding natural environment. During relicensing discussions for the South State Water Project hydro power facilities under the Federal Energy Regulatory Commission (FERC) license Project No.2426 (P-2426), the USFS requested that the California Department of Water Resources (DWR) conceal certain dams in the P-2426 license into the surrounding environment so as to reduce the project visibility to the public recreationists using local hiking trails. The DWR requested in an email dated September 27, 2019 that the Dam Safety Review Board (DSRB) render an opinion on the proposed request to modify and conceal the dams into the surrounding natural environment.

The DSRB for P-2426 has discussed the proposal to modify the dams and make the dams more obscure with the local natural environment. The following list provides a summary of the DSRB response:

- P-2426 contains large dams classified as HIGH hazard facilities, which means that a potential failure would be expected to result in loss of life. In addition, a potential failure could result in serious damage to homes, agricultural, industrial and commercial facilities, important public utilities, main highways, or railroads. Therefore, the DSRB advises that concealing such a facility is not in the best interest of the public. Rather, it is critical that everyone understand that these structures are to be set-apart from the surrounding environment and clearly visible.
- Dam Safety is an important public concern and visual observations are considered the first line of action in any dam safety program, as noted throughout the state-of-the-practice dam safety publications by the Federal Energy Regulatory Commission (FERC)¹, US Army Corps of Engineers (USACE)², and the US Bureau of Reclamation (USBR)³. Dams are also large structures and can be difficult to physically “inspect” and more so during potential emergency situations which could occur at night. Thus, regular and emergency inspections rely on the ability to observe visible changes in the structure and its components with respect to historic conditions to identify potential adverse conditions, or concerns. Changes the appearance of a dam by purposely modifying the color would compromise historical data related to visual inspections obtained over the life of the dam. For example, the visible changes in the appearance of the rip rap, such as discoloration or shadowing due to leaks, seepage, settlement, cracks, etc. may provide early indication of a change in condition. Therefore, since early detection of changes in physical appearance may be vital in

¹ FERC, Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 9 – Instrumentation and Monitoring, latest update dated June 4, 2018.

² USACE, Engineer Regulation 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Work Structures, dated February 15, 1995.

³ USBR, Design of Small Dams, Third Edition, 1987.

identifying potential dam safety concerns, any attempt to conceal the structure into the surrounding environment would be in direct conflict to the state-of-the-art practices and inhibit the ability to identify changes in the visible appearance and early detection of dam safety concerns and would reduce the value of the historical observations that have been collected over the last 50 years.

In conclusion, the DSRB has considered the proposed modification and concealment of the selected dams with respect to dam safety and reduction of the risks associated with the dams. Based on the discussion above, the DSRB considered the request to conceal the physical appearance of the dams and concludes that **concealment or modification of the physical appearance to match, or blend into the surrounding environment is not in the best interest of dam safety or the public interest.** The public should have an awareness of the dam, its public benefits (water supply, recreation, flood protection), and the risks associated with downstream communities.

The Board appreciates the opportunity to work with DWR on the P-2426 Project. If there are any further questions regarding these concerns, then please do not hesitate to contact us.

Sincerely Yours

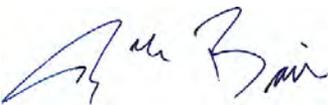
P-2426 Dam Safety Review Board



Kevin Snyder, PE (Colorado)
HDR, Inc.



Guy S. Lund, PE
Gannett Fleming, Inc.



Jeff Bair, PE
Black & Veatch, Inc.



Robert Wright, PG, CEG, PhD
Wood Environmental & Infrastructure Solutions, Inc.

Appendix N

SHPO's Correspondence

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DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



May 31, 2017

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

FERC Project No. 14797 – Devil Canyon Project Relicensing

Dear Ms. Polanco:

The California Department of Water Resources (DWR), under the authority of the Federal Energy Regulatory Commission (FERC), is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the undertaking referenced above, per Title 36 Code of Federal Regulations (CFR) Part 800. DWR (Licensee) is seeking a FERC license for the Devil Canyon Project under FERC Project No. 14797 (Project) using the Traditional Licensing Process. The Project hydropower facilities and lands are currently licensed under FERC Project No. 2426 that was issued on March 22, 1978 with an effective date of February 1, 1972 for a period of 50 years. The existing license has an expiration date of January 31, 2022, and thus, DWR is in the process of seeking a new license for the Devil Canyon Project, separate from the license for FERC Project No. 2426. In accordance with 36 CFR §800.2(c)(4), FERC has designated DWR as its non-federal representative for the purposes of Section 106 consultation during relicensing of the Project¹. At the present time, DWR is seeking your concurrence on the determination of the Project's Area of Potential Effects (APE).

Attached you will find the following materials in support of our present consultation effort:

Attachment 1: Project Vicinity Map

Attachment 2: United States Geological Survey (USGS) topographic quadrangles depicting the location of the undertaking and the proposed APE

¹ DWR was designated as FERC's non-federal representative for carrying out "informal consultation", pursuant to...Section 106 of the National Historic Preservation Act," in FERC's notification of DWR's filing of the Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process, dated September 30, 2016. At the same time, FERC initiated consultation with SHPO pursuant to Section 106 of the National Historic Preservation Act and the implementing regulations of the Advisory Council on Historic Preservation at 36 CFR §800.2. FERC will be responsible for all findings and determinations made pursuant to 36 CFR §800.2(a).

Ms. Julianne Polanco
May 31, 2017
Page 2

The Project is located along a larger water storage and delivery system, the State Water Project (SWP), but it is licensed by FERC as a discrete hydropower project within the SWP system. Project facilities are located along the East Branch of the SWP in San Bernardino County, California, between the cities of Hesperia and San Bernardino (Attachment 1).

The Project APE includes all lands within the proposed Project boundary, as delineated by the known or potential locations of Project operations and maintenance (including direct and indirect disturbances) and Project facilities, features, and access roads. The proposed Project boundary includes 2,070 acres of land with approximately 132 acres of National Forest System lands managed by the United States Department of Agriculture, Forest Service, San Bernardino National Forest. The APE excludes lands overlying the San Bernardino Tunnel as DWR does not perform any Project operations and maintenance activities on these lands. There are no plans to conduct any Project-related activities outside of these boundaries.

The Project consists of the Devil Canyon Power Development, which includes Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities associated with Silverwood Lake, and appurtenant facilities (Attachment 2).

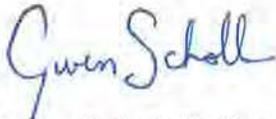
DWR filed with FERC its Notice of Intent (NOI) and Pre-Application Document on August 1, 2016. Email notification of the filing was sent to all potential relicensing participants on August 1, 2016 with the NOI attached and a link to the public Project website for access to both documents in electronic format for review and comment. DWR issued public notices using the FERC docket, electronic email, and local newspapers for a site visit that was held on November 2, 2016 and morning and evening meetings that occurred on November 3, 2016.

In accordance with 36 CFR §800.4(a)(1), DWR requests your concurrence on the appropriateness of the APE for the proposed undertaking. Pursuant to 36 CFR §800.4, we look forward to receipt of your response within 30 days of your receipt of this letter.

Ms. Julianne Polanco
May 31, 2017
Page 3

Thank you for your assistance with this undertaking. If you have any questions or require additional information, please contact me at (916) 557-4554 or your staff may contact Lisa Lee, Senior Environmental Scientist at (916) 557-4557.

Sincerely,

A handwritten signature in blue ink that reads "Gwen Scholl". The signature is written in a cursive, flowing style.

Gwen Scholl, Acting Chief
Hydropower License Planning and Compliance Office
Executive Division
California Department of Water Resources

Attachments

cc: Dr. Frank Winchell
Federal Energy Regulatory Commission
888 First Street, Northeast
Washington, DC 20426

