

FERC Project No. 2426
South SWP Hydropower
Special-Status Terrestrial Wildlife Species –
California Wildlife Habitat Relationships Study

FIELD RESULTS AND DATA SUMMARY

April 1, 2019

Consistent with Section 5.0 of the South SWP Hydropower Revised Study Plan and as approved in the Federal Energy Regulatory Commission (FERC) Study Plan Determinations dated June 14, 2017 and September 7, 2018, the California Department of Water Resources and Los Angeles Department of Water and Power (Licensees) provide the following Field Results and Data Summary update for Study 4.1.7, *Special-Status Terrestrial Wildlife Species – California Wildlife Habitat Relationships Study* (Study), which includes work completed to date, key findings, associated data files, variances, and remaining work. The Licensees consider these data to be public.

Completed Work to Date:

The Study is complete. Specifically, the Licensees have completed Step 1 (Select Sampling Locations and Create Field Study Maps, and Step 2 (Conduct Field Habitat Assessments to Evaluate Habitat, Document Potential Movement Barriers at the Lower Quail Canal and Castaic Penstocks, and Incidentally Document Special-Status Terrestrial Wildlife) of the Study Plan. The Licensees developed field study maps for California Wildlife Habitat Relations (CWHR) vegetation types under Step 1. A summary of completed work is as follows:

- Prior to field surveys, a total of 66 randomized locations representing 26 habitat types were identified (2 Blue Oak – Foothill Pine [BOP], 1 Blue Oak Woodland [BOW], 2 Coastal Oak Woodland [COW], 1 Desert Riparian [DRI], 2 Desert Wash [DSW], 1 Joshua Tree [JST], 2 Juniper [JUN], 1 Montane Hardwood – Conifer [MHC], 2 Montane Hardwood [MHW], 2 Montane Riparian [MRI], 3 Pinyon – Juniper [PJN], 1 Sierran Mixed Conifer [SMC], 2 Valley Oak Woodland [VOW], 2 Valley Foothill Riparian [VRI], 5 Chamise – Redshank Chaparral [CRC], 6 Coastal Scrub [CSC], 6 Mixed Chaparral [MCH], 1 Montane Chaparral [MCP], 4 Sagebrush [SGB], 3 Annual Grassland [AGS], 2 Fresh Emergent Wetland [FEW], 1 Pasture [PAS], 2 Perennial Grassland [PGS], 3 Wet Meadow [WTM], 2 Urban [URB], 2 Barren [BAR], and 5 locations in areas previously unmapped by the Classification and Assessment with Landsat of Visible Ecological Groupings [CalVeg]) and had no designated habitat type.
- A single CWHR Habitat Element Checklist datasheet was completed for each of the survey point locations.
- Three non-overlapping, 0.1-acre circular plots were sampled at each wooded habitat location, and three non-overlapping, 25-foot by 25-foot square plots were surveyed at each non-wooded (i.e., shrub or herbaceous-dominated) habitat location using the California Department of Fish and Wildlife (CDFW) CWHR System data forms.
- Photos were taken in the four cardinal directions from the center of each plot looking outwards. In the dataset, photo 1 = north, photo 2 = east, photo 3 = south, and photo 4 = west.
- Changes in vegetation boundaries from the CWHR habitat map were mapped in the

field using an iPad, or in the office using ArcGIS.

- The entire length of both the 2-mile-long Quail Lake Canal and the 2,400-foot-long Castaic Penstocks were walked and assessed as potential barriers to wildlife movement. Any areas with at least a 2.5-foot clearance were marked by a Global Positioning System device and photographed.
- Any incidental observations of special-status species were noted and a California Native Species Field Survey Form was prepared for submittal to CDFW for addition to the California Natural Diversity Database (CNDDDB).
- Due to safety concerns, some areas were deemed inaccessible based on the presence of private property, steep slopes, unstable footing, dense vegetation, or inundation. As a result, data collection was restricted in these areas. These data collection restrictions are summarized below.
 - Inaccessibility due to safety concerns eliminated the possibility of collecting plot data at some locations. In these instances, an “over-the-fence” approach was implemented, which included the completion of a CWHR Habitat Element Checklist, as well as an estimation of percent cover by species. This modified assessment was conducted at nine of the 65 sample locations, including: AGS7, BOW12, DRI26, DSW28, FEW29, FEW30, PAS46, PGS48, and PJN49.
 - Photos were generally taken in the four cardinal directions from the center of each plot looking outwards, except where site conditions prevented standing at those precise locations (e.g., steep slopes, unstable terrain, etc.). When locations were inaccessible, photos were taken from afar.

