

Attachment A

Project Description and Environmental Information for 2018
Foresthill Public Utility District Temporary Water Transfer to
Kern County Water Agency and Dudley Ridge Water District

1.0 INTRODUCTION

This attachment provides supplemental descriptions, graphics, and analysis in support of a proposed 2018 water transfer for up to 2,000 acre-feet from Foresthill Public Utility District (FPUD) to buyers located in areas requiring the water to be exported from the Sacramento/San Joaquin Delta. The buyers include Kern County Water Agency (KCWA) and Dudley Ridge Water District (DRWD). Collectively the "Buyers," are part of the State Water Contractors' ("SWC") Dry Year Transfer Program. The information is intended to facilitate review and approval of the proposed transfer by the State Water Resources Control Board (SWRCB).

2.0 ORGANIZATION

The remainder of this Attachment is organized as follows:

1. Overview of Transfer Parties —a brief introduction to both FPUD and the SWC buyers, with relevant information regarding the basis for the transfer.
2. Summary of the Proposed Transfer — a summary of the proposed transfer, including sources of water, method to make water available, and requested changes to a water right license for a portion of the transfer.
3. Requested Changes to the Point of Diversion and Place of Use for Water Right Permit No. 15375.
4. Transfer Details —information regarding the proposed timing of releases, flow rates and other relevant details, including graphs, maps and tables and proposed monitoring and compliance procedures.
5. Demonstrating Compliance with Water Code Statutes - information regarding no injury to other legal users or to fish and wildlife, as required under Water Code Section 1727.
6. Other relevant information.

3.0 OVERVIEW OF TRANSFER PARTIES

The proposed transfer is between FPUD and the buyers: KCWA and DRWD. Water transferred under the proposed agreement would be delivered in the summer of 2018. The following provides a brief overview of each of the parties participating in the proposed transfer.

3.1 Foresthill Public Utility District

FPUD serves approximately 13,000 acres consisting of the unincorporated community of Foresthill in Placer County, California. FPUD's main water source is the Sugar Pine Reservoir, which has an existing storage capacity of 6,922 AF. Due to the late season storms over the past winter and early spring, Sugar Pine Reservoir refilled and still is nearly full. Currently, Sugar Pine Reservoir has a surplus of water stored and not scheduled for use by FPUD.

3.2 Kern County Water Agency and Dudley Ridge Water District

KCWA and DRWD (the Buyers) are members of the SWC, a statewide, non-profit association of 27 public agencies from Northern, Central, and Southern California that purchase water under contract from the California State Water Project (SWP). Collectively, SWC delivers water to more than 25 million residents throughout the state and more than 750,000 acres of agricultural land. The descriptions of the Buyers' respective agencies contained herein is taken from Attachment A to the 2018 Environmental Information for Petitions document in support of the 2018 water transfer petition submitted by El Dorado Irrigation District.

3.2.1 Kern County Water Agency

The Agency was created in 1961 by a special act of the California State Legislature and serves as the local contracting entity for the SWP. The Agency participates in a wide scope of water management activities, including water quality, flood control, and groundwater operations to preserve and enhance Kern County's water supply. The Agency covers all of Kern County, is the second-largest participant in the SWP, and has long-term contracts with 13 local water districts, called Member Units, and Improvement District No. 4 (ID4) for SWP water.

The Agency's Member Units are:

- Belridge Water Storage District
- Berrenda Mesa Water District
- Buena Vista Water Storage District
- Cawelo Water District
- Henry Miller Water District
- Kern Delta Water District
- Lost Hills Water District
- Rosedale-Rio Bravo Water Storage District
- Semitropic Water Storage District
- Tehachapi-Cummings County Water District
- Tejon-Castac Water District
- West Kern Water District
- Wheeler Ridge-Maricopa Water Storage District

3.2.2 Dudley Ridge Water District

The District was formed in 1963 and encompasses more than 37,000 acres of farmland in southern Kings County on the western edge of the San Joaquin Valley. The District lies south of Kettleman City and is

bounded on the northeast by the Tulare Lake Basin Water Storage District, on the south by the Kings-Kern county line, and generally on the west by the California Aqueduct (Aqueduct). Interstate 5 traverses the District in a northwest-southeast direction.

Land use within the District is agricultural; the District's boundaries do not encompass any incorporated or unincorporated communities. The District's primary water source is imported surface water supplies from the SWP via the Aqueduct; the District does not use local groundwater due to its low yields and poor quality. The concrete-lined Aqueduct brings water from the Sacramento-San Joaquin Delta, via the Banks Pumping Plant, down the west side of the Central Valley.

The District delivers SWP water from the Aqueduct through five delivery structures (turnouts). From each turnout, water is delivered to landowners through approximately 12 miles of District-owned concrete-lined distribution canals and 10 miles of pipelines to metered farm turnouts. In addition to the water distribution canals and pipelines, the District owns a terminal reservoir to capture operational spills, whereby the final field deliveries can be made directly from the reservoir. While this reservoir historically has been utilized, privately owned storage reservoirs have since been constructed that supplant its operation. In addition to the SWP supplies, water has been made available through programs for water regulation and storage in off-site groundwater basins and from purchases, transfers, and unbalanced exchanges from other water agencies.

4.0 SUMMARY OF THE PROPOSED TRANSFER

As noted above, FPUD proposes to transfer up to 2,000 acre-feet for use by two State Water Contractors: KCWA and DRWD. This temporary transfer would involve water currently stored in FPUD's Sugar Pine Reservoir on North Shirttail Canyon Creek to the SWC for use within the KCWA and DRWD service areas under SWRCB water rights Permit No. 15375. Transfer water would be supplied under this appropriative right to help meet existing demand from existing development with KCWA and DRWD's existing service areas during 2018.

In accordance with Water Code §1728, this transfer shall occur within a year or less from the date of approval by the SWRCB. The proposed transfer would release the stored water from Sugar Pine Reservoir into North Shirttail Canyon Creek, then to the North Fork American River, and subsequently into Folsom Reservoir by September 24, 2018. The water would be released from Folsom Reservoir into Lake Natoma, which is impounded by Nimbus Dam. Lake Natoma serves as the re-regulating Afterbay for Folsom Reservoir. The water would be released during the period August through September 2018 from Nimbus Dam into the Lower American River, and subsequently would flow into the Sacramento River and the Delta. The transfer water would be conveyed from the Banks Pumping Plant in the southern portion of the Delta into the California Aqueduct and delivered to KCWA and DRWD facilities through existing turnouts.

5.0 REQUESTED CHANGES TO POD AND POU FOR SUGAR PINE RESERVOIR

5.1 Proposed Point of Rediversion

Execution of the proposed water transfer will require approval of two points of rediversion: the SWP's Harvey O. Banks Pumping Plant (Banks). Banks will be added as a point of rediversion to allow the

California Department of Water Resources (DWR) to deliver the water to the Buyers' service areas. This proposed point of diversion is shown in **Attachment D**. Specifically, the point of diversion is Banks Pumping Plant via Clifton Court Forebay: N 2,126,440 ft., E 6,256,425 ft., California Coordinate System Zone 3, NAD 83, being within the NW 1/4 of SE 1/4 of Projected Section 20, T1S, R4E, MDB&M.

5.2 Current Place of Use of Water Right Permit 15375

The current POU for water in Sugar Pine Reservoir under Water Right Permit 15375 is within the FPUD Service Area shown in **Attachment B**. The service area encompasses approximately 36,152 acres located north of the Middle Fork American River and entirely within Placer County.

5.3 Proposed Place of Use of Water Rights Permit 15375

The transferred water will be used within the Buyer's specific service areas contained within the SWP service area. Maps of the two service areas are provided herein in **Attachment E**.

6.0 TRANSFER DETAILS

As noted, FPUD proposes to transfer up to 2,000 AF during the summer of 2018. Due to the late season storms over the past winter and early spring, Sugar Pine Reservoir refilled and still is nearly full. FPUD wishes to take this opportunity to shape the transfer releases to support a coordinated downstream monitoring and data collection program in coordination with the U.S. Forest Service. This section describes the multiple goals considered while developing the release schedule. This section also describes the proposed monitoring and data collection program.