Tribal and Agency Distribution List

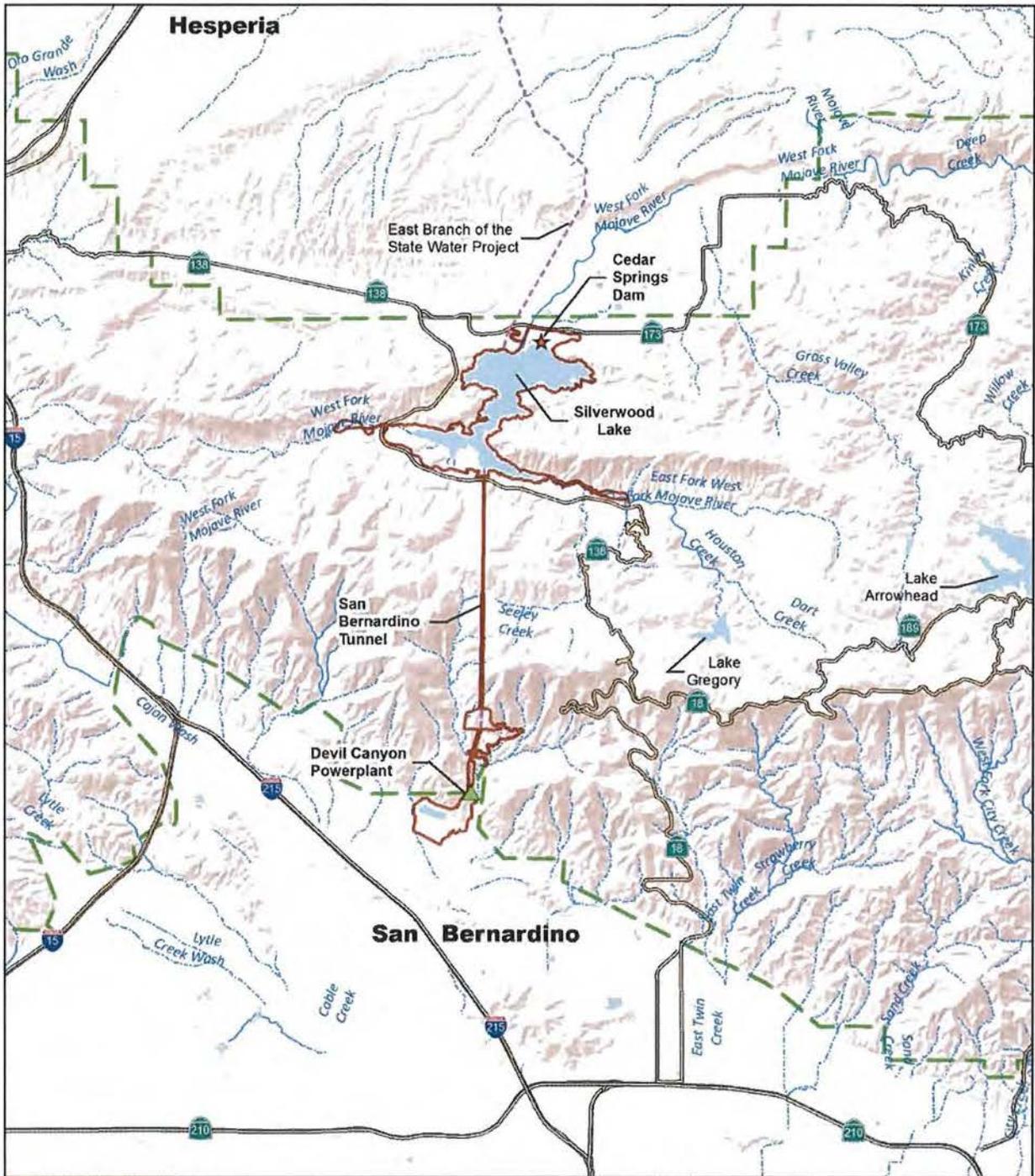
DISTRIBUTION LIST

<p>Gabrieleno Band of Mission Indians - Kizh Nation Andrew Salas, Chairperson Post Office Box 393 Covina, California 91723</p>	<p>Gabrielino/Tongva Nation Sam Dunlap, Cultural Resources Director Post Office Box 86908 Los Angeles, California 90086</p>
<p>Gabrielino/Tongva Nation Sandonne Goad, Chairperson 106 1/2 Judge John Aiso Street Los Angeles, California 90012</p>	<p>Gabrielino/Tongva San Gabriel Band of Mission Indian Anthony Morales, Chairperson Post Office Box 693 San Gabriel, California 91778</p>
<p>Morongo Band of Mission Indians Robert Martin, Chairperson 12700 Pumarra Road Banning, California 92220</p>	<p>Morongo Band of Mission Indians Ernest H. Siva, Tribal Elder 9570 Mias Canyon Road Banning, California 92220</p>
<p>Morongo Band of Mission Indians Denisa Torres, Cultural Resources Manager 12700 Pumarra Road Banning, California 92220</p>	<p>Morongo Band of Mission Indians Ray Huaute, Cultural Resource Specialist 12700 Pumarra Road Banning, California 92220</p>
<p>Morongo Band of Mission Indians Shane Helms, Planning Director 12700 Pumarra Road Banning, California 92220</p>	<p>San Manuel Band of Mission Indians Lee Clauss, Director-CRM Department 26569 Community Center Drive Highland, California 92346</p>
<p>San Manuel Band of Mission Indians Lynn Valbuena, Chairwoman 26569 Community Center Highland, California 92346</p>	<p>Serrano Nation of Mission Indians Goldie Walker, Chairwoman Post Office Box 343 Patton, California 92369</p>
<p>Tejon Indian Tribe Octavio Escobedo, Tribal Chair 1731 Hasti Drive, #108 Bakersfield, California 93309</p>	<p>San Fernando Band of Mission Indians John Valenzuela, Chairperson Post Office Box 221838 Newhall, California 91322</p>
<p>Robert G. Taylor, P.G. Forest Hydrologist San Bernardino National Forest 602 S. Tippecanoe Avenue San Bernardino, California 92408</p>	<p>Daniel Grijalva Forest Archaeologist/Tribal Liaison San Bernardino National Forest 602 S. Tippecanoe Avenue San Bernardino, California 92408</p>
<p>Office of Historic Preservation Kathleen Forrest, State Historian II 1725 23rd Street, Suite 100 Sacramento, California 95816</p>	

**Department of Water Resources
Devil Canyon Project Relicensing
FERC Project No. 14797
San Bernardino County, California**

Attachment 1

Project Vicinity Map



Legend

- Proposed Project Boundary (v.20151214)
- State Water Project
- Perennial Stream/River
- Intermittent Stream/River
- Major Highway
- Congressional National Forest Boundary
- ★ Project Dam
- ▲ Powerplant

0 0.5 1 2 3 4 Miles

Prepared: May 2016
 Projection: CA SP V NAD83 (ft)
 Data and/or Background: Watershed NHD, Terrain: USGS
 Path: PROP MGMT\2015 Projects
 \20150722\FERC_No2426_SWP_Hydropower_Relicensing\GIS\Maps\mxd\DevilsCynPad

N

DEVIL CANYON PROJECT RELICENSING



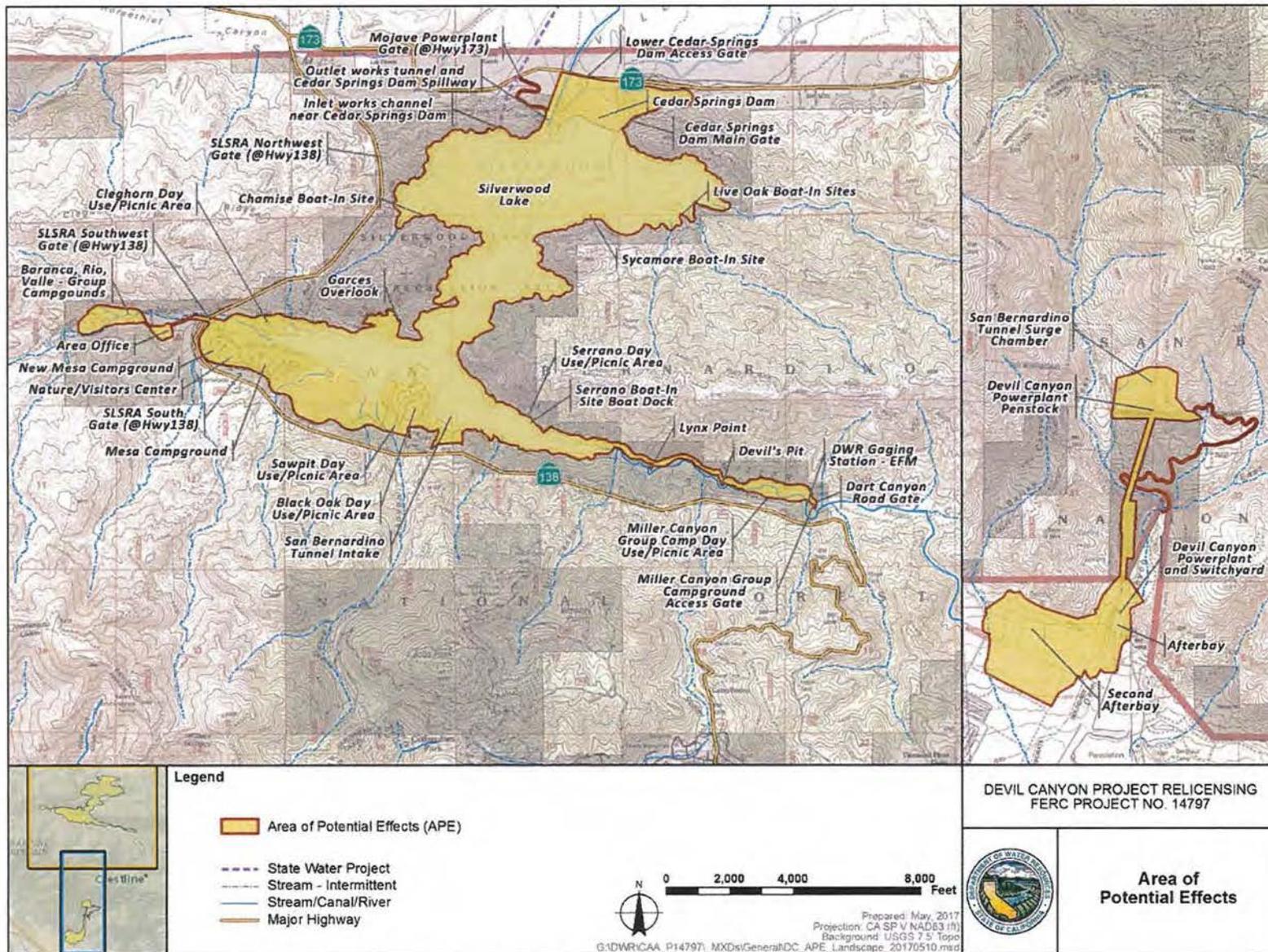
Project Vicinity

Attachment 1. Project Vicinity

**Department of Water Resources
Devil Canyon Project Relicensing
FERC Project No. 14797
San Bernardino County, California**

Attachment 2

**USGS Topographic Quadrangles Depicting the
Location of the Undertaking and the Proposed APE**



Attachment 2. Area of Potential Effects

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov



July 18, 2017

In reply refer to: FERC_2017_0714_001

Gwen Scholl, Acting Chief
Hydropower License Planning and Compliance Office
California Department of Water Resources
1416 Ninth Street, P.O. Box 942836
Sacramento, CA 95816

RE: Devil Canyon Project Relicensing (FERC No. 14797), Area of Potential Effect, San Bernardino County, California

Dear Ms. Scholl:

Thank you for your letter received July 14, 2017, initiating consultation regarding the above-referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101), as amended, and its implementing regulation found at 36 CFR § 800. The California Department of Water Resources (DWR) has been delegated Section 106 consultation authority by the Federal Energy Regulatory Commission (FERC), pursuant to FERC's September 30, 2016 *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process* for the Devil Canyon Project (project). Included with DWR's letter was the proposed Area of Potential Effect (APE) map.

The project is located along the State Water Project (SWP), but is licensed as a discrete hydropower project by FERC. Project facilities are located along the East Branch of the SWP in San Bernardino County, between the cities of Hesperia and San Bernardino. The project consists of the Devil Canyon Power Development, including the Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities associated with Silverwood Lake, and appurtenant facilities. The existing 50-year FERC license for the project expires on January 21, 2022, thus DWR is in the process of seeking a new license from FERC.

As described in the consultation package the APE has been defined as all lands within the FERC boundary, as delineated by the known or potential locations of project operations and maintenance (including direct and indirect disturbances and project facilities, features, and access roads. The APE includes 2,070 acres of land with approximately 132 acres located within the San Bernardino National Forest. The APE

excludes lands overlying the San Bernardino Tunnel as DWR does not perform any Project operations and maintenance activities on these lands.