Key Accomplishments/Summary of Findings to Date:

A summary of key results includes:

CWHR

- Based on updated mapping, a total of 26 habitat types occur in the Study area. Within the proposed Project boundary, a total of 18 CWHR habitat types, including Lacustrine, occur. The acreages of CWHR habitat types in the proposed Project boundary and Study area are summarized in the table below. Refer to CWHR_Habitat_Maps.pdf (in Associated Data Files, listed below) for maps showing the sample locations, as well as the acreages and distribution of habitats within the Study area.

TABLE 1: CWHR Habitat Acreages and Percentages within the Study Area and Proposed Project Boundary

CWHR Habitat Type	Number of Sampling Points Planned ¹	Number of Sampling Points Actual ²	Acreage in Proposed Project Boundary ³	Percentage of Proposed Project Boundary	Acreage in Study Area ³	Percentage of Study Area
TREE-DOMINATED HABITATS						
Blue Oak - Foothill Pine (BOP)	2	2	0.5	0.01	610.7	0.7

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Blue Oak Woodland (BOW)	1	1	-	-	381.1	0.4
Coastal Oak Woodland (COW)	2	2	2.8	0.1	264.0	0.3
Desert Riparian (DRI)	1	2	51.5	1.2	65.4	0.08
Joshua Tree (JST)	1	1	0.2	0.004	5.4	0.01
Juniper (JUN)	2	0	-	-	144.5	0.2
Montane Hardwood - Conifer (MHC)	1	2	-	-	90.4	0.1
Montane Hardwood (MHW)	2	0	0.5	0.01	329.3	0.4
Montane Riparian (MRI)	2	0	-	-	12.1	0.0
Pinyon - Juniper (PJN)	3	0	5.1	0.1	572.3	0.7
Sierran Mixed Conifer (SMC)	1	0	-	-	80.1	0.1
Valley Oak Woodland (VOW)	2	2	-	-	307.0	0.4
Valley Foothill Riparian (VRI)	2	5	96.4	2.2	516.4	0.6
SHRUB-DOMINATED HABITATS						
Chamise - Redshank Chaparral (CRC)	5	6	135.2	3.0	9391.8	11.0
Coastal Scrub (CSC)	6	9	545.1	12.2	13784.0	16.2
Desert Wash (DSW)	2	1	2.5	0.06	215.2	0.25
Mixed Chaparral (MCH)	6	8	437.4	9.8	37881.8	44.5
Montane Chaparral (MCP)	1	0	-	-	46.2	0.1
Sagebrush (SGB)	4	8	280.8	6.3	3490.6	4.1
HERBACEOUS-DOMINATED HABITATS						
Annual Grassland (AGS)	3	7	196.9	4.4	8616.1	10.1
Fresh Emergent Wetland (FEW)	2	3	55.3	1.2	55.3	0.1
Pasture (PAS)	1	0	-	-	-	-
Perennial Grassland (PGS)	2	1	-	-	9.7	0.01
Wet Meadows (WTM)	3	1	20.9	0.5	30.2	0.04
DEVELOPED HABITATS						
Urban (URB)	2	3	412.7	9.3	3592.9	4.2
NON-VEGETATED HABITATS						
Barren (BAR)	2	1	222.6	5.0	645.4	0.8
AQUATIC HABITATS						
Lacustrine (LAC)	0	0	1993.0	44.7	4021.3	4.7
OTHER						
Unknown (UNK)	5	0	-	-	-	-
Total	66	65	4459.4	100.00	85159.2	100.0

Source: U.S. Forest Service (USFS) 2018 and field data

Notes:

¹ Number presented here represents the number of sample points planned for each habitat type based on acreage in study area and value to wildlife.

² Number presented here represents the number of sample points actually collected for each habitat type. Difference from planned number of points due to incorrect mapping and inaccessibility resulting from private property or unsafe conditions. In some cases of limited access, a sampled point had limited data collected (Habitat Element Checklist only, no vegetation plots). This is clarified in the habitat descriptions section below.