6.1 Proposed Water Transfer

Figure 1 shows the actual storage beginning in February as the solid gold line. Beginning May 1, the line transitions to a forecasted dashed blue line. The forecasted storage assumes a local demand of about 1,200 AF, 90th percentile inflow forecast to Sugar Pine Reservoir and a 2,000 AF water transfer from August 15 – September 25. The inflow forecast was developed based upon the California Nevada River Forecast Center's North Fork American River runoff forecast scaled to Sugar Pine Reservoir inflow. The green line represents the recreation minimum storage of 3,560 AF negotiated by the U.S. Bureau of Reclamation and the California Department of Fish and Game (now Wildlife) in a 1967 MOA to provide recreation opportunities during the normal recreation season of May 1 through September 30th. The upper and lower boat ramps both operate fully at the recreation minimum storage of 3,560 AF. This storage level allows for storage withdrawals to meet FPUD demands and instream fishery flow release requirements even during the recreation season. The orange line represents the minimum storage specified by the 1967 MOA, which supports ongoing use of both the upper and lower boat ramps.

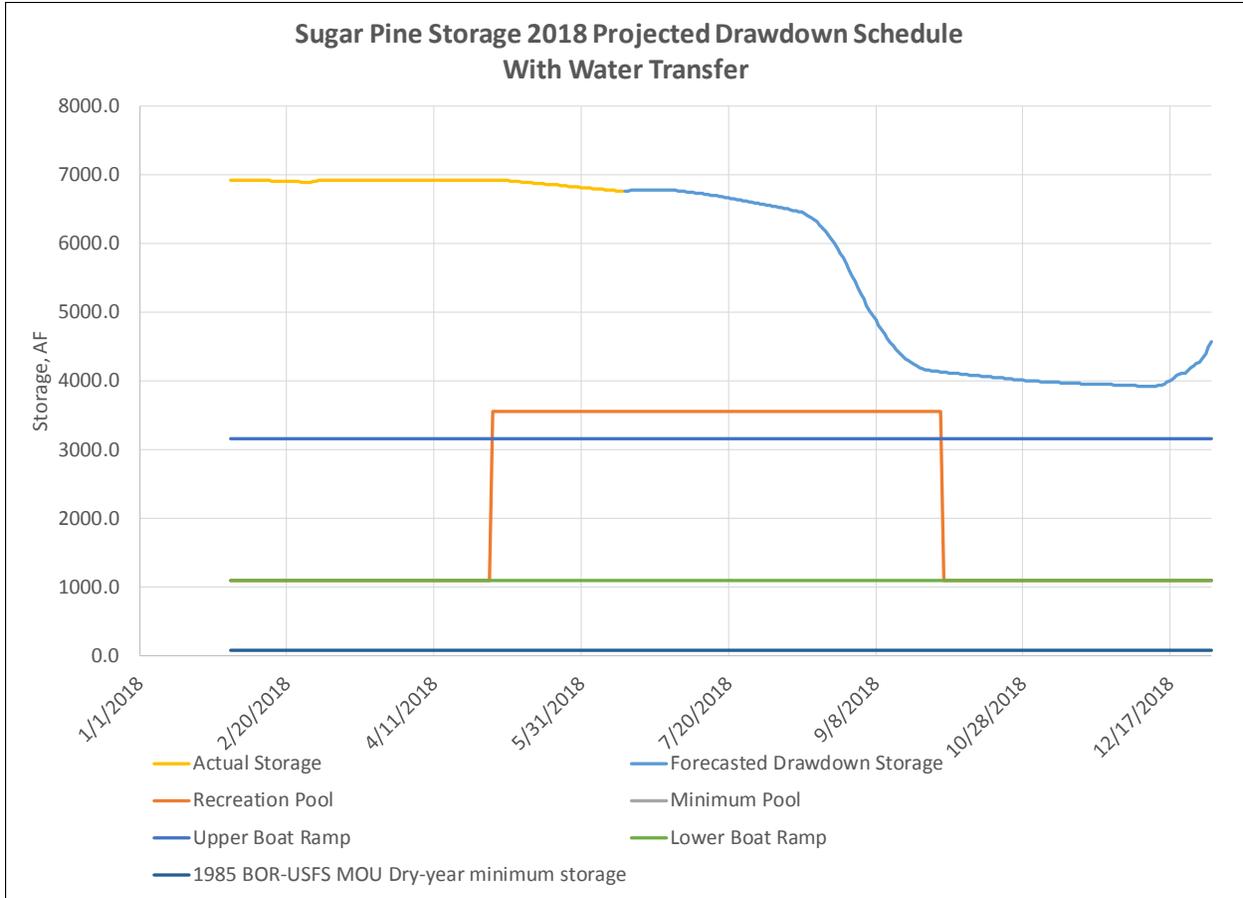


Figure 1- Sugar Pine Reservoir drawdown schedule with water transfer

The development of this transfer schedule considers the requirements listed above and multiple goals including the desire to make releases at several flow rates to create an elevation–discharge curve (rating curve) at the study sites and to evaluate habitat at the various flow rates. In addition, this schedule avoids changes in flow rates during the weekends when operators are not working. Finally, the designed release volume is consistent with the water transfer volume agreement while moving all the water during the July 1 through September 30 transfer window.

Figures 2 and 3 below illustrate the color-coded August and September Transfer schedule. This schedule should be considered a guide that can be used to ensure the operations hit the targets discussed above. Adjustments to the schedule may be needed during the transfer and study process as information is gathered.

2018 August Transfer Schedule						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
			15 10 cfs	16 10 cfs	17 10 cfs	18 10 cfs
19 10 cfs	20 20 cfs	21 20 cfs	22 20 cfs	23 20 cfs	24 30 cfs	25 30 cfs
26 30 cfs	27 30 cfs	28 30 cfs	29 40 cfs	30 40 cfs	31 40 cfs	

Figure 2 - August Transfer Calendar

2018 September Transfer Schedule						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
						1 40 cfs
2 40 cfs	3 40 cfs	4 40 cfs	5 40 cfs	6 40 cfs	7 30 cfs	8 30 cfs
9 30 cfs	10 30 cfs	11 30 cfs	12 30 cfs	13 30 cfs	14 20 cfs	15 20 cfs
16 20 cfs	17 20 cfs	18 20 cfs	19 10 cfs	20 10 cfs	21 10 cfs	22 10 cfs
23 10 cfs	24 10 cfs	25	26	27	28	29

Figure 3 - September Transfer Calendar

Figure 4 below illustrates the transfer release schedule as discussed above. The baseline condition, illustrated in Figure 5 represents operations if no transfer were made.