DWR, on behalf of FERC, has requested comments on the APE. After reviewing the information submitted with your letter, I offer the following:

- Please provide additional discussion of the methodology and rationale for the APE and how it is appropriate to the scale and nature of the undertaking.
- Please note that the results of the identification efforts may necessitate expansion of the APE in order to adequately identify and evaluate historic properties.
- Please provide an electronic copy of FERC's September 30, 2016 *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process* that includes the delegation of consultation authority to DWR.
- Please clarify why the lands above the San Bernardino Tunnel were not included in the APE, and whether the tunnel itself is included in the APE. The consultation letter states that the lands above the tunnel have been excluded because DWR does not perform any project operations and maintenance on these lands; please clarify how the tunnel is accessed currently and how it might be accessed if the tunnel portals were blocked.

Thank you for the opportunity to comment and I look forward to consulting with FERC and DWR on this undertaking. Please direct any questions or concerns that you may have to Kathleen Forrest, Historian, at 916-445-7022 or kathleen.forrest@parks.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Julianne Polanco', with a long horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



August 23, 2017

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

FERC Project 14797 – Response to Comments on the Devil Canyon
Project Area of Potential Effects, San Bernardino County, California

Dear Ms. Polanco:

Thank you for your letter dated July 18, 2017 responding to the May 31, 2017 request by the California Department of Water Resources (DWR) for concurrence on DWR's Devil Canyon Project, Federal Energy Regulatory Commission (FERC) Project No. 14797 (Project), Area of Potential Effects (APE). DWR, under FERC's authority, is continuing consultation with the State Historic Preservation Officer (SHPO) regarding your comments, for the undertaking referenced above. Please find below the information requested in your letter.

Please provide additional discussion about the methodology and rationale for the APE and how it is appropriate to the scale and nature of the undertaking.

DWR has no plans for any new construction, expansion of Project facilities, or any other work for the Project that would require potential modifications or disturbances outside of the proposed APE. As a result, DWR designed the proposed APE to fully encompass all lands currently used by DWR to operate and maintain the Project. Therefore, the proposed APE includes all Project operation facilities (e.g., the dam, spillway, powerhouse, recreation areas, Project roads, and buildings or other built environment features and locations) under FERC's jurisdiction where DWR might have Project-related activities and/or related effects.

Please note that the results of the identification effort may necessitate expansion of the APE in order to accurately identify and evaluate historic properties.

Ms. Julianne Polanco
August 23, 2017
Page 2

DWR understands that the cultural resources and tribal resources relicensing studies may result in the identification of potential historic properties that extend outside the proposed APE. If such areas are identified by these studies, DWR will expand the APE in accordance with 36 CFR §800.4(a)(1), in consultation with the United States Forest Service - San Bernardino National Forest and the Native American Tribes as appropriate, and will seek consultation and concurrence on the expansion of the APE from your office in coordination with FERC. Under such circumstances, the APE would only be expanded to the extent necessary to evaluate National Register of Historic Places eligibility and potential Project-related effects.

Please provide an electronic copy of FERC's September 30, 2016 Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving use of the Traditional Licensing Process that approves the delegation of consultation authority to DWR.

As requested, DWR is enclosing a hard copy of FERC's September 30, 2016 Notice, and will transmit an electronic copy of this Notice as an Adobe Acrobat file via email.

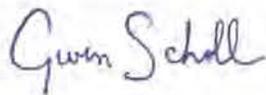
Please clarify why the lands above the San Bernardino Tunnel were not included in the APE, and whether the tunnel itself is included in the APE. The letter states that the tunnel has been excluded because DWR does not perform any project operations and maintenance on these lands: Please clarify how the tunnel is accessed currently, and how it might be accessed if the tunnel portals were blocked.

The physical structure of the San Bernardino Tunnel is included in the APE. Lands above the underground portions of the tunnel where DWR performs no work associated with the undertaking are not included in the APE because the undertaking has no potential to affect cultural resources that may occur on those lands. In contrast, lands where DWR may occasionally access the tunnel for periodic inspections or maintenance (i.e., at the upstream and downstream ends of the tunnel, at a few manholes above the tunnel and at a few adits to the tunnel) are included in the APE because the undertaking has a potential to affect cultural resources that may occur on those lands. If the tunnel portals were hypothetically blocked, DWR would access the tunnel from the existing manholes and adits.

Ms. Julianne Polanco
August 23, 2017
Page 3

Thank you for the opportunity to respond to your comments and for your assistance with this undertaking. We look forward to hearing from you soon regarding our request for concurrence on the appropriateness of the APE for the proposed undertaking, pursuant to 36 CFR §800.4(a)(1). If you have any questions or require additional information, please contact me at (916) 557-4554, or your staff may contact Lisa Lee, Senior Environmental Scientist, at (916) 557-4557.

Sincerely,



Gwen Scholl, Acting Chief
Hydropower License Planning and Compliance Office
Executive Division
California Department of Water Resources

Enclosure

cc: Dr. Frank Winchell
Federal Energy Regulatory Commission
888 First Street, Northeast
Washington, DC 20426

Tribal and Agency Distribution List

DISTRIBUTION LIST

Gabrieleno Band of Mission Indians - Kizh Nation Andrew Salas, Chairperson Post Office Box 393 Covina, California 91723	Gabrielino/Tongva Nation Sam Dunlap, Cultural Resources Director Post Office Box 86908 Los Angeles, California 90086
Gabrielino/Tongva Nation Sandonne Goad, Chairperson 106 1/2 Judge John Aiso Street Los Angeles, California 90012	Gabrielino/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson Post Office Box 693 San Gabriel, California 91778
Morongo Band of Mission Indians Robert Martin, Chairperson 12700 Pumarra Road Banning, California 92220	Morongo Band of Mission Indians Ernest H. Siva, Tribal Elder 9570 Mias Canyon Road Banning, California 92220
Morongo Band of Mission Indians Ray Huaute, Tribal Historic Preservation Officer 12700 Pumarra Road Banning, California 92220	Morongo Band of Mission Indians Shane Helms – Planning Director 12700 Pumarra Road Banning, California 92220
Morongo Band of Mission Indians Denisa Torres, Cultural Resources Manager 12700 Pumarra Road Banning, California 92220	San Fernando Band of Mission Indians John Valenzuela, Chairperson Post Office Box 221838 Newhall, California 91322
San Manuel Band of Mission Indians Lee Clauss, Director-CRM Department 26569 Community Center Drive Highland, California 92346	San Manuel Band of Mission Indians Lynn Valbuena, Chairwoman 26569 Community Center Highland, California 92346
Serrano Nation of Mission Indians Goldie Walker, Chairwoman Post Office Box 343 Patton, California 92369	Tejon Indian Tribe Octavio Escobedo, Tribal Chair 1731 Hasti Drive, #108 Bakersfield, California 93309
San Bernardino National Forest Daniel Grijalva Forest Archaeologist/Tribal Liaison 602 S. Tippecanoe Avenue San Bernardino, California 92408	San Bernardino National Forest Robert G. Taylor, P.G. Forest Hydrologist 602 S. Tippecanoe Avenue San Bernardino, California 92408
Office of Historic Preservation Kathleen Forrest, State Historian II 1725 23rd Street, Suite 100 Sacramento, California 95816	

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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September 21, 2017

In reply refer to: FERC_2017_0714_001

Gwen Scholl, Acting Chief
Hydropower License Planning and Compliance Office
California Department of Water Resources
1416 Ninth Street, P.O. Box 942836
Sacramento, CA 95816

RE: Devil Canyon Project Relicensing (FERC No. 14797), Area of Potential Effect, San Bernardino County, California

Dear Ms. Scholl:

Thank you for your letter received August 25, 2017, continuing consultation regarding the above-referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101), as amended, and its implementing regulation found at 36 CFR § 800. The California Department of Water Resources (DWR) has been delegated Section 106 consultation authority by the Federal Energy Regulatory Commission (FERC), pursuant to FERC's September 30, 2016 *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process* for the Devil Canyon Project (project). The current consultation package includes DWR's response to SHPO's comments dated July 18, 2017.

The project is located along the State Water Project (SWP), but is licensed as a discrete hydropower project by FERC. Project facilities are located along the East Branch of the SWP in San Bernardino County, between the cities of Hesperia and San Bernardino. The project consists of the Devil Canyon Power Development, including the Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities associated with Silverwood Lake, and appurtenant facilities. The existing 50-year FERC license for the project expires on January 21, 2022, thus DWR is in the process of seeking a new license from FERC.

As described in the consultation package the APE has been defined as all lands within the FERC boundary, as delineated by the known or potential locations of project operations and maintenance (including direct and indirect disturbances and project facilities, features, and access roads. The APE includes 2,070 acres of land with approximately 132 acres located within the San Bernardino National Forest. The APE

excludes lands overlying the San Bernardino Tunnel as DWR does not perform any Project operations and maintenance activities on these lands. DWR clarified in the current consultation that the APE does include the various tunnel access points.

DWR, on behalf of FERC, has requested comments on the APE. After reviewing the information submitted with your letter, I offer the following:

- I agree that APE is sufficient for the identification of historic properties for the undertaking, per 36 CFR §800.4(a)(1).

Thank you for the opportunity to comment and I look forward to consulting with FERC and DWR on this undertaking. Please direct any questions or concerns that you may have to Kathleen Forrest, Historian, at 916-445-7022 or Kathleen.Forrest@parks.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to be 'Julianne Polanco', with a long horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



July 30, 2019

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

OHP Reference No: FERC_2017_0714_001

FERC Project No. 14797—Devil Canyon Project Relicensing,
San Bernardino County, California—Changes to the Project Area of Potential Effects

Dear Ms. Polanco:

The California Department of Water Resources (DWR), under the authority of the Federal Energy Regulatory Commission (FERC),¹ is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the undertaking referenced above, per Title 36 Code of Federal Regulations (CFR) Part 800. DWR holds the original FERC license for the Devil Canyon Project (Project), consisting of the Devil Canyon Power Development, located in San Bernardino County, California, along the East Branch of the State Water Project between the cities of Hesperia and San Bernardino. The Project is currently licensed as part of FERC Project No. 2426, but DWR is currently seeking a new separate license for the project under license No. 14797. The original FERC license is scheduled to expire on January 31, 2022. Therefore, DWR is in the process of seeking a new license from FERC to continue operating and maintaining the Project. The Area of Potential Effects (APE) was previously proposed as part of this relicensing process. SHPO's concurrence on the APE was provided in a letter dated September 21, 2017. DWR has subsequently determined the need to revise the APE and is seeking SHPO's review and concurrence on the proposed changes.