³ All acreages exclude Angeles Tunnel.

- Habitat was determined to be incorrectly mapped by CalVeg at 33 locations out of the 65 total locations sampled. As a result of this ground-truthing, it was determined that initial habitat mapping based on available CalVeg data was incorrect in just under 50 percent of the sampled cases. This indicates that portions of the Study area that were not ground truthed as part of this Study may be inaccurately mapped. However, most of these areas are largely inaccessible or located on the outer edges of the Study area, far from the proposed Project boundary. For the purposes of this Study, a conservative approach was taken and areas that were not directly observable were assumed to be correctly mapped.
- One of the CWHR habitat types, Pasture (PAS), previously mapped in the Study area, was eliminated. All areas previously mapped as PAS were surveyed in their entirety and changed to Annual Grassland (AGS).
- All five unknown (UNK) points in the previously unmapped (by CalVeg) area north of Quail Lake were surveyed and determined to be a mix of Annual Grassland (AGS) and Sagebrush (SGB) habitats. These data, along with surrounding mapped vegetation types, were used to extrapolate and fill in the entirety of the unmapped area.
- The ground-truthed CWHR habitat mapping paired with special-status species queries of the CNDDDB, USFS Sensitive Animals Species Lists, and the CWHR database, resulted in the determination that 55 special-status terrestrial species have the potential to occur in the proposed Project boundary. This includes 1 terrestrial invertebrate, 1 terrestrial amphibian, 10 reptiles, 27 birds, and 16 mammals.
- Refer to CWHR_Species_Table.pdf for more information on the 55 special-status terrestrial wildlife species determined to have the potential to occur in or adjacent to the Study area based on the presence of potential habitat. The table includes listing status, habitat requirements, expected CWHR habitat associations, and whether the species has been documented or potentially occurs within the proposed Project boundary or Study area.

Wildlife Movement

- The Lower Quail Canal is bounded by an approximately 4.5-foot-tall barbed-wire fence, which is intact throughout most of the canal and acts as a barrier to small mammal passage. However, there are a couple of areas along the eastern fence line with at least a 2.5-foot clearance suitable for wildlife passage. The fence would be passable by most large mammals. For example, mule deer, mountain lion, and bobcat would be able to jump over the 4.5-foot tall fence. Other species would be able to find breaks in the fence or crawl under. Thus, the barbed wire fence does not present a significant barrier to wildlife movement. A single east-west drainage culvert that is approximately 4 feet in diameter runs under the canal. This culvert is adequately sized for small- to medium-sized mammals to pass through (although small mammals typically prefer vegetated culverts for passage); large mammals are not expected to use this culvert and likely circumvent the canal by moving along the fence line. The Licensees noted other potential barriers to wildlife movement along the canal, including a chain-link fenced area at the southern intake.

- The upper foundation area and the bottom of the Castaic Penstocks are surrounded by chain-link fencing. The graded hill slope that the six penstock pipes travel down has concrete V-ditch culverts running perpendicular to the penstocks, as well as scattered erosional features, which exceeded the 2.5-foot clearance. These drainage ditches under the penstocks provide clearance for movement of wildlife. However, 7- to 9-foot-tall fencing on either side of the penstocks and around the top pad area would prevent mule deer, bighorn sheep, American badger, and coyote from jumping over, but may allow for other mammals, such as black bear, mountain lion, or bobcat, to climb over the fence.
- Under existing conditions, most Project infrastructure, including the Lower Quail Canal, does not obstruct movement of wildlife. The tall fence and wide set of six side-by-side pipes that make up the Castaic Penstocks may obstruct the movement of large mammals. However, the Penstocks are only 2,400 feet long and are surrounded by large areas of open space that act as alternative movement corridors.

Incidental Observations

- Four special-status wildlife species were incidentally observed during the CWHR field study, and included the following:
 - A single adult loggerhead shrike (*Lanius ludovicianus*), a State Species of Concern (SSC) was observed perching on a rubber rabbitbrush (*Ericameria nauseosa*) near sampling point SGB2.
 - A single adult northern harrier (*Circus hudsonius*; SSC) was observed flying through the Los Alamos Campground, near sampling point BAR8.
 - A pair of golden eagles (*Aquila chrysaetos*), which are protected under the Bald and Golden Eagle Act and a California Fully Protected species, were observed soaring over the western arm of Pyramid Lake.
 - A single western pond turtle (*Emys marmorata*; SSC) was observed basking on the shore of Pyramid Lake, at the outlet of Piru Creek above Pyramid Lake near sampling point WTM59.