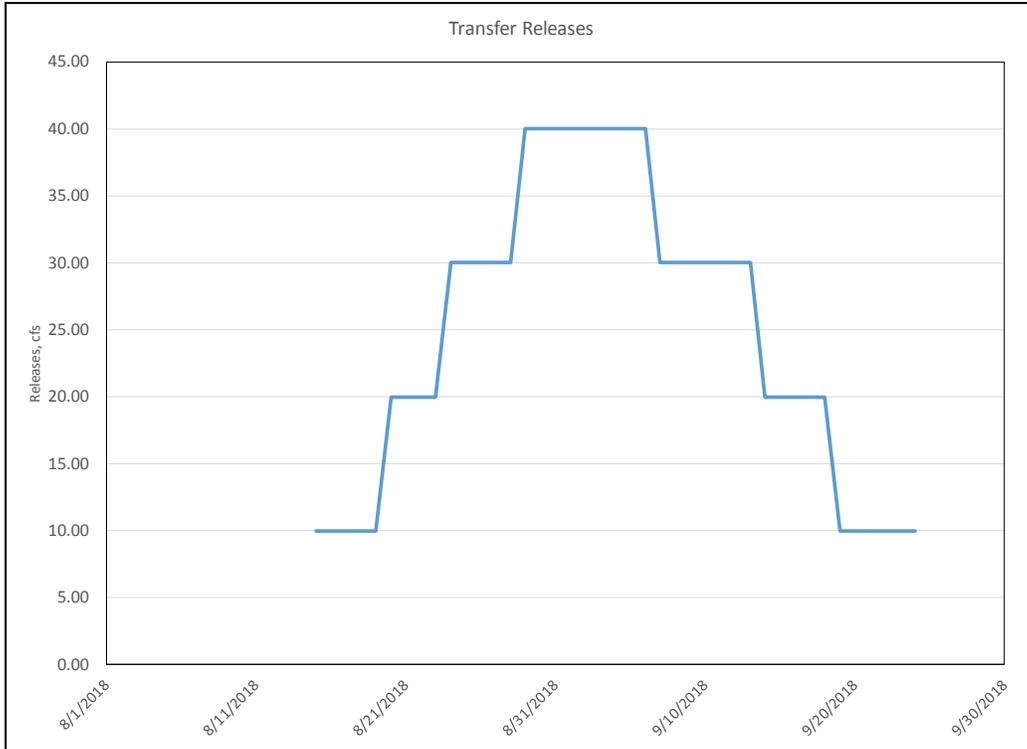


Figure 4 - Transfer Schedule

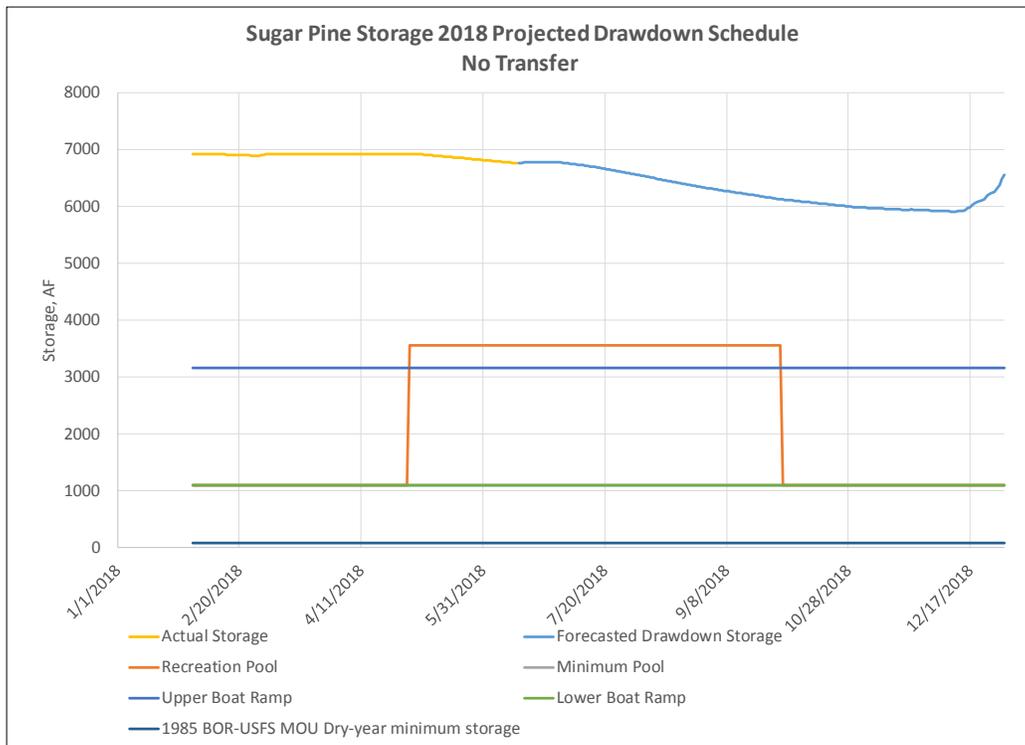


Figure 5 - Project Sugar Pine Reservoir drawdown schedule assuming no water transfer

In this case, only releases to meet minimum instream flow requirements and diversions to meet local consumptive demands will be made. This operation can be used to identify transfer deliveries.

6.2 Shirrtail Creek Monitoring and Data Collection Plan

As part of the proposed 2018 temporary water transfer, FPUD proposes to implement a plan to monitor flow, water quality, and biological resource conditions in North Shirrtail Creek below Sugar Pine Dam and above the creek's confluence with the North Fork American River. A primary objective of the plan is to monitor the response of different age classes of the foothill yellow-legged frog (FYLF) to the increased water volume and velocity resulting from the water transfer and to effect alterations to the transfer release volumes in the event that any potentially adverse effects to the species are detected. The details of this plan are included in **Technical Appendix A** to this attachment.

7.0 DEMONSTRATING COMPLIANCE WITH WATER CODE STATUTES

The following provides the SWRCB with necessary information to answer the key questions articulated in Water Code §1727, namely:

- §1727(b)(1) The proposed temporary change would not injure any legal user of the water, during any potential hydrologic condition that the board determines is likely to occur during the proposed change, through significant changes in water quantity, water quality, timing of diversion or use, consumptive use of the water, or reduction in return flows.
- §1727(b)(2) The proposed temporary change would not unreasonably affect fish, wildlife, or other instream beneficial uses.

7.1 Information to Support Finding of No-Injury from Proposed Changes to Sugar Pine Reservoir Re-operation

The water proposed for transfer pursuant to this temporary change consists of water previously stored in Sugar Pine Reservoir pursuant to Water Right Permit 15375. In the absence of the proposed transfer, the water would remain in storage for future use by FPUD and would not be available to other water users. There will be no change in return flows for FPUD's service area. Further, the releases from storage pursuant to the temporary transfer will not reduce the available supply to any other legal user of water downstream of Sugar Pine Reservoir. Refill of the storage vacated for the transfer will only occur during periods when it will not affect the amount of water that would otherwise have been available to other legal users downstream of Sugar Pine Reservoir.

The transfer is subject to a reservoir refill agreement with Reclamation and DWR ensuring that future refill to replace the stored water released for transfer will not reduce the amount of water that Reclamation, DWR, or other water users could otherwise divert under their water rights during the refill period.

7.2 Information to Support Finding of No Unreasonable Effects on the Environment from Sugar Pine Reservoir Re-operation

An analysis of effects from FPUD's proposed water transfer on fish and wildlife in Sugar Pine Reservoir, North Shirttail Canyon, and downstream watercourses indicates that the proposed transfer will not result in any unreasonable effects on those resources. **Technical Appendix A** to this attachment specifically addresses potential project effects on Sugar Pine Reservoir biological resources and resources present in North Shirttail Creek between Sugar Pine Dam and the creek's confluence with the North Fork American River.

Below the North Shirttail Creek/North Fork American River confluence, the timing of the proposed transfer would likely have a positive effect on summer minimum instream flows and water quality in the upper American River. Delivery of transfer water to Folsom Reservoir in mid- to late summer will augment the cold water pool in the reservoir.

All water diverted at Banks will be done in accordance with the criteria contained in D-1641 and related Biological Opinions (BOs). DWR and Reclamation will continue to meet the objectives specified in D-1641 or any subsequent orders in effect at the time of the export. The quantity of transfer water to be conveyed through the Delta, including other currently planned transfers, is well within the quantities analyzed in current BOs and environmental documentation on the coordinated operation of the State Water Project and Central Valley Project and relevant BOs. The proposed transfer agreement will be subject to all existing restrictions regarding use of the Delta Pumps, included existing BOs.

8.0 OTHER RELEVANT INFORMATION

In addition to DWR, Reclamation, and SWRCB, the Buyers are coordinating with appropriate local, state and federal agencies to obtain all necessary approvals, consultations or noticing for the proposed transfer including:

- California Department of Fish and Wildlife;
- California Regional Water Quality Control Board; and
- All counties affected by the transfer, including: Placer, Fresno, Kern, Kings, and Merced.