Enclosed are the following materials in support of our consultation effort:

Enclosure 1: Project Vicinity Map

Enclosure 2: U.S. Geological Survey (USGS) Topographic Quadrangles
Depicting the APE Map with the Location of the Undertaking and
the Proposed Revisions to the APE

¹ Licensee was designated as FERC's non-federal representative for "informal consultation, pursuant to...Section 106 of the National Historic Preservation Act," in FERC's *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process*, dated September 30, 2016.

Ms. Julianne Polanco
July 30, 2019
Page 2

The previous Project APE on which SHPO concurred was reviewed by participating tribes and the San Bernardino National Forest during a meeting with DWR on May 15, 2017. DWR formally submitted the proposed APE for SHPO's review on May 31, 2017, with additional correspondence to clarify the proposed APE on August 23, 2017. As noted above, SHPO provided concurrence on the current Project APE on September 21, 2017.

DWR has since identified the need to add segments of existing access roads to the new license as primary project roads (also known as primary access roads) that were not identified in 2017. The addition of the new primary project roads will affect the existing APE boundary as described below, and as shown in Enclosure 2.

Primary project roads are identified in a FERC license as Project facilities that are used almost exclusively to access the Project, are within the proposed Project boundary, and are operated and maintained exclusively by the Licensee as a Project feature. Enclosure 2 of this letter shows the changes that will occur to the APE as a result of including these additional primary project roads, all of which are existing roads.

In a letter dated May 31, 2019, the addition of the newly identified primary project roads to the proposed revised APE was presented to participating tribes and agencies for a 30-day review. To date, the San Manuel Band of Mission Indians has responded in writing to the proposed revised APE and offered its approval of these changes. During a recently held Section 106 consultation meeting on July 12, 2019, in Loma Linda, California, tribes and agency attendees from the Morongo Band of Mission Indians, San Manuel Band of Mission Indians, U.S. Forest Service (USFS), and the California Department of Parks and Recreation provided their approval to proceed with the proposed revised APE.

During the meeting there was discussion about how to address the effects of performing mitigation efforts outside the proposed APE that DWR might implement in the future but are not currently proposed by DWR as part of this undertaking and are, therefore, not reasonably foreseeable at this time. The San Manuel Band of Mission Indians, Morongo Band of Mission Indians, and USFS recommended that DWR reconsider the APE boundary should any such mitigation efforts become foreseeable in the future. DWR agrees and will evaluate the need for additional modifications of the APE and consult with tribes and agencies about any additional proposed changes to the APE if and when such efforts outside the proposed APE become foreseeable.

Ms. Julianne Polanco
July 30, 2019
Page 3

In accordance with 36 CFR Section (§) 800.4(a)(1), DWR requests your concurrence on the appropriateness of the revised APE for the undertaking. Pursuant to 36 CFR § 800.4, we look forward to receiving your response within 30 days of the date of this letter (i.e., no later than August 29, 2019). Comments may be provided to DWR via U.S. Postal Service or by email at the contact information below.

Scott Goebel, Program Manager III, CBDA
Hydropower License Planning and Compliance Office
Department of Water Resources
Post Office Box 942836
Sacramento, California 94236-0001
Email: Scott.Goebel@water.ca.gov

Thank you for your assistance with this undertaking. If you have any questions or would like additional information, please contact Scott Goebel, DWR's Environmental Program Manager at (916) 557-4561.

Sincerely,

Handwritten signature of Scott Goebel in blue ink, followed by the text "acting for".

Gwen Knittweis, Chief
Hydropower License Planning and Compliance Office
Executive Division

Enclosures

cc: Dr. Frank Winchell
Federal Energy Regulatory Commission
888 First Street, Northeast
Washington, DC 20426

Brendon Greenaway
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

(Tribal and Agency Distribution List)

DISTRIBUTION LIST

<p>Gabrieleno/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson Post Office Box 693 San Gabriel, California 91778</p>	<p>Gabrieleno Band of Mission Indians - Kizh Nation Andrew Salas, Chairperson Post Office Box 393 Covina, California 91723</p>
<p>Gabrielino/Tongva Nation Sam Dunlap, Cultural Resources Director Post Office Box 86908 Los Angeles, California 90086</p>	<p>Gabrielino /Tongva Nation Sandonne Goad, Chairperson 106 1/2 Judge John Aiso Street Los Angeles, California 90012</p>
<p>Morongo Band of Mission Indians Travis Armstrong, Tribal Historic Preservation Officer 12700 Pumarra Road Banning, California 92220</p>	<p>Morongo Band of Mission Indians Robert Martin, Chairperson 12700 Pumarra Road Banning, California 92220</p>
<p>San Manuel Band of Mission Indians Lynn Valbuena, Chairwoman 26569 Community Center Highland, California 92346</p>	<p>San Manuel Band of Mission Indians Lee Clauss, Director-CRM Department 26569 Community Center Drive Highland, California 92346</p>
<p>San Fernando Band of Mission Indians Donna Yocum, Chairperson Post Office Box 221838 Newhall, California 91322</p>	<p>Chemehuevi Indian Reservation Charles Wood, Chairperson 1990 Palo Verde Drive Post Office Box 1976 Havasu Lake, California 92363</p>
<p>Serrano Nation of Mission Indians Wayne Walker, Co-Chairperson Post Office Box 343 Patton, California 92369</p>	<p>Serrano Nation of Mission Indians Mark Cochrane, Co-Chairperson Post Office Box 343 Patton, California 92369</p>
<p>Angeles National Forest and San Gabriel Mountains National Monument David S. Peebles, Heritage & Tribal Relations Program Manager 701 North Santa Anita Avenue Arcadia, California 91006</p>	<p>San Bernardino National Forest Jay Marshall, Forest Archaeologist/ Tribal Liaison 602 South Tippecanoe Avenue San Bernardino, California 92408</p>

California State Parks Southern Service Center Gabriella Lucidi, Assistant State Archaeologist 2797 Truxtun Road San Diego, California 92106	California State Parks Southern Service Center Marla Mealey, Associate State Archaeologist 2797 Truxtun Road San Diego, California 92106
San Bernardino National Forest Robert G. Taylor, P.G. Forest Hydrologist 602 South Tippecanoe Avenue San Bernardino, California 92408	California State Parks Lake Perris State Recreation Area Kimberly Seltmann, State Park Interpreter 17801 Lake Perris Drive Perris, California 92571

**DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION**

Lisa Ann L. Mangat, Director

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

September 13, 2019

In reply refer to: FERC_2017_0714_001

Ms. Gwen Knittweis, Chief
Hydropower License Planning and Compliance
Department of Water Resources
1416 Ninth Street, P.O. Box 942836
Sacramento, CA 94236-0001

VI ELECTRONIC MAIL

Re: Section 106 consultation—Revision to the Area of Potential Effects (APE) for Devil Canyon Project FERC Project No. 14797

Dear Ms. Knittweis:

The State Historic Preservation Officer (SHPO) is in receipt of your letter continuing consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101), as amended, and its implementing regulation found at 36 CFR § 800. The California Department of Water Resources (DWR) has been delegated Section 106 consultation authority by the Federal Energy Regulatory Commission (FERC), pursuant to FERC's September 30, 2016 *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process* for the Devil Canyon Project (project).

The project is located along the State Water Project (SWP), but is licensed as a discrete hydropower project by FERC. Project facilities are located along the East Branch of the SWP in San Bernardino County, between the cities of Hesperia and San Bernardino. The project consists of the Devil Canyon Power Development, including the Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities associated with Silverwood Lake, and appurtenant facilities. The existing 50-year FERC license for the project expires on January 21, 2022, thus DWR is in the process of seeking a new license from FERC.

On September 21, 2017, the SHPO previously agreed that the APE as you defined is sufficient for the identification of historic properties for the undertaking pursuant to 36 CFR § 800.4(a)(1). DWR has since identified the need to add segments of existing access roads to the new license. By letter dated May 31, 2019, the revised APE was presented to participating tribes and agencies for a 30-day review period, no objections were raised. DWR additionally

Ms. Gwen Knittweis, Chief
September 13, 2019
Page 2 of 2

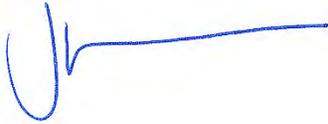
FERC_2017_0714_001

submitted Enclosure 2, Topographic Quadrangles depicting the revised APE. At this time, DWR seeks SHPO comments on its revision to the APE.

After reviewing the submitted documentation, I agree that the APE is sufficient for the identification of historic properties for the undertaking, pursuant to 36 CFR § 800.4(a)(1).

If my staff can be of any further assistance, please contact Brendon Greenaway at 916-445-7036 or Brendon.Greenaway@parks.ca.gov.

Sincerely,



Julianne Polanco
State Historic Preservation Officer

Electronic cc:

Lisa Lee, Department of Water Resources

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO 94296-0001
(916) 653-6624
FAX: (916) 653-9824

August 20, 1997



REPLY TO: FERC940823A

Ms. Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
Mail Code: DPCE HL-21.1
888 First Street, Northeast
Washington, DC 20426

Project: Archaeological Site Testing Report, Silverwood Lake - FERC 2426-113

Dear Ms Cashell:

The State Historic Preservation Officer (SHPO) has reviewed and provides the following comments on the documentation provided by the California Department of Water Resources (DWR) submitted pursuant to the Commission's responsibilities under Section 106 of the National Historic Preservation Act.

The report submitted for my review concerns the evaluation of prehistoric archaeological site CA-SBR-8913 (SL-1). I concur in the adequacy of the evaluation. While brief, it supplies me with sufficient information to concur in your determination that CA-SBR-8913 fails to meet the eligibility criteria for the National Register of Historic Places.

Please be aware that your agency may have additional Section 106 responsibilities under certain circumstances set forth in 36 CFR 800.

Your consideration of historic properties in the project planning process is appreciated. If you have any questions regarding our review of this undertaking, please call Chuck Whatford of my staff at (916) 653-2716.