Associated Data Files (All associated data can be found in the folder with this summary form. Note: Confidential CEII/privileged information will not be posted publicly.):

File Name	Data Description	File Type	File Location
CWHR_Habitat_Sample_Points.zip	Sample point locations from CWHR habitat mapping study	ZIP	Project Website
CWHR_Movement_Study_Data.zip	Data collected during wildlife movement study at Castaic Penstocks and Lower Quail Canal	ZIP	Project Website
CWHR_Habitat_Maps.pdf	Maps of CWHR habitat	PDF	Project Website
CWHR_Movement_Maps.pdf	Maps of survey findings from Lower Quail Canal and Castaic Penstocks	PDF	Project Website

SSWP_CWHR_datasheets_compiled.pdf	Survey forms for CWHR habitat study	PDF	Project Website
CWHR_Sample_Point_Photos (Folder w/ 632 jpg files)	All photos associated with CWHR sample points	JPG	Project Website
CWHR_Movement_Study_Photos (Folder)	All photos associated with CWHR movement study data collection	JPG	Project Website
CNDDDB_golden_eagle_CWHR.pdf	CNDDDB observation form golden eagle	PDF	Available upon request
CNDDDB_loggerhead_shrike_CWHR.pdf	CNDDDB observation form loggerhead shrike	PDF	Project Website
CNDDDB_northern_harrier_CWHR.pdf	CNDDDB observation form northern harrier	PDF	Project Website
CNDDDB_western_pond_turtle_CWHR.pdf	CNDDDB observation form western pond turtle	PDF	Project Website
CWHR_Habitat_Acreages_Table.xlsx	Summary of habitat acreages and percentages for the new license Project boundary and Study area	XLSX	Project Website
CWHR_Species_Table.pdf	Table of all special-status species determined to have the potential to occur within the new license Project boundary.	PDF	Project Website
CWHR_movement_photo_log	Photo log for movement study; photo locations associated with photo points shown on CWHR_Movement_Maps	PDF	Project Website
CWHR_Habitat_Sample_Points_wPhotos.zip	Sample point locations and associated photos from CWHR habitat mapping study	ZIP	Available upon request
CWHR_Movement_Study_Data_wPhotos.zip	Data collected during wildlife movement study at Castaic Penstocks and Lower Quail Canal, including photos	ZIP	Available upon request

Key:

CNDDDB = California Natural Diversity Database
CWHR = California Wildlife Habitat Relationships

Variations from Study Methods, Schedule, or Approach and Abnormalities in Expected Field Conditions:

The following variations and/or abnormalities were encountered during the field surveys:

- The CWHR study plan originally stated that 60 points would be sampled; however, 66 sample points were planned prior to field efforts. This discrepancy between the study plan and how the study was conducted can be explained as follows: (1) five of the additional points were to adequately cover the sections of the buffer surrounding the proposed Project boundary but it was discovered that those sections have not

been previously mapped by CalVeg and thus vegetation classifications needed to be determined from scratch; and (2) there was also one additional point included with the addition of primary Project roads and further refinement of the proposed Project boundary after the study plan was finalized.

- One survey point out of the 66 sample points was not surveyed due to complete inaccessibility (JUN33). This brought the total number of sampled points down to 65.
- In some cases, inaccessibility or small habitat patch size limited the number of plots that could be sampled at a given location. Limited plot data was collected at seven of the 65 sample locations, including: BOP10, CRC16, MHC41, MHW42, PJN50, SMC52, and VOW55. One to two plots were sampled at these locations, rather than the typical three.
- Data was collected for only one plot at Urban locations, as the majority of the cover in these areas was hardscape, which is easily visible and detectable on aerial photographs, and transect data provided little value to the Study as a whole.

These variances are considered minor and are not expected to have influenced the findings of the Study as a whole. Areas that were subject to limited sampling (Urban plots and the specific locations listed above) were sufficiently sampled to accurately represent the habitats at each area.

Remaining Work:

The Study is complete, and no work remains.