8.1 California Department of Fish and Wildlife (CDFW)

Consistent with Water Code § 1726, a copy of this Petition will be sent prior to Public Notice to Lauren Mulloy, the CDFW Region 2 water rights staff contact, at 1701 Nimbus Road, Rancho Cordova, CA 95670, 916-358-2909, and to Kevin Thomas, Environmental Program Manager — CDFW Fisheries. As detailed in **Technical Appendix A**, the transfer has been determined to not have unreasonable effects on fish and wildlife.

8.2 California Regional Water Quality Control Board

FPUD has not formally contacted the Regional Board staff, but intends to send a copy of this Petition prior to the posting of the Public Notice and opening of the comment period. The water proposed for transfer is very high-quality runoff derived from snowmelt and rains falling in eastern Placer County.

The proposed transfer would not violate any water quality standards or waste discharge requirements. The proposed transfer would use existing reservoirs, streams, and rivers operating within all applicable requirements. Given ambient flow conditions and the relatively small amount of transfer water released, there would not be any existing water quality standards or waste discharge requirements that would not be met. The relatively small amount of the transfer (up to 2,000 acre-feet) being added to Folsom Reservoir would not violate water quality standards or waste discharge requirements. Agricultural activities in the Buyer's service areas would not change as a result of the proposed project, and no new violations in water quality standards or waste discharge requirements would occur.

8.3 County Notifications

FPUD will provide a copy of the petition to the counties of Placer, Fresno, Merced, Kern, and Kings as required by Water Code Section 1726(c) *[A petitioner shall provide a copy of the petition to ...the board of supervisors of the county or counties in which the petitioner currently stores or uses the water subject to the petition, and the board of supervisors of the county or counties to which the water is proposed to be transferred.]*

8.4 Proposed New Users Information

Kern County Water Agency
Lara Kimm
P.O. Box 58
Bakersfield, CA 93302

Dudley Ridge Water District
Rick Besecker
Provost & Pritchard Engineering Group, Inc.
286 W. Cromwell Avenue
Fresno, CA 93711

Technical Appendix to Attachment A

Analysis of the Effects of the Proposed 2018 FPUD Water Transfer on Sugar Pine Reservoir and North Shirttail Creek Fish and Wildlife Resources

TECHNICAL APPENDIX TO ATTACHMENT A

Introduction

This technical appendix (TA) was prepared in support of FPUD's obligation under §1727(b)(2) of the California Water Code to demonstrate that a proposed temporary 2018 water transfer would not unreasonably affect fish, wildlife, or other instream beneficial uses. Specifically, this TA addresses the potential effects of the proposed transfer on fish and wildlife resources of Sugar Pine Reservoir and North Shirttail Creek downstream of Sugar Pine Dam.

Environmental Setting

The American River Watershed originates at the crest of the Sierra Nevada just west of Lake Tahoe, within Tahoe and El Dorado National Forest boundaries. The American River has three forks: the North, Middle, and South. The area of study for this TA is located within the North Fork American River (NFAR) Watershed.

The NFAR is 85 miles long and originates in eastern Placer County in the Tahoe National Forest. It flows west and then southwest, passing southeast of the town of Colfax and through Clementine/North Fork Reservoir; it receives the Middle Fork American four miles below the North Fork Reservoir Dam. The NFAR drains approximately 387 square miles, making it the American River's second largest sub-watershed. Shirttail Creek, a major free-flowing tributary of the NFAR, flows through Shirttail Canyon, and drains a watershed basin bounded by the Iowa Hill and Foresthill divides.

The area of study addressed in this TA is located in the California Floristic Province in the Northern Sierra Nevada foothills subregion (Baldwin et al. 2012), and includes two locations along North Shirttail Creek below Sugar Pine Reservoir. Site one is located just below Sugar Pine Dam in a deep, narrow, canyon composed of lower montane coniferous forest, at an elevation of approximately 3,500 feet. Watershed area above this location is about 17% of the total North Shirttail Creek watershed area. Site two is located near the confluence with the North Fork American River. This area of North Shirttail Creek is broad and has characteristics similar to the North Fork American River. Site two is located at an elevation of approximately 1,000 feet approximately 14 river miles downstream of Sugar Pine Dam. Riparian vegetation occurs within the margins of both study areas and within the floodplains of North Shirttail Creek.

Proposed Water Transfer

To implement the proposed transfer, FPUD proposes to increase the volume of releases from Sugar Pine Reservoir in four distinct steps as detailed in Section 4 of Attachment A. The first step above baseline flow would be to 10 cubic feet per second (cfs) and this rate would be held for five days. After five days, water release would be increased to 20 cfs and would be held for four days. The third step would be to 30 cfs, and the final step would be to 40 cfs, the maximum flow rate to be released. This flow rate would be held for nine days, and slowly stepped down in 10 cfs increments to the pre-release volume until the 2,000-acre-foot transfer is complete. The entire transfer is expected to take 41 days.

Affected Environment

The following section describes the existing biological resources within the study area, including terrestrial plant and wildlife communities, fisheries and aquatic resources, and potentially occurring special-status species. Special-status species include those listed pursuant to the federal Endangered Species Act (ESA) and California ESA consisting of endangered or threatened species, candidate ESA species, and species of concern.

The lower portion of North Shirttail Creek begins at the outfall from Sugar Pine Reservoir. Just below the dam, the creek channel is broad (15 m) and deep (greater than 1 m) in places. Water pools at the outfall, and sun exposure is 100 percent. Boulder, rock, cobble, and concrete comprise the substrate and provide numerous potential basking areas. The streambed narrows quickly, however, and soon averages 1-3 m wide. Canopy cover from streamside willows (*Salix* spp.), California alder (*Alnus rhombifolia*), and big-leaf maple (*Acer macrophyllum*) becomes dense, with little direct sunlight reaching the creek. Indian rhubarb (*Darmera peltata*) dominates in-stream vegetation, and at some places clumps of this plant become almost impenetrable. Instream vegetative cover (including rhubarb rhizomes) approaches 80 percent to 90 percent in places. Stream gradient is low to medium throughout the survey reach, but bank gradient is high. Undercut banks are uncommon. The entire reach is wetted, with water depths throughout the reach averaging approximately 30-40 cm. This reach receives fluctuating flow volumes depending on the time of year and time-specific management of reservoir levels. Most of the creek farther down occurs on private property.

North Shirttail Creek at the confluence of the NFAR has characteristics similar to the river. It is a broad (to 30 m at bank full) stream, lined with cobble, boulders, and bedrock, with evidence of regular scouring flows. Stream gradient for most of the stream is gentle, increasing in slope as one goes farther east from the confluence. Instream habitats are diverse, with low gradient riffles and runs, a few mid-stream and side pools, and, as the upstream extent of the survey is reached, some cascade pools. Most of the reach occurs in full sun, with overhanging oaks and alders shading up to 30% of the bank at water's edge. Little emergent or submerged vegetation is present.

The study area supports habitat for resident mammal species such as California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), black-tail jackrabbit (*Lepus californicus*), mule deer (*Odocoileus hemionus*) and black bear (*Ursus americanus*). Several bird species may nest and forage within the FHDPC area, including northern flicker (*Colaptes auratus*), American robin (*Turdus migratorius*), Steller's jay (*Cyanocitta stelleri*), common raven (*Corvus corax*), white-breasted nuthatch (*Sitta carolinensis*), American dipper (*Cinclus mexicanus*), mallard (*Anas platyrhynchos*), turkey vulture (*Cathartes aura*), Anna's hummingbird (*Calypte anna*), oak titmouse (*Baeolophus inornatus*), and belted kingfisher (*Megasceryle alcyon*). Common reptiles that might be encountered include western fence lizard (*Sceloporus occidentalis*), Southern alligator lizard (*Elgaria multicarinata*), California kingsnake (*Lampropeltis getula*), Pacific gopher snake (*Pituophis catenifer*), Western terrestrial garter snake (*Thamnophis elegans*), Sierra garter snake (*T. couchii*), common garter snake (*T. sirtalis*), rubber boa (*Charina bottae*), and western rattlesnake (*Crotalus oreganus*). Amphibians that inhabit the area include California newt (*Taricha torosa*), American bullfrog (*Lithobates catesbeianus*), Sierra chorus frog (*Pseudacris sierra*), and western toad (*Anaxyrus boreas*). Fish species that have been observed in North Shirttail Creek

include hitch (*Lavina exillicauda*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), and rainbow trout (*Oncorhynchus mykiss*).