Sincerely,

A handwritten signature in cursive script, appearing to read "Cheryl Widell".

Cherilyn Widell
State Historic Preservation Officer

COPY

STATE OF CALIFORNIA — THE RESOURCES AGENCY

PETE WILSON, Governor

OFFICE OF HISTORIC PRESERVATION
 DEPARTMENT OF PARKS AND RECREATION
 P.O. BOX 942896
 SACRAMENTO 94286-0001
 (916) 653-6624
 FAX: (916) 653-9824

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6 December 1994

FEDERAL ENERGY
 REGULATORY

Reply to: FERC 940823A

J. Mark Robinson
 Federal Energy Regulatory Commission
 Project Compliance & Administration
 Washington, DC 20426

Subject: CALIFORNIA AQUEDUCT PROJECT/SAN BERNARDINO TUNNEL
 FERC No. 2426-063

Dear Mr. Robinson:

Thank you for requesting my review of the undertaking noted above and for including the documentation on historic resources prepared by Dr. Orlins.

The California Department of Water Resources (DWR) is seeking a FERC license to build a new water intake tower in Silverwood Lake. Archaeologist Dr. Robert Orlins conducted an archaeological record search to ascertain if any archaeological resources were recorded within the undertaking's Area of Potential Effect, now inundated by the lake. A 1967 archaeological site inventory recorded a prehistoric bedrock mortar and designated it CA-SBR-501. Considering the constraints against gathering additional information and with the information available, FERC has determined that CA-SBR-501 is ineligible for inclusion in the National Register of Historic Places. I agree.

To build the new intake tower, DWR must lower the water level of the lake. When the lake bottom is exposed, the FERC agrees to conduct an inventory to verify the existence or location of CA-SBR and ascertain its condition. Any additional features not noted in 1967, that may be in association with CA-SBR-501, will be identified and evaluated.

You have fulfilled federal agency responsibilities pursuant to 36 CFR 800, the regulations implementing Section 106 of the National Historic Preservation Act. Please note that your agency may have additional responsibilities under 36 CFR 800 under any of the following circumstances:

1. If any person requests that the Advisory Council on Historic Preservation review your findings in accordance with 36 CFR 800.6(e);
2. If this undertaking changes in ways that could affect historic properties [36 CFR 800.5(c)];

3. If previously undocumented properties are discovered during the implementation of this undertaking or if a known historic property will be affected in an unanticipated manner [36 CFR 800.11];
4. If a property that was to be avoided has been inadvertently or otherwise affected [36 CFR 800.4(c);800.5];
5. If any condition of the undertaking, such as a delay in implementation or implementation in phases over time, may justify reconsideration of the current National Register status of properties within the undertaking's Area of potential Effects [36 CFR 800.4(c)].

Thank you for considering historic properties during project planning. If you have any questions, please call staff archaeologist Nicholas Del Cioppo at (916) 653-9696.

Sincerely,



Ms. Cheryl Widell
State Historic Preservation Officer

**DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION**

Lisa Ann L. Mangat, Director

Julianne Polanco, State Historic Preservation Officer
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September 18, 2019

In reply refer to: FERC_2017_0714_001

Ms. Gwen Knittweis, Chief
Hydropower License Planning and Compliance
Department of Water Resources
1416 Ninth Street, P.O. Box 942836
Sacramento, CA 94236-0001

VI ELECTRONIC MAIL

Re: Section 106 consultation—Determinations of Eligibility and Finding of Effect for the Devil Canyon Project FERC Project No. 14797

Dear Ms. Knittweis:

The State Historic Preservation Officer (SHPO) is in receipt of your letter continuing consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101), as amended, and its implementing regulation found at 36 CFR § 800. The California Department of Water Resources (DWR) has been delegated Section 106 consultation authority by the Federal Energy Regulatory Commission (FERC), pursuant to FERC's September 30, 2016 *Notice of Intent to File License Application, Filing of Pre-Application Document, and Approving Use of the Traditional Licensing Process* for the Devil Canyon Project (project).

The project is located along the State Water Project (SWP), but is licensed as a discrete hydropower project by FERC. Project facilities are located along the East Branch of the SWP in San Bernardino County, between the cities of Hesperia and San Bernardino. The project consists of the Devil Canyon Power Development, including the Cedar Springs Dam, Silverwood Lake, San Bernardino Tunnel, Devil Canyon Powerplant and Switchyard, Devil Canyon Afterbay, Devil Canyon Second Afterbay, recreational facilities associated with Silverwood Lake, and appurtenant facilities. The existing 50-year FERC license for the project expires on January 21, 2022, thus DWR is in the process of seeking a new license from FERC.

At this time, DWR is seeking the following from the SHPO:

- Pursuant to 36 CFR § 800.4(b), DWR is seeking comments from the SHPO regarding its efforts to identify historic properties located within the Area of Potential Effects (APE);
- Pursuant to 36 CFR § 800.4(c), DWR is seeking SHPO concurrence on determinations of eligibility for listing in the National Register of Historic Places (NRHP);

- Pursuant to 36 CFR § 800.4(d), DWR is seeking comments from the SHPO on its determination that no historic properties will be affected by this undertaking.

To identify historic properties located within the APE, DRW developed and implemented a Cultural Resources Study Approach in consultation with participating Tribes, the California Department of Parks and Recreation, and the San Bernardino National Forest (SBNF). Efforts to identify historic properties included background and literature review and research and survey for archaeological and built environment resources in accessible areas within the APE. The results of the studies were distributed to consulting parties for review and comment on May 31, 2019. Comments received from the San Manuel Band of Mission Indians, Morongo Band of Mission Indians, and the SBNF were incorporated. Final versions of the following reports are provided in support of DWR's determinations of eligibility and finding of effects:

- Volume I: Project Overview and Summary of Results and Recommendations (HDR, July 2019)
- Volume II: Archaeological Study Results and Recommendations (HDR, July 2019)
- Volume III: Historical Built Environment Study Results and Recommendations (HDR, July 2019)

DWR has applied the National Register Criteria at 36 CFR part 63 and have determined that the following resources are not eligible for listing in the NRHP:

- P-36-013421
- P-36-024109
- DC-HDR-001
- DC-HDR-002
- DC-HDR-003
- DC-HDR-005
- DC-HDR-007
- DC-HDR-009
- DC-HDR-010
- DC-HDR-011
- DC-HDR-012
- DC-HDR-014
- DC-HDR-015
- DC-HDR-017
- DC-HDR-019
- PR-028864
- DC-HDR-ISO-001
- DC-HDR-ISO-002
- DC-HDR-ISO-003
- DC-HDR-ISO-004
- DC-HDR-ISO-005
- DC-HDR-ISO-007
- DC-HDR-ISO-008
- Cedar Springs Dam Low-Level Outlet Works
- San Bernardino Tunnel Intake
- San Bernardino Tunnel Surge Chamber
- Devil Canyon Powerplant Penstocks
- Devil Canyon Powerplant Facility
- Devil Canyon Water Treatment Plant and Monitoring Station
- Sawpit Canyon Day Use Facilities
- Cedar Springs Historic Apple Orchard
- Bridge BR 54-325

DWR have determined that the following resources are eligible for listing in the NRHP:

- Cedar Springs Dam, Criteria A and C
- Silverwood Lake, Criterion A

• Cedar Springs Dam Spillway, Criterion A
For the purposes of this undertaking only, DWR is assuming the following resources to be eligible for listing in the NRHP and will manage accordingly:

- P-36-000174/CA-SBR-174
- DC-HDR-018
- P-36-008913
- DC-HDR-021
- P-36-024794
- DC-HDR-006
- P-36-000501/CA-SBR-501/H
- DC-HDR-022
- DC-HDR-008
- P-36-003033/CA-SBR-3033/H/CHL No. 963

Following review of the supporting documentation, the SHPO offers the following comments:

- Pursuant to 36 CFR § 800.4(b), the historic property identification efforts have been reasonable and in good faith. However, as DWR states in its August 16, 2019 letter to SHPO, additional project areas are needed and additional historic property identification efforts are planned in areas of the expanded APE. At this time, the SHPO withholds further comment pursuant to 36 CFR § 800.4(b).
- Of the nine resources evaluated for NRHP eligibility, three were determined eligible. The Cedar Springs Dam, Silverwood Lake and Cedar Springs Dam Spillway are eligible under Criterion A for their association with the statewide water conveyance and planning efforts. These components are part of the most successful complex water conveyance system built, the State Water Project. Cedar Springs Dam is also eligible under Criterion C for its unique engineering and design required in response to seismic concerns in the project area. I **concur** with these determinations and the remaining determinations listed above pursuant to 36 CFR § 800.4(c).
- As additional consultation is required regarding effects to historic properties possibly located within the APE, at this time I withhold comments on your determination that no historic properties will be affected from this undertaking.

If my staff can be of any further assistance, please contact Brendon Greenaway at 916-445-7036 or Brendon.Greenaway@parks.ca.gov.

Sincerely,



Julianne Polanco
State Historic Preservation Officer

Electronic cc: Lisa Lee, Department of Water Resources

Exhibit E

Appendix K – SHPO Correspondence

(flysheet)

SHPO Review of the Supplemental Cultural Resources Report – DWR will submit the Supplemental Cultural Resources Report to the State Historic Preservation Officer (SHPO) for 30-day review on October 9, 2019. Concurrence on the eligibility recommendations and Finding of Effect is expected in November, 2019.

SHPO Review of the Historic Properties Management Plan – DWR expects to submit the Historic Properties Management Plan (HPMP) to SHPO for 30-day review in October, 2019. Concurrence on the HPMP is expected in November-December, 2019, contingent on the number of review and submittal cycles.

Appendix O

NHPA Section 106 Consultation Log

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Date	Topic	Description	Discussion/Notes	Consulting Parties
6/1/2015	Tribal Contacts and Sacred Lands	Request to Native American Heritage Commission (NAHC) for Tribal contacts and search of their Sacred Lands files	DWR submitted a request to the NAHC for a list of tribes and individuals who might want to participate in the Relicensing and for a search of the NAHC's Sacred Lands files for potential resources of concern in the relicensing Area of Potential Effects (APE)	DWR, NAHC
7/17/2015	Tribal Contacts and Sacred Lands	NAHC response to DWR for Tribal contacts and search of Sacred Lands files	The NAHC provided a list of tribes and individuals potentially interested in the relicensing and indicated that there were no resources listed in their Sacred Lands files for the relicensing APE.	DWR, NAHC
7/28/2015	Pre-PAD Relicensing Questionnaire	Licensees' letter and questionnaire to potentially interested parties and stakeholders regarding the South SWP Relicensing, including the Devil Canyon Project.	DWR provided Project and relicensing information to potentially interested parties and requested completion of questionnaire attached to letter.	DWR to potentially interested Tribes, Agencies, Non-Governmental Organizations (NGOs), and other Potential Stakeholders.
8/10/2016	Section 106 Consultation	Letters from FERC to potentially interested Tribes.	FERC invitation to participate in Project relicensing process.	FERC, Morongo Band of Mission Indians (Morongo), San Manuel Band of Mission Indians (San Manuel)
10/25/2016	FERC Scoping Meeting and Environmental Site Review	Site visit with Relicensing Participants	Licensees contacted tribes by phone to provide information on scoping meeting and environmental site review.	DWR, interested Tribes and Relicensing Participants
10/28/2016	Section 106 Consultation	Email from Lee Clauss, San Manuel to FERC (John Mudre) regarding Scoping Document 1 for South SWP Hydropower Relicensing	Lee Clauss, Cultural Resources Director for the San Manuel, confirmed that the Tribe will be participating in the Devil Canyon Project Relicensing.	San Manuel and FERC
12/29/2016	Tribal Comments on PAD	Letter with Comments from San Manuel Tribe on PAD and Proposed Cultural and Tribal Resources Studies.	Clauss provided comments and concerns regarding the inclusion of certain resources in the studies and other materials in support of the studies.	DWR, San Manuel
1/23/2017	Tribal Comments	Telephone Conversation with San Manuel	DWR provided Clauss with a status update on the Project relicensing.	DWR, San Manuel
1/23/2017	Tribal Information	Follow-Up to 1/23/2017 Telephone Conversation	Clauss emailed DWR information regarding the Serrano Territory and plants of tribal concern as discussed in the telephone call.	DWR, San Manuel
2/15/2017	Section 106 Consultation	FERC telephone memo regarding FERC consultation with the San Manuel	FERC filed a telephone memo indicating that FERC's representatives held a consultation meeting with Clauss of the San Manuel on 10/17/2016.	FERC, San Manuel
2/17/2017	Section 106 Consultation	FERC telephone memo regarding FERC consultation efforts with the Morongo	FERC filed a telephone memo that summarizes FERC's communications with the Morongo between 9/12/2016-10/5/2016, indicating that FERC spoke with an assistant to Chairperson Robert Martin, who directed FERC to speak with Shane Helms regarding the Tribe's participation in the relicensing. FERC left a message for Mr. Helm but did not hear back from Chairperson Martin or Mr. Helms.	FERC, Morongo
4/8/2017	Tribal Comments on Study Plans	Letter from San Manuel providing comments on Cultural and Tribal Study Plan Approaches	In the Cultural Study Plan, San Manuel asked for clarification regarding definitions of "Oral Histories" and "Study Area," and had comments regarding field survey and excavation methods. San Manuel asked for clarification on references, provided comments on the Tribal Resources Study Approach regarding research processes, and requested that a 60-day review be provided for a Traditional Cultural Property (TCP)-based report.	DWR, San Manuel
5/15/2017	Section 106 Kick-Off Meeting	Meeting in Victorville, CA with FERC, Relicensing Team, Tribes and San Bernardino National Forest (SBNF)	The meeting covered an overview of Project; relicensing steps, relicensing progress, study plans; proposed APE; relationship between FERC relicensing process, Section 106, and CEQA AB 52; next steps.	FERC, DWR, Stantec, HDR, Morongo Band of Mission Indians (Morongo), San Manuel, and SBNF
5/19/2017	Cultural Resources Permit Application	Email from HDR (Flint) to Daniel Grijolva (SBNF)	Introduction of HDR to SBNF and request for a permit application to obtain the Cultural Resources Study permit required to work on federal lands.	HDR, SBNF

Date	Topic	Description	Discussion/Notes	Consulting Parties
5/23/2017	Section 106 Kick-Off Meeting Follow-up	Landowners in Project FERC boundary	DWR provided SBNF with map of landowners in proposed Project Boundary	DWR, HDR, SBNF
5/31/2017	APE Consultation	DWR submitted consultation letter to SHPO	DWR requested SHPO concurrence on the proposed Project APE	DWR, SHPO
5/31/2017	APE Consultation	DWR filed letter informing FERC of SHPO consultation	DWR submitted the letter requesting SHPO concurrence on the Project APE to FERC	DWR, FERC
6/22/2017	Cultural Resources Permit	SBNF issues Cultural Resources Permit	Daniel Grijolva (SBNF Archaeologist) issued HDR a permit to conduct the Cultural Resources Survey on SBNF lands	HDR, SBNF
7/18/2017	APE Consultation	SHPO letter to DWR	SHPO requested additional information regarding the APE	DWR, SHPO
8/14/2017	APE Consultation	DWR submitted consultation letter to SHPO	DWR provided requested information to the SHPO regarding the Project APE	DWR, SHPO
8/18/2017	Section 106 Consultation and Tribal Engagement	Email to Chairwoman Sandonne Goad and Vice Chairman Adam Loya regarding scheduling an August 29, 2018 meeting	Meeting invitation to the Gabrielino/Tongva Nation to discuss Project information and to meet the Project Relicensing ethnography team.	DWR and Gabrielino/Tongva Nation
8/21/2017	Section 106 Consultation and Tribal Engagement	Email from Chairwoman Sandonne Goad confirming her participation in the August 29, 2018 meeting	Chairwoman Sandonne Goad confirmed her participation in the August 29, 2018 meeting and indicated that she will check with other tribal members on their participation.	DWR and Gabrielino/Tongva Nation
8/24/2017	Meet and Greet/Project Site Visit	DWR, Stantec, HDR, ethnographers, and tribes meet and tour Project together	Tour begins at Silverwood Lake and concludes at the San Manuel reservation for a discussion regarding the tribes' involvement and non-disclosure agreements.	DWR, Stantec, HDR, Albion, SRI, Reddy Anthropology, San Manuel, and Morongo
8/25/2017	Meet and Greet/Project Site Visit	DWR, Stantec, HDR, ethnographers, and tribes continue tour of Project	Second day of Project tour	DWR, Stantec, HDR, Albion, SRI, Reddy Anthropology, San Manuel, and Morongo
9/21/2017	APE Consultation	SHPO concurrence	SHPO concurred with the proposed APE	DWR, SHPO
10/24/2017	Non-Disclosure Agreements	Non-Disclosure Agreements	Clauss (San Manuel) provided comments to DWR for the draft non-disclosure agreements	DWR, San Manuel
10/30/2017	Non-Disclosure Agreements	Non-Disclosure Agreements	DWR submitted revised agreement to San Manuel for the tribe's review	DWR, San Manuel
2/14/2018	Section 106 Consultation	Tribal site visit	As follow-up to the Section 106 kick-off meeting and site visit on August 29, 2017, DWR called Chairwoman Sandonne Goad to see if they had any questions and to inquire on their site visit request following the August 29, 2017 meet and greet meeting. DWR left a voice message. An email was sent the same day to Chairwoman Sandonne Goad. No response was received.	DWR, Gabrielino/Tongva Nation
8/16/2018	Tribal Resources Study	Botanical Resources of Tribal interest	Clauss informed DWR of tribal requests made to the ethnographer regarding the inclusion or exclusion of botanical resource data.	DWR, San Manuel
9/13/2018	Tribal Resources Study	Communications regarding Tribal field visit and community member interviews	Clauss informed DWR that San Manuel did not know the Tribal Resources Study schedule and end date and, therefore, was considering the potential for community members to be interviewed as part of the Study. They were also planning a site visit for the community members in October 2018 as part of that consideration, with the potential for the community members to be interviewed as a group.	DWR, San Manuel
10/1/2018	Tribal Resources Study	Communications regarding Tribal field visit and community member interviews	Ethnographer Mike Lerch (SRI) was informed by Clauss of San Manuel that the community member field visit tentatively scheduled for October 2018 would only include tribal members, and that the question of community member interviews was still pending.	SRI, DWR, HDR, San Manuel
4/10/2019	Document Reviews	Draft License Application (DLA) and Draft Historic Properties Management Plan (HPMP)	DWR distributes the DLA with the draft HPMP as an appendix, for Relicensing Participants' 90-day review and comment period, including tribes, agencies, and SHPO.	DWR, Tribes, Agencies, NGOs, and other Potential Stakeholders.