Two species of special concern are known to occur with North Shirttail Canyon. These are yellow-legged frog (FYLF), a species proposed for listing under the California ESA, and western pond turtles (a California Species of Special Concern).

Potential Impacts

Biological resources potentially affected by the project include plant and terrestrial wildlife species, including special-status species, and their associated habitats that occur within Sugar Pine Reservoir, North Shirttail Creek, the NFAR, and Folsom Lake. Increased flows could potentially adversely affect sensitive riparian resources and plant and animal species in riparian habitats, while a reduction of pool in Sugar Pine Reservoir could strand riparian species above the area of inundation.

The reduction in storage in Sugar Pine Reservoir and temporary increase in storage in Folsom Reservoir, however, are considered normal fluctuations within the range of storage/water surface elevations that occur annually and would not change the existing conditions. With the proposed transfer, changes in flow would result in only a minor change to river flows and reservoir elevations.

The small changes in flows through North Shirttail Creek are not expected to adversely affect environmental conditions for terrestrial plants and wildlife species, including special-status species, and the increase in flows may provide minor benefits to riparian vegetation and species that are supported by riparian habitats. The proposed transfer would not create fluctuation in flows in the NFAR beyond current minimum and maximum ranges (Reclamation 2014), and fishery and aquatic resources are managed throughout the year to account for seasonal changes in river and reservoir conditions. Therefore, fishery and aquatic resources would be maintained in the NFAR (Reclamation 2014).

Furthermore, the proposed 2,000 AF increase to Folsom Reservoir by September 26, 2018, from the NFAR may create a slight benefit to the coldwater fishery habitat in Folsom Reservoir (Reclamation 2014). Increases in cool metalimnetic water into Folsom Reservoir during the summer months and a blending of cold hypolimnetic water and cool metalimnetic water through powerhouse intakes would generate a temperature mechanism that would allow greater flexibility in beneficial coldwater releases to the lower American River (Reclamation 2014). As such, the proposed transfer would provide a biological benefit, albeit slight, to the special-status salmonids in the river systems downstream of Folsom Dam by contributing to cooler summer water temperatures.

The highest potential for transfer-related impacts is within North Shirttail Creek. At the outfall, the creek is narrow, steep-sided, and densely vegetated with hydrophilic vegetation (primarily Indian rhubarb) that may be affected by increasing flows. The creek provides breeding habitat for foothill yellow-legged frog (FYLF), a species proposed for listing under the California ESA, and western pond turtles (a California Species of Special Concern) are known from the creek as well. The proposed transfer has the potential to flush tadpoles downstream, to eliminate tadpole rookeries (side pools and channels, gravel point bars with low velocity where tadpoles graze on diatoms and algae), to lower or raise water temperatures below or above optimal temperatures for growth, to strand tadpoles in unsuitable (drying) microhabitats as the transfer

volume ramps down, and to reduce basking habitat for juvenile and adult frogs. Monitoring and an immediate response protocol will be established to ensure FYLF are not unreasonably affected by the transfer.

In addition, the proposed transfer has the potential to increase temperatures above the optimal range for the creek's resident trout community, and to strand fish in isolated pools as the transfer volume is ramped down in the latter stages of the water transfer. It should be noted that young-of-the-year (YOY) fish occurring in the creek will be free-swimming juveniles by the time the ramp down occurs in late summer and, thus, have an ability to move out of habitats near the channel margins on their own volition prior becoming stranded in any isolated pools created by the ramp down. However, habitats created during the ramp up that have a high potential for stranding (e.g., deep pools in the widened channel) will be observed visually for the presence of fish. These habitats will be prioritized for evaluation during the ramp down for the presence of fish stranded in isolated pools, or for adequate hydraulic connectivity (e.g., water depths) to allow fish to move upstream or downstream from these habitats before stranding occurs.

Monitoring and Data Collection Plan

As part of the proposed transfer, FPUD proposes to implement a monitoring and data collection plan to monitor the response of different FYLF age classes to the increased water volume and velocity resulting from the water transfer. In carrying out this plan, FPUD's biological consultant will: 1) establish permanent stream cross section transects to record water variables, 2) monitor points with biological relevance to FYLF, 3) install water temperature data loggers, and 4) establish visual encounter survey (VES) areas at two locations and perform repeated surveys before, during, and after the transfer. These are discussed below.

1. *Permanent Stream Cross Section Transects*

Stream cross section measurements (Gallagher and Stevenson 1999) for depth and velocity will be taken at the two (2) fixed monitoring transects seven (7) times during the temporary water-transfer to record water and biological variables. ECORP will establish long-term hydrology monitoring transects at two reaches: Site 1) on Forest Service land below Sugar Pine Dam on North Shirttail Creek, and Site 2) on lower Shirttail Creek at Auburn State Recreation Area near the confluence of the NFAR. For the purposes of this study, one transect across North Shirttail Creek below Sugar Pine Dam and one near the confluence of the NFAR constitute one paired transect. The first paired transect will be made prior to the transfer in order to document baseline velocity and temperature conditions. Four paired transects will be made during the transfer at intervals spaced two days after each stepped water release increase. Other paired transects will be performed after peak releases have subsided and as the volume of the water release is reduced.

2. *Monitoring Points with Biological Relevance for FYLF*

Additional monitoring points will be established during the pre-transfer survey based on in-field findings to monitor areas/points with biological relevance to FYLF. Monitoring points will be established and data collected at all documented tadpole groups. In addition, points will be established at representative side channels, side pools, and gravel or cobble bar tail outs and other important microhabitats used by FYLF. Surveys for western pond turtles will occur

concurrently with those for FYLF. Locations of all monitoring points will be recorded with a GPS system with sub-meter accuracy.

3. *Install Water Temperature Data Loggers*

During the pre-transfer paired survey, water temperature data loggers (Thermochron iButtons) will be deployed in representative areas and at biologically relevant locations and set to collect temperature at regular intervals before, during and after the transfer. Temperature at those fixed locations can then be measured relative to the stepped water releases throughout the study period to determine how water temperature is affected by known volume releases. The temperature of water releases from Sugar Pine Dam can then be optimized by choosing the appropriate outfall from the dam, assuming that the highest elevation outfall releases warmer water while the lowest elevation outfall releases colder water.

4. *Establish Survey Areas at Two Locations*

Visual encounter surveys (VES-Crump and Scott 1994) as modified for stream-dwelling foothill yellow-legged frogs (Peek et al. 2017) will be performed at the two reaches. Surveys will be conducted seven (7) times at both reaches in conjunction with hydrology monitoring. A pre-release survey, four mid-release surveys (timed two days after each stepped increase of water released), and post-release surveys will be conducted.

During each paired survey, qualified biologists will walk the edges and midstream of the creek while looking for tadpoles, metamorphs, and adult frogs and western pond turtles. Binoculars will be used to scan ahead. Data to be collected at each egg mass, tadpole group, and metamorphic or adult frog observation point and will include: water velocity and temperature, substrate composition, vegetative composition of overstory and understory, among other variables. Egg masses and tadpole groups will be revisited during subsequent surveys, and environmental parameters recorded during each visit. Locations of all positive findings will be recorded with a GPS system with sub-meter accuracy.

Immediate Response Protocol and Impact Avoidance

During mid-release and post-release surveys, qualified biologists will monitor the locations and behaviors of young FYLF, with the intent of detecting any adverse effects on FYLF, especially in the tadpole life stage. If indications are found that increased water transfer rates are affecting tadpole health or survivorship, biologists will have the authority to immediately convey the information and have water release rates lowered to the previous rate where no adverse effects were detected. Conversely, if tadpoles are found to be stranded in side pools or channels during the ramping down period, biologists will advise that release rates remain stable until stranded tadpoles can be salvaged. A communication protocol will be established where biologists have immediate access to dam operators.