Date	Topic	Description	Discussion/Notes	Consulting Parties
5/10/2019	Tribal Contacts and Sacred Lands	Request to NAHC for an updated Tribal contact list and search of Sacred Lands files	On behalf of DWR, HDR submitted a request to the NAHC for an updated list of tribes and individuals who might want to participate in the relicensing and for a search of the NAHC's Sacred Lands files for potential resources of concern in the relicensing APE.	DWR, NAHC, HDR
5/21/2019	Section 106 Consultation	Section 106 consultation meetings	DWR provided an email notice to Cultural and Tribal Relicensing Participants for DWR's proposed Section 106 consultation meetings for the Project. DWR proposed to schedule Consultation Meeting Number 1 on a date to be determined during the week of June 11-13, 2019, and to provide a follow-up email to Cultural and Tribal Relicensing Participants prior to the scheduled meeting date.	DWR, participating tribes, SBNF
5/28/2019	Document Reviews	Draft Revised APE and Draft Cultural Resources Study Report	Proposed revisions to the SHPO-approved APE and the Draft Cultural Resources Study Report were distributed to Tribes, SBNF, and California Department of Parks and Recreation (DPR) for 30-day review and comment period.	DWR, San Manuel, Morongo, Chemehuevi Indian Reservation (Chemehuevi), San Fernando Band of Mission Indians (San Fernando), DPR, and SBNF
5/29/2019	Tribal Contacts and Sacred Lands	NAHC response for an updated Tribal contact list and search of Sacred Lands files	The NAHC provided an updated list of tribes and individuals potentially interested in the relicensing and indicated that there was a potential resource identified in their Sacred Lands files. The NAHC recommended contacting the tribes included on the list regarding the potential resource.	DWR, NAHC, HDR
5/31/2019	Section 106 Consultation	Consultation regarding the relicensing and Section 106 Consultation Meeting No. 1	Robert Taylor with SBNF informed DWR that the SBNF forest archaeologist had left the organization and was replaced by Jay Marshall. On behalf of DWR, HDR contacted Marshall to discuss the relicensing and Consultation Meeting 1. Marshall stated that he would be unable to attend this meeting, but that David Peebles may be able to attend and he would call Peebles. Flint and Marshall discussed the participating tribes and FERC as the lead federal agency for the relicensing, that FERC had designated DWR as its Section 106 non-federal representative in support of day-to-day consultation, and that relicensing includes communication and coordination with SBNF. Marshall also mentioned that Caltrans had recently been conducting work on Hwy 138 and that there were a lot of cultural resources identified during that work. He felt it was possible that the newly identified sensitive tribal resource in the NAHC's Sacred Lands files may be associated with that work, as the tribes were heavily involved in the project.	HDR, SBNF
6/3/2019	Section 106 Consultation	DWR coordination for Consultation Meeting No. 1	Lee (DWR) spoke with Donna Yocum (San Fernando) regarding Consultation Meeting 1, mailing a flash drive with Cultural Resources reports, and to request comments on the proposed revised APE.	DWR, San Fernando
6/3/2019	Cultural Resources Study	Email from HDR to DPR regarding DPR Permit Application for survey work performed 2017 at Silverwood Lake	Ruth (HDR) emailed Marla Mealey (DPR) with questions for content to be included in permit application post-survey (2017) at Silverwood Lake. Mealey provided information, including backup contact information of Gabriella Lucidi.	HDR, DPR
6/3/2019-6/5/2019, and 6/28/2019	Section 106 Consultation	Tribal participation in relicensing	On behalf of DWR, HDR called newly identified tribes and individuals included on the updated NAHC list, as well as non-responsive contacts included on the 2015 NAHC list, to determine their interest in participating in the relicensing. All newly identified Tribal contacts stated that they wish to participate in the relicensing and include: the Chemehuevi Indian Reservation, Serrano Nation of Mission Indians, and the San Fernando Band of Mission Indians. Existing contacts that had been unresponsive to meeting invitations and other communications who stated that they wish to participate include: Gabrieleno Band of Mission Indians - Kizh Nation, the Gabrieleno/Tongva San Gabriel Band of Mission Indians, and the Gabrielino/Tongva Nation. Voicemail messages were left for Sam Dunlap, Cultural Resources Director with the Gabrielino/Tongva Nation, but Mr. Dunlap has not returned the calls. The San Manuel and Morongo have continued to actively participate in the relicensing and were not recontacted during this effort as a result.	DWR, HDR, Chemehuevi Indian Reservation, Serrano Nation of Mission Indians, San Fernando Band of Mission Indians, Gabrieleno Band of Mission Indians - Kizh Nation, Gabrieleno/Tongva San Gabriel Band of Mission Indians, and the Gabrielino/Tongva Nation.
6/5/2019	Cultural Resources Study	Email notice of Consultation Meeting 1	Email was sent out by Flint (HDR) for notice of Consultation Meeting to provide the date, location, and additional information related to Consultation Meeting Number 1: 6/13/19 from 9:30-12:30 at TownePlace Suites in Loma Linda. DWR requested that recipients respond to the invitation no later than June 10, 2019.	DWR, Stantec, HDR, Morongo, San Manuel, Chemehuevi, Serrano Nation of Mission Indians, San Fernando Band of Mission Indians DPR, SBNF, and SHPO

Date	Topic	Description	Discussion/Notes	Consulting Parties
6/6/2019	Cultural Resources Study	Permit Application to California Department of Parks and Recreation (DPR) for survey work at Silverwood Lake	HDR submitted a permit application to DPR for survey work at Silverwood Lake, per DPR's request.	HDR, DPR
6/6/2019	Section 106 Consultation	Responses to Consultation Meeting 1 invitation	Those who accepted the meeting invitation include DPR, San Manuel, and Morongo, in addition to FERC, DWR, Stantec, and HDR. Kathleen Forrest, FERC Liaison at SHPO, requested that Brendon Greenaway (SHPO) be included in the contact list. SHPO was unavailable to attend the meeting.	FERC, DWR, Stantec, HDR, DPR, SHPO, Morongo, and San Manuel
6/13/2019	Section 106 Consultation	DWR conducted Consultation Meeting 1	DWR met with participating tribes, SBNF, DPR, FERC, and consultants Stantec and HDR to provide tribes and agencies with a status of the relicensing, overview of the results of the Tribal and Cultural Resources Studies, a look-ahead at upcoming meetings and document reviews, and to provide an opportunity for consultation parties to ask questions or to provide comments and/or concerns.	FERC, DWR, Stantec, HDR, DPR, Morongo, and San Manuel
6/18/2019	Section 106 Consultation	Notice of Consultation Meeting No. 2	DWR sent tribes, SBNF, DPR, SHPO, and FERC an email notice detailing the location and time for Consultation Meeting No. 2	DWR, San Manuel, Morongo, Chemehuevi, San Fernando, DPR, Gabrieleno, Gabrieleno/Tongva, Gabrielino/Tongva, Serrano Nation, DPR, and SBNF
6/26/2019	Document Reviews	Draft HPMP	DWR submits letter to tribes, SBNF, and DPR requesting formal review and comments on the draft HPMP included in the DLA.	DWR, Morongo, San Manuel, Serrano, Chemehuevi Indian Reservation (Chemehuevi), San Fernando Band of Mission Indians (San Fernando), California Department of Parks and Recreation (DPR), and SBNF
7/1/2019	Document Reviews	Revised APE and Cultural Resources Report	Tribes, SBNF, and DPR 30-day comments due on the proposed APE revisions and Cultural Resources Report. No comments were received.	DWR, San Manuel, Morongo, Chemehuevi, San Fernando, DPR, and SBNF
7/1/2019	Document Reviews	Tribal Resources Report	DWR provides San Manuel with the Tribal Resources Report for review. The report was provided only to San Manuel first, per the non-disclosure agreement between San Manuel and DWR.	DWR, San Manuel
7/8/2019	Document Reviews	DLA and Draft HPMP	90-day comments due on DLA and draft HPMP from tribes, SBNF, and DPR	DWR, San Manuel, Morongo, Tribes, SBNF, DPR
7/9/2019	Section 106 Consultation	Additional Notice of Consultation Meeting No. 2	DWR sent tribes, SBNF, DPR, SHPO, and FERC an updated email notice detailing the location and time for Consultation Meeting No. 2	DWR, San Manuel, Morongo, Chemehuevi, San Fernando, DPR, Gabrieleno, Gabrieleno/Tongva, Gabrielino/Tongva, Serrano Nation, DPR, and SBNF
7/12/2019	Section 106 Consultation	DWR conducted Consultation Meeting 2	DWR met with participating tribes, SBNF, DPR, FERC, and consultants Stantec and HDR to provide tribes and agencies with an update for the relicensing, overview of the results of the Tribal and Cultural Resources Studies subsequent to Consultation Meeting 1, provided a look-ahead at upcoming meetings and document reviews, and provided an opportunity for consultation parties to ask questions or to provide comments and/or concerns. During the meeting, Robert Taylor (SBNF) provided verbal comments to DWR regarding the proposed revised APE and concerns for the APE boundary at recreation areas.	FERC, DWR, Stantec, HDR, DPR, Morongo, San Manuel, and SBNF
7/30/2019	APE Consultation	DWR letter to SHPO	DWR request for SHPO concurrence on revised APE	DWR, SHPO
8/6/2019	Document Reviews	Supplemental Cultural Resources Report	DWR submits Supplemental Cultural Resources Report to tribes and agencies for 30-day review.	DWR, San Manuel, Morongo, Serrano, San Fernando Chemehuevi, SBNF, DPR, and SBNF

Date	Topic	Description	Discussion/Notes	Consulting Parties
8/11/2019	Document Reviews	Tribal Resources Study Report	By way of email, Clauss of San Manuel provided tribal comments on the Tribal Resources Study Report.	DWR, San Manuel
8/12/2019	Document Reviews	Tribal Resources Study Report	Lee of DWR responded to Clauss' (San Manuel's) 8/12/2019 comments on the Tribal Resources Study Report by email to ask when other members of the tribe will provide comments, reminding Clauss of the relicensing schedule, requesting to be contacted if the tribe anticipates any delays in its reviews, requesting more specific information regarding the tribe's interest in plants on the Project, asking for confirmation that Clauss would like to review the Tribal Resources Study Report again after her comments have been addressed before the report is distributed to other consulting parties, and asking to Lee to let her know if and when the tribal Cultural Advisor Working Group (CAWG) wants to be interviewed following their review of the Tribal Resources Study Report.	DWR, San Manuel
8/12/2019	Document Reviews	Tribal Resources Study Report	Telephone call between Lisa Lee (DWR) and Lee Clauss (San Manuel) to clarify San Manuel comments on the Tribal Resources Report. Clauss discussed the tribe's interest in plant gathering within the APE, confirmed that there are no requests from tribal members for Tribal Resources Study interviews, requested that the Serrano and San Manuel tribes be represented appropriately and their conversations during the Tribal Study be accurately relayed in the Study report, requested that a particular map not be included in the Tribal Resources Report, specified that, for purposes of the Tribal Resources Report, a map including Serrano place names be contained to the APE and a 0.25-mile buffer, provided specific language to discuss the place names in the report narrative, and provided sensitivity concerns related to the cultural background section of the report. Lee provided Clauss with an update for the research efforts to address resource information provided by the NAHC. Clauss requested that that San Manuel be afforded one more review of the revisions to the Tribal Resources Report and that the tribe will decide at that time if the report can be distributed to other tribes and agencies for review, per the tribe's non-disclosure agreement with DWR. Clauss offered to provide a quick turn-around review of the revised report to assist in keeping the relicensing schedule moving. Clauss offered her appreciation of how welcoming the relicensing team is, and to the team's openness and willingness to hear and address her concerns, and that she thinks it is a very good team. Clauss further specified her appreciation that DWR is heading more towards collaboration with tribal communities rather than just consultation for the sake of consultation for a project.	DWR, San Manuel
8/13/2019	Document Reviews	Tribal Resources Study Report	Clauss of San Manuel responded via email to Lisa Lee's 8/12/2019 email proposing that San Manuel and DWR have a telephone call on 8/16/2019 to discuss the subjects in Lisa Lee's email. Lisa Lee responded that she was available to talk at the date and time Clauss proposed.	DWR, San Manuel
8/16/2019	Section 106 Consultation	Tribal Resources Study Report and NAHC Sacred Lands File Search Results	Lisa Lee of DWR and Lee Clauss of San Manuel spoke by telephone for clarification on Clauss' comments on the Tribal Resources Study Report, additional review of the report by Clauss, and potential tribal sensitivities on the Project. Lee and Clauss also discussed the results of the NAHC 2019 search having identified a resource in its Sacred Lands File that is potentially within the Project APE, and that discussions with participating tribes under the Tribal Resources Study did not result in the identification of any Sacred Lands resources within the APE. Clauss stated that there had been no requests from tribal members to be interviewed and requested that the Tribal Resources Study Report be updated regarding potential interviews. Clauss stated the importance of documenting each tribe's comments and responses appropriately in the report and asked that a map of ancestral lands provided by Lee in 2015 be excluded from the report. Clauss further provided comments on a map in the report showing place names and offered information about potentially sensitive topics in the report for other tribes. Clauss confirmed that she wanted to review the report before the tribe would provide consent to distribute it to others. Clauss offered a schedule for the week of August 26, 2019 in which she could review the report and provide comments. She further offered suggestions on the approach for the tribe's review of the Cultural Resources Study Report. Clauss stated the consultation history log should be updated to reflect the conversation between Lee and Clauss, especially in light of not resolving the Sacred Lands File information provided by the NAHC. She further offered to be available if ethnographer Lerch had any further questions for the Tribal Resources Study. Clauss also expressed her appreciation for the team's willingness to be open to her comments and to address her concerns.	DWR, San Manuel

Date	Topic	Description	Discussion/Notes	Consulting Parties
8/23/2019	Section 106 Consultation	Plant Gathering in the Project APE	Lee (DWR) spoke with Clauss (San Manuel) regarding the tribe's request to access certain portions of the APE to gather plants, reviewed regulations related to plant gathering, and spoke with local governmental representative for the same reasons.	DWR, San Manuel
9/4/2019	Section 106 Consultation	Email Notice of Consultation Meeting 3	DWR submitted an email invitation to tribes, SBNF, DPR, SHPO, and FERC with the date, location, and time for Consultation Meeting 3	DWR, San Manuel, Morongo, Chemehuevi, San Fernando, DPR, Gabrieleno, Gabrieleno/Tongva, Gabrielino/Tongva, Serrano Nation, DPR, and SBNF
9/4/2019	Section 106 Consultation	Email Notice of Consultation Meeting 3	DWR received an email from Armstrong with the Morongo requesting information about Consultation Meeting 3.	DWR, Morongo
9/5/2019	Section 106 Consultation	Clauss Response to Email Notice of Consultation Meeting 3	Clauss of San Manuel responded to the Consultation Meeting 3 email invitation to indicate that she was unable to make the meeting time and offering the time she was available.	DWR, San Manuel
9/5/2019	Section 106 Consultation	Updated Email Notice of Consultation Meeting 3	In response to Clauss' message about the meeting time for Consultation Meeting 3, DWR rescheduled the meeting to accommodate her schedule and resubmitted an updated email invitation to the tribes, SBNF, DPR, SHPO, and FERC.	DWR, San Manuel, Morongo, Chemehuevi, San Fernando, DPR, Gabrieleno, Gabrieleno/Tongva, Gabrielino/Tongva, Serrano Nation, DPR, and SBNF
9/5/2019	Document Reviews	Supplemental Cultural Resources Study Report	Supplemental Cultural Resources Report 30-day comments due to DWR	DWR, San Manuel, Morongo, Serrano, San Fernando, Chemehuevi, SBNF, and DPR
9/5/2019	Document Reviews	Supplemental Cultural Resources Study Report	SBNF provided DWR with comments on the Supplemental Cultural Resources Report.	DWR, SBNF
9/13/2019	APE Consultation	SHPO Correspondence	By way of a letter, SHPO concurred with DWR's proposed revisions to the Project APE.	DWR, SHPO
9/13/2019	Document Reviews	San Manuel on hold to Participate in the Relicensing	Clauss of San Manuel contacted Lee (DWR) to report that that due to the recent Freedom of Information Act (FOIA) request, and information provided by FERC staff that indicated the request involved releasing the draft HPMP and draft Cultural Resources Study Report, San Manuel will no longer actively participate in the relicensing until the FOIA request has been resolved. She was advised by San Manuel's legal counsel not to review or provide any comments/feedback on behalf of the tribe, indicating that this is the reason that she did not provide any comments on the Supplemental Cultural Resources Study Report. Clauss said she plans to attend next week's Consultation Meeting No. 3, but not actively participate.	DWR, San Manuel
9/18/2019	Section 106 Consultation	SHPO Correspondence on the Cultural Resources study Report	By way of a letter, SHPO concurred with all of DWR's recommended NRHP evaluations in the Cultural Resources Study Report and advised DWR that SHPO would withhold comments on the adequacy of the identification of historic properties pending completion of the forthcoming supplemental field survey and reporting.	DWR, SHPO
9/19/2019	Section 106 Consultation	DWR Conducted Consultation Meeting 3	DWR met with participating tribes, SBNF, DPR, FERC, and consultants Stantec and HDR to provide tribes and agencies with an update for the relicensing, updates of the results of the Tribal and Cultural Resources Studies subsequent to Consultation Meeting 2, provided a look-ahead at upcoming document reviews, and provided an opportunity for consultation parties to ask questions or to provide comments and/or concerns.	DWR, FERC, Stantec, HDR, San Manuel, Morongo, Serrano, SBNF, and DPR
9/24/2019	Exempt Activities for Project Operations and Maintenance	DPR Provides DWR with a list of State Recreation Area Exempt Activities	Lucidi (DPR) provided Lee (DWR) with a list of exempt activities from the DPR's Environmental Review section of the DPR Department Operations Manual that may be useful for the "exempt activities" list discussed at Consultation Meeting No. 3 (9/19/2019).	DWR, DPR
10/3/2019	Document Reviews	San Manuel Review of Supplemental Cultural Resources Study Report	Lee of DWR left a voice message for Clauss (San Manuel) indicating that if she does not have any concerns or response regarding the Supplemental Cultural Resources Study Report, that DWR was planning to distribute the report either 10/4/2019 or early the following week.	DWR, San Manuel

Date	Topic	Description	Discussion/Notes	Consulting Parties
10/9/2019	Document Reviews	Supplemental Cultural Resources Study Report and Tribal Resources Study report Comments	Clauss of San Manuel contacted Lee (DWR) via email to state that she will not have any comments on the Supplemental Cultural Resources Study Report, and will provide comments on the revised Tribal Resources Study Report by October 25, 2019. Clauss noted that the month of October is a busy month for the tribe and indicated that the tribe approves DWR distributing the Tribal Resources Study Report to other tribes and participating agencies.	DWR, San Manuel
11/3/2019	Document Review	Tribal Resources Study Report Comments	Clauss of San Manuel contacted Lee (DWR) via e-mail confirming their consent to distribute the draft Tribal Resources Study Report.	DWR, San Manuel

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Appendix P

NAHC Correspondence

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NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95891
(916) 373-3710
Fax (916) 373-5471



July 17, 2015

Monica Mackey
HDR Inc.
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833

Sent by Fax: (916) 679-8701
Number of Pages: 43

Re: Relicensing of the Devil Canyon Hydroelectric Project (FERC No. 2426), San Bernardino County.

Dear Ms. Mackey,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

A handwritten signature in cursive script that reads "Katy Sanchez".

Katy Sanchez
Associate Government Program Analyst

**Native American Contact List
San Bernardino County
July 17, 2015**

San Manuel Band of Mission Indians
Lynn Valbuena, Chairwoman
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Gabrielino/Tongva San Gabriel Band of Mission Indian
Anthony Morales, Chairperson

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Gabrielino /Tongva Nation
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26569 Community Center Drive Serrano
Highland , CA 92346
dmccarthy@sanmanuel-nsn.gov
(909) 864-8933 Ext 3248

(909) 862-5152 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson

12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
(951) 849-8807
(951) 755-5200

(951) 922-8146 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman

P.O. Box 343 Serrano
Patton , CA 92369

(909) 528-9027

(909) 528-9032

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Relicensing of the Devil Canyon Hydroelectric Project (FERC No. 2426), San Bernardino County.

Native American Contact List
San Bernardino County
July 17, 2015

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road Serrano
Banning , CA 92220 Cahuilla
siva@dishmail.net
(951) 849-4676

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.
(626) 926-4131

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

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This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Relicensing of the Devil Canyon Hydroelectric Project (FERC No. 2426), San Bernardino County.

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: <http://www.nahc.ca.gov>
Twitter: @CA_NAHC



May 29, 2019

Kamil Rochon
HDR

VIA Email to: kamil.rochon@hdrinc.com

RE: Devil Canyon Project, San Bernardino County

Dear Ms. Rochon:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

A handwritten signature in blue ink that reads "Steven Quinn".

Steven Quinn
Associate Governmental Program Analyst

Attachment

**Native American Heritage Commission
Native American Contact List
San Bernardino County
5/29/2019**

Chemehuevi Indian Reservation

Charles Wood, Chairperson
P.O. Box 1976 1990 Palo Verde Drive Chemehuevi
Havasu Lake, CA, 92363
Phone: (760) 858 - 4219
Fax: (760) 858-5400
chairman@cit-nsn.gov

Serrano Nation of Mission Indians

Mark Cochrane, Co-Chairperson
P. O. Box 343 Serrano
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Phone: (909) 528 - 9032
serranonation1@gmail.com

Morongo Band of Mission Indians

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12700 Pumarra Rroad Cahuilla
Banning, CA, 92220 Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Serrano Nation of Mission Indians

Wayne Walker, Co-Chairperson
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dtorres@morongo-nsn.gov

San Fernando Band of Mission Indians

Donna Yocum, Chairperson
P.O. Box 221838 Kitanemuk
Newhall, CA, 91322 Vanyume
Phone: (503) 539 - 0933 Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians

Lee Clauss, Director of Cultural Resources
26569 Community Center Drive Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

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This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Devil Canyon Project, San Bernardino County.

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