With implementation of the proposed monitoring and data collection plan in concert with the identified impact avoidance protocol, the proposed temporary transfer can be carried out with no unreasonable effects on North Shitrtail Creek fish and wildlife resources.

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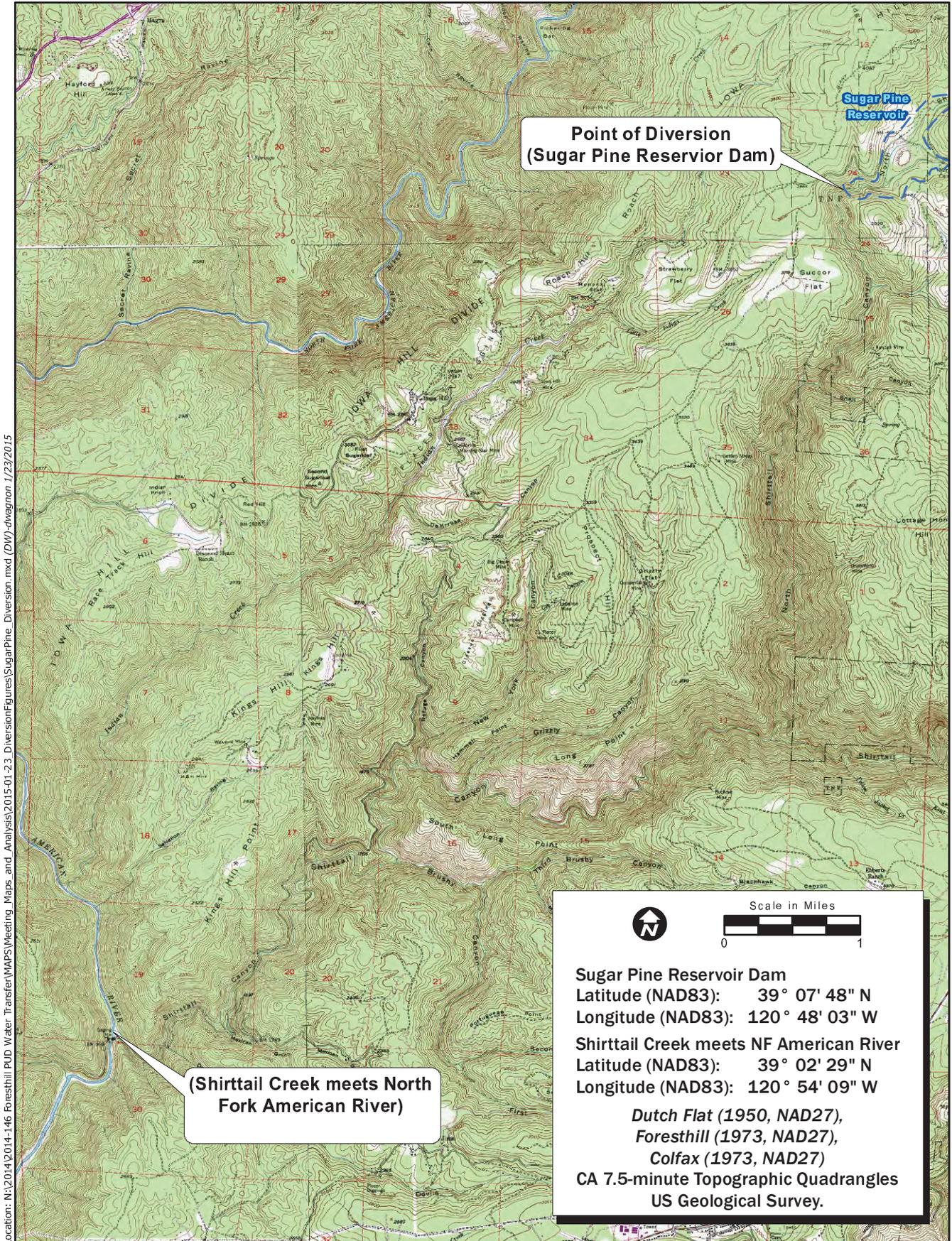
Attachment B

FPUD Service Area

Attachment C

Point of Diversion Map

Attachment C - Point of Diversion Map



Location: N:\2014\2014-146 Foresthill PUD Water Transfer\WAPS\Meeting_Maps_and_Analysis\2015-01-23_Diversion\Figures\SugarPine_Diversion.mxd (DW)-dwagnoon 1/23/2015

Map Date: 1/23/2015

Scale in Miles
0 1



Sugar Pine Reservoir Dam
 Latitude (NAD83): 39° 07' 48" N
 Longitude (NAD83): 120° 48' 03" W

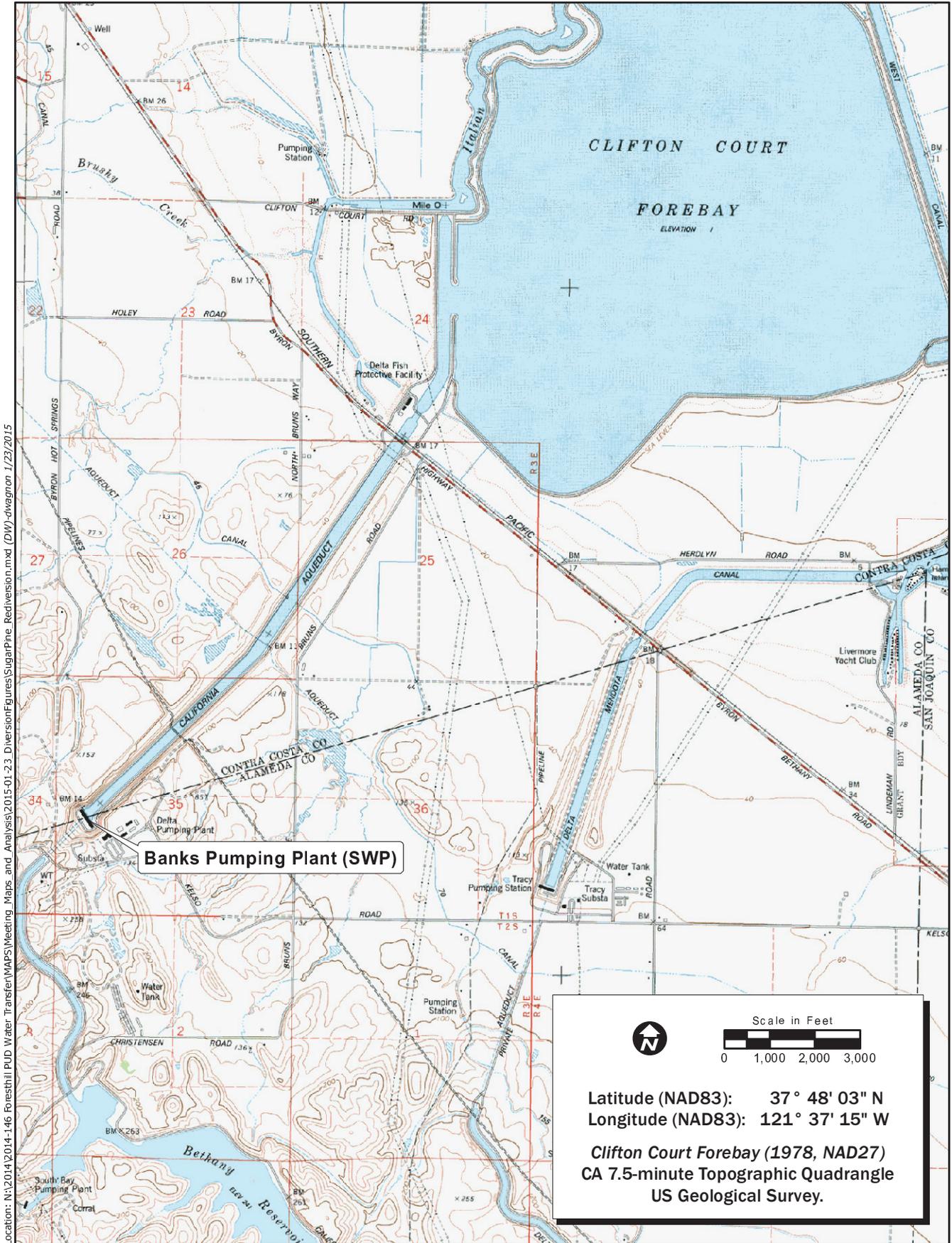
Shirttail Creek meets NF American River
 Latitude (NAD83): 39° 02' 29" N
 Longitude (NAD83): 120° 54' 09" W

*Dutch Flat (1950, NAD27),
 Foresthill (1973, NAD27),
 Colfax (1973, NAD27)*
 CA 7.5-minute Topographic Quadrangles
 US Geological Survey.

Attachment D

Point of Rediversion

Attachment D - Point of Rediversion



Location: N:\2014\2014-146 Foresthill PUD Water Transfer\WAPS\Meeting Maps and Analysis\2015-01-23_Diversion\Figures\SugarPine_Rediversion.mxd (DW)-dwagron 1/23/2015

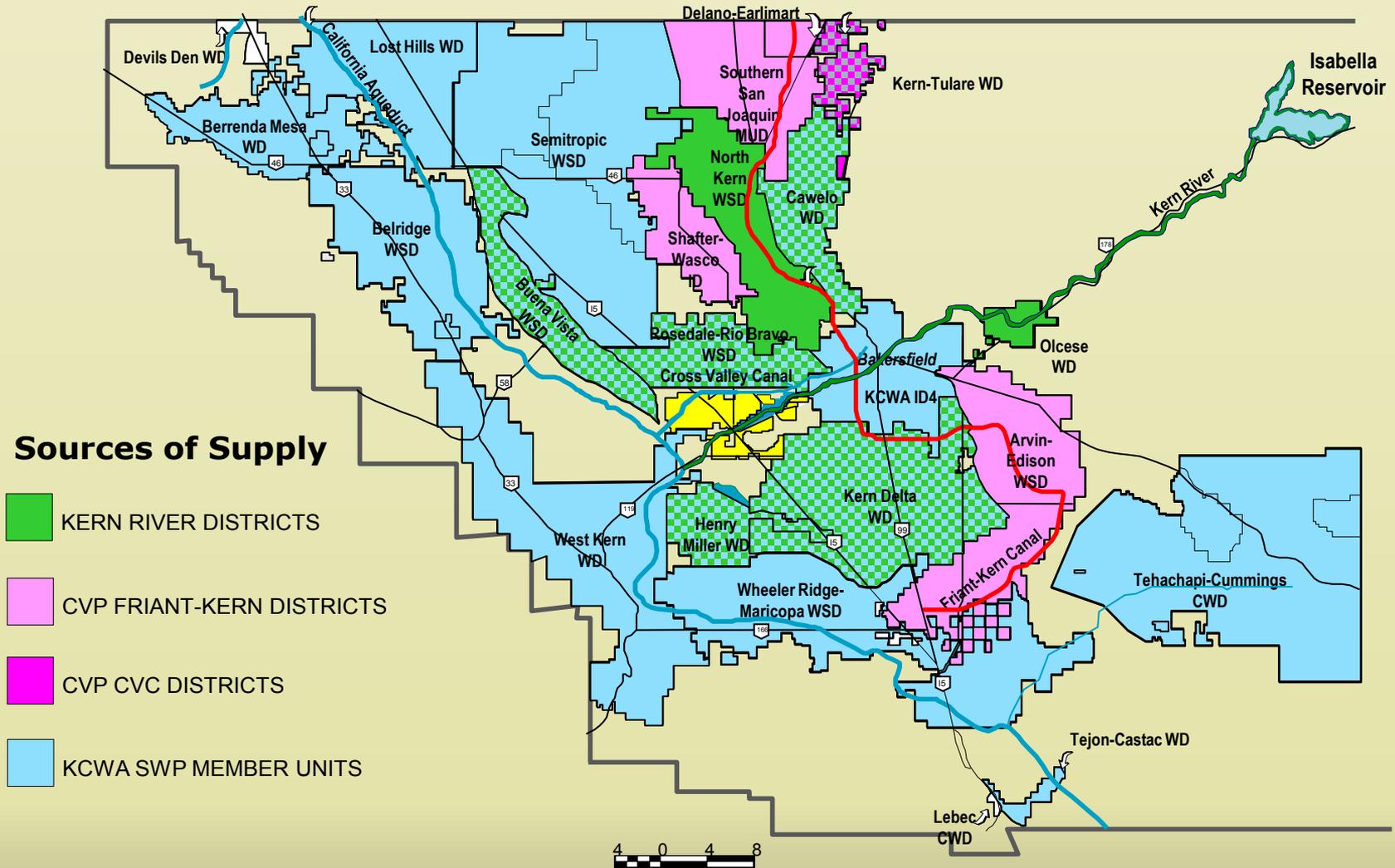
Map Date: 1/23/2015

Attachment E

KCWD Service Area
DRWD Service Area

Kern County Water Districts

Attachment E - KCWA Service Area



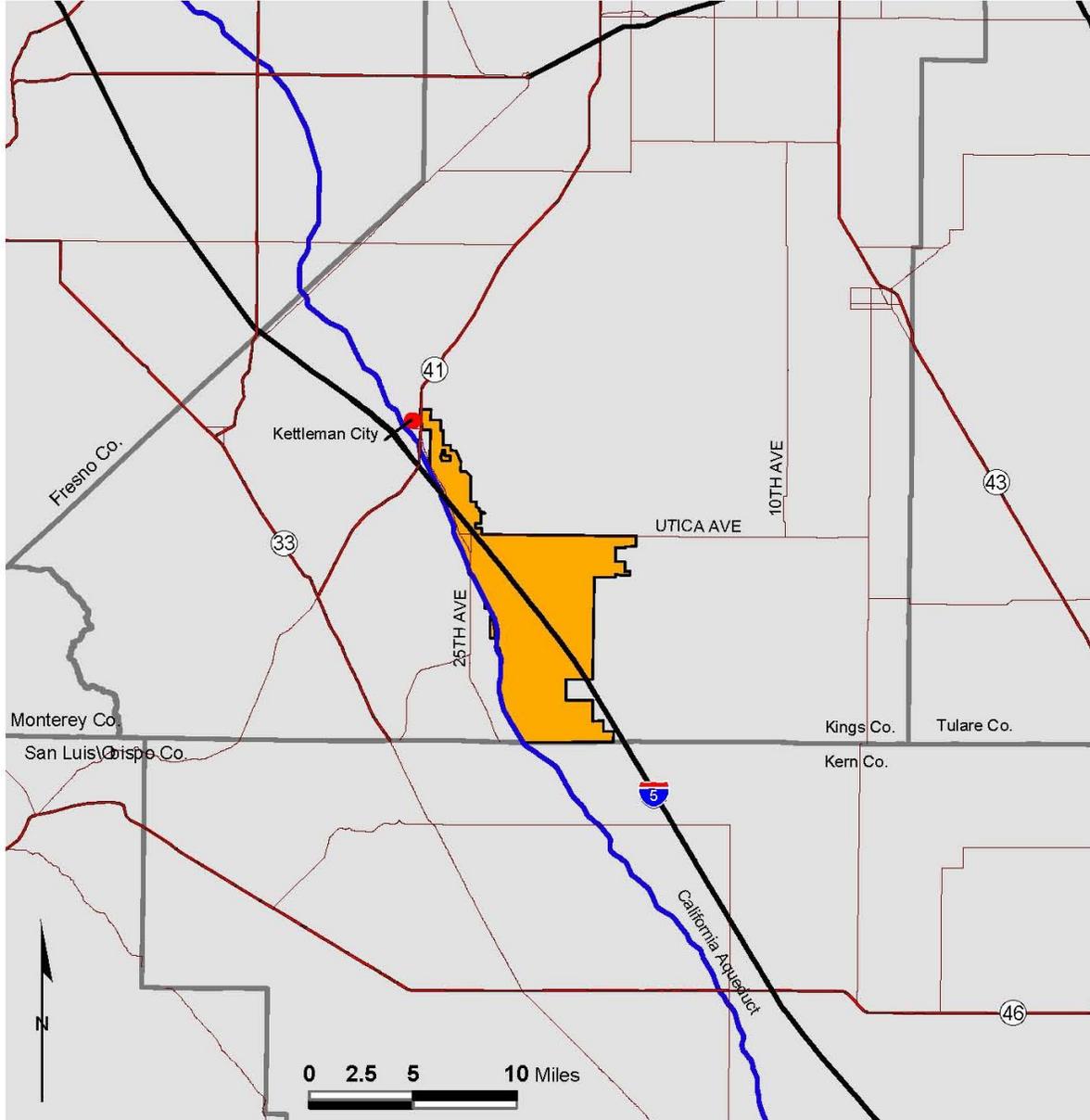
Sources of Supply

-  KERN RIVER DISTRICTS
-  CVP FRIANT-KERN DISTRICTS
-  CVP CVC DISTRICTS
-  KCWA SWP MEMBER UNITS

Courtesy of the Kern County Water Agency

Location Map

Dudley Ridge Water District



Attachment F

Photographs to Support Petition for Change

Photo 1: Sugar Pine Reservoir and Upstream Habitat (Google Earth Image, screen shot June 28, 2018)



Photo 2: Sugar Pine Reservoir and Downstream Habitat (Google Earth Image, screen shot June 28, 2018)



Photo 3: Folsom Reservoir and Upstream Habitat (Google Earth Image, screen shot June 28, 2018)

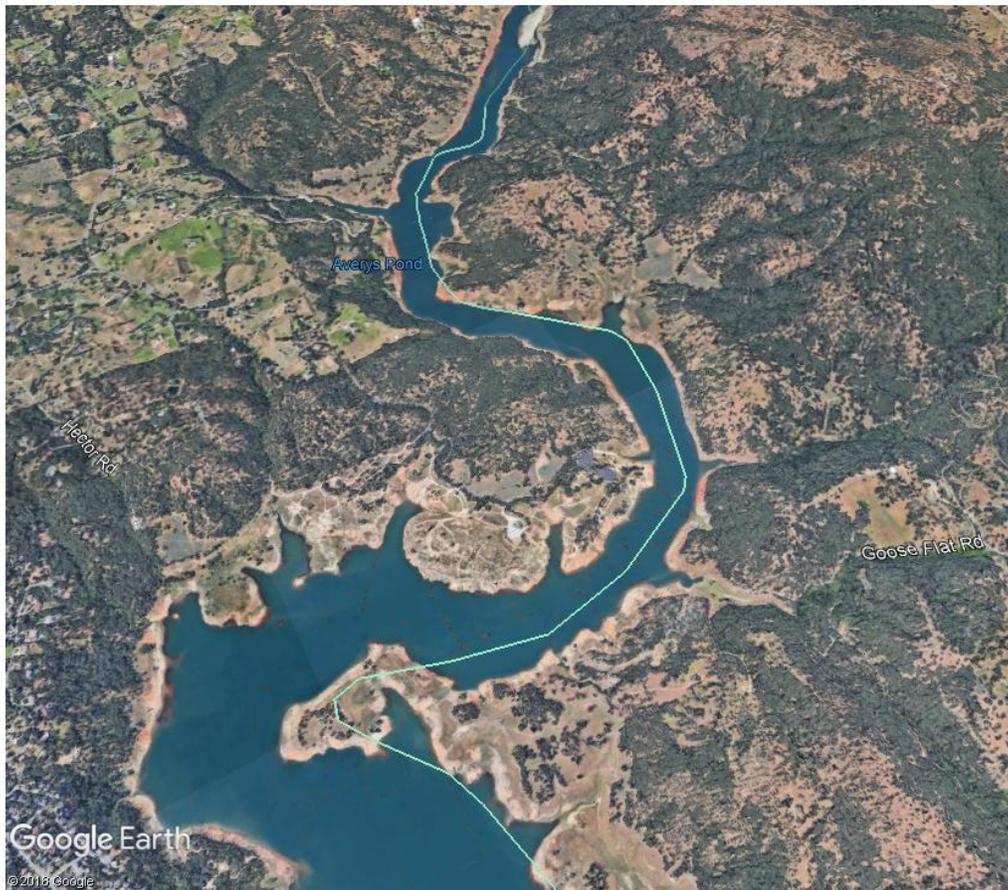


Photo 4: Folsom Reservoir and Downstream Habitat (Google Earth Image, screen shot June 28, 2018)

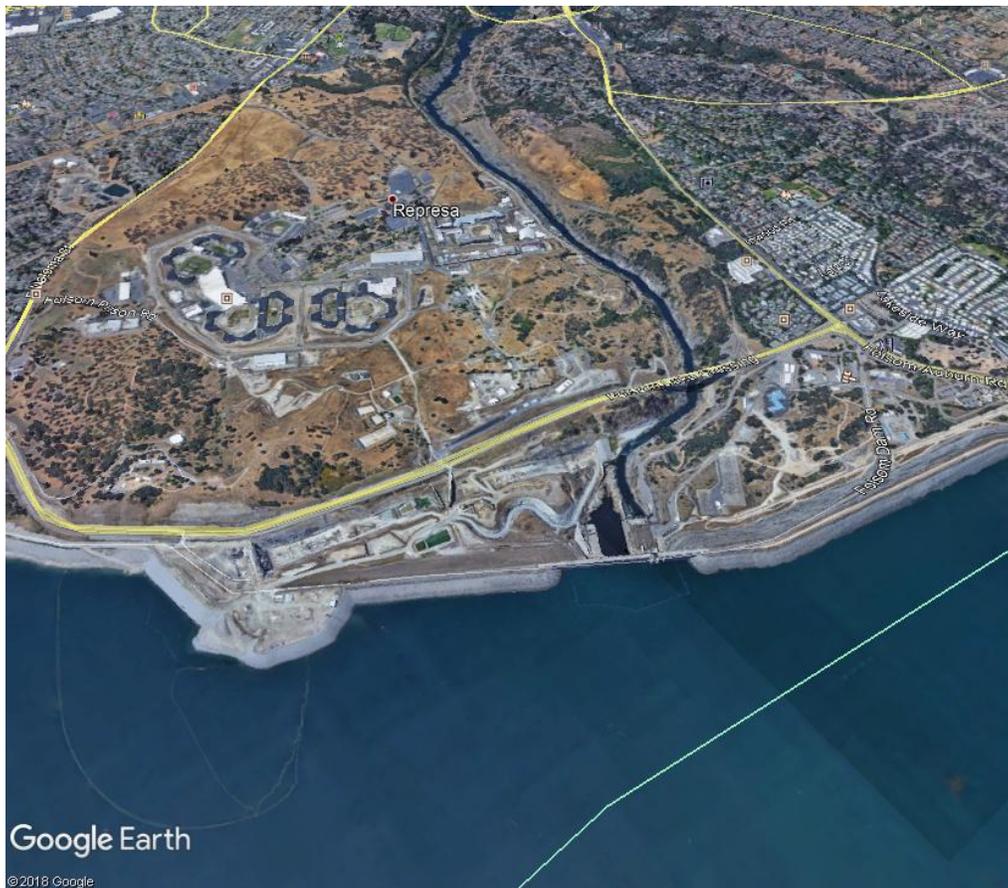


Photo 5: Proposed Place of Use within Kern County Water Agency (typical) (Google Earth Image, screen shot June 28, 2018)



Photo 6: Proposed Place of Use within Dudley Ridge Water District (typical) (Google Earth Image, screen shot June 28, 2018)

