Print Form

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Yuba
915 8th Street, Suite 107
Marysville, California 95901

From: (Public Agency): Yuba County Water Agency
1220 F Street
Marysville, California 95901
(Address)

ENDORSED FILED
YUBA COUNTY CLERK/RECORDER
JAN 16 2024
DONNA HILLEGASS, Clerk
BY BRIDGETTE EVANS DEPUTY CLERK

Project Title: Lake Francis Dam Geotechnical Instrumentation and Data Acquisition Systems Project

Project Applicant: Yuba County Water Agency

Project Location - Specific:
Lake Francis Dam and Dobbins Creek, near Dobbins, CA

Project Location - City: Unincorporated Project Location - County: Yuba

Description of Nature, Purpose and Beneficiaries of Project:
Installation of sensors (piezometers) on the dam and in weirs downstream of the dam to measure various parameters, including the phreatic surface within the dam embankment and foundation, and the seepage flows from the dam drains. The phreatic surface is proposed to be monitored with piezometers mainly near the maximum height section (low-level outlet area) but also in the central portion of the dam, while the seepage flows are proposed to be monitored from two drainage areas on weirs below the dam. Please see the attachment for a complete project description.

Name of Public Agency Approving Project: Yuba County Water Agency

Name of Person or Agency Carrying Out Project: Yuba County Water Agency

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Class 1 (Existing Facilities), Section 15301
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:
The project consists of minor repairs or alterations to a dam and its appurtenant structures and will be carried out under the supervision of the Department of Water Resources. The project would not result in any significant adverse environmental impacts and is not barred by any exceptions identified in CEQA guidelines 153000.2.

Lead Agency
Contact Person: Jacob Vander Meulen Area Code/Telephone/Extension: (530) 443-7412

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ▪ Yes No

Signature: Jacob Vander Meulen Date: 01-16-2024 Title: Environmental Manager

▪ Signed by Lead Agency ▪ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

Revised 2011

2024FG-00004

☐

Yuba County
Donna Hillegass, County Clerk
and Recorder
915 8th Street, Suite 107
Marysville, CA 95901
(530) 749-7850

Receipt: 24-531

ProductName		Extended
FG	CLERK FISH AND GAME FILINGS	$50.00
Document #	2024FG-00004	
Filing Type	ADMIN FEE (NOTICE OF EXEMPT)	
Total		$50.00
Tender (Check)		$50.00

Check# 508223
Paid By YUBA COUNTY WATER

Thank You for Your Business

1/16/24 9:39 AM PST
counterclerk1
Workstation: REC123

YUBA COUNTY WATER AGENCY **POWER SYSTEMS** 508223

Vendor ID 00342 **Vendor** County of Yuba, Clerk/Recorder 12/21/2023 **Check #** 508223

Invoice Number	Date	Invoice Amount	Amount Paid	Discount Taken	Write Off	Net Amount
PID24401-P	12/19/2023	$ 50.00	$ 50.00	$ 0.00	$ 0.00	$ 50.00
TOTALS:		$ 50.00	$ 50.00	$ 0.00	$ 0.00	$ 50.00

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Notice of Exemption Attachment
Supplemental Information and Consistency Findings for Class 1 Categorical Exemption
Lake Francis Dam Geotechnical Instrumentation and Automated Data Acquisition Systems Project

DOCUMENT ORGANIZATION

This document consists of the following sections:

1. Introduction
2. Project Location
3. Project Description
4. Potential Project-Related Environmental Effects and Applicability of a Categorical Exemption to the Proposed Project
5. References

Appendices

A. Engineering Plans
B. Representative Photographs

Figures

1. Project Location and Vicinity
2. Project Area – Aerial View
3. Site Plan and Impacts to Aquatic Features

1.0 PROJECT PURPOSE

Yuba Water Agency (YWA) is proposing to install sensors (piezometers) on the dam and in weirs downstream of the dam to measure various parameters, including the phreatic surface within the dam embankment and foundation, and the seepage flows from the dam drains (Proposed Project). The phreatic surface is proposed to be monitored with piezometers mainly near the maximum height section (low-level outlet area) but also in the central portion of the dam, while the seepage flows are proposed to be monitored from two drainage areas on weirs below the dam. These sensors will collect data and record information on flows from the dam. A seepage cutoff wall will also be installed to prevent seepage from bypassing the existing flume, which is designed to overtop with higher flows.

2.0 PROJECT LOCATION

The Proposed Project is in unincorporated Yuba County just southeast of the community of Dobbins and Lake Francis in a remote area on land owned and maintained by YWA (Figure 1).

The approximately 11.187-acre Project Area is located along the crest of the Lake Francis Dam at the southern end of Lake Francis, west of Lake Francis Road in Dobbins, California (Figure 2). The dam was originally built in 1898 but was replaced by a compacted earthen dam in 1999-2000. Undeveloped portions of the Proposed Project primarily include disturbed lands, valley oak riparian woodland, valley oak woodland, Ponderosa pine woodland, and lacustrine communities. Vegetation communities present include valley oak riparian forest and woodland, valley oak woodland and forest, Ponderosa pine forest and woodland, and disturbed/developed. Land uses surrounding the Proposed Project include recreational activities in and around the lake, viticulture, and rural residential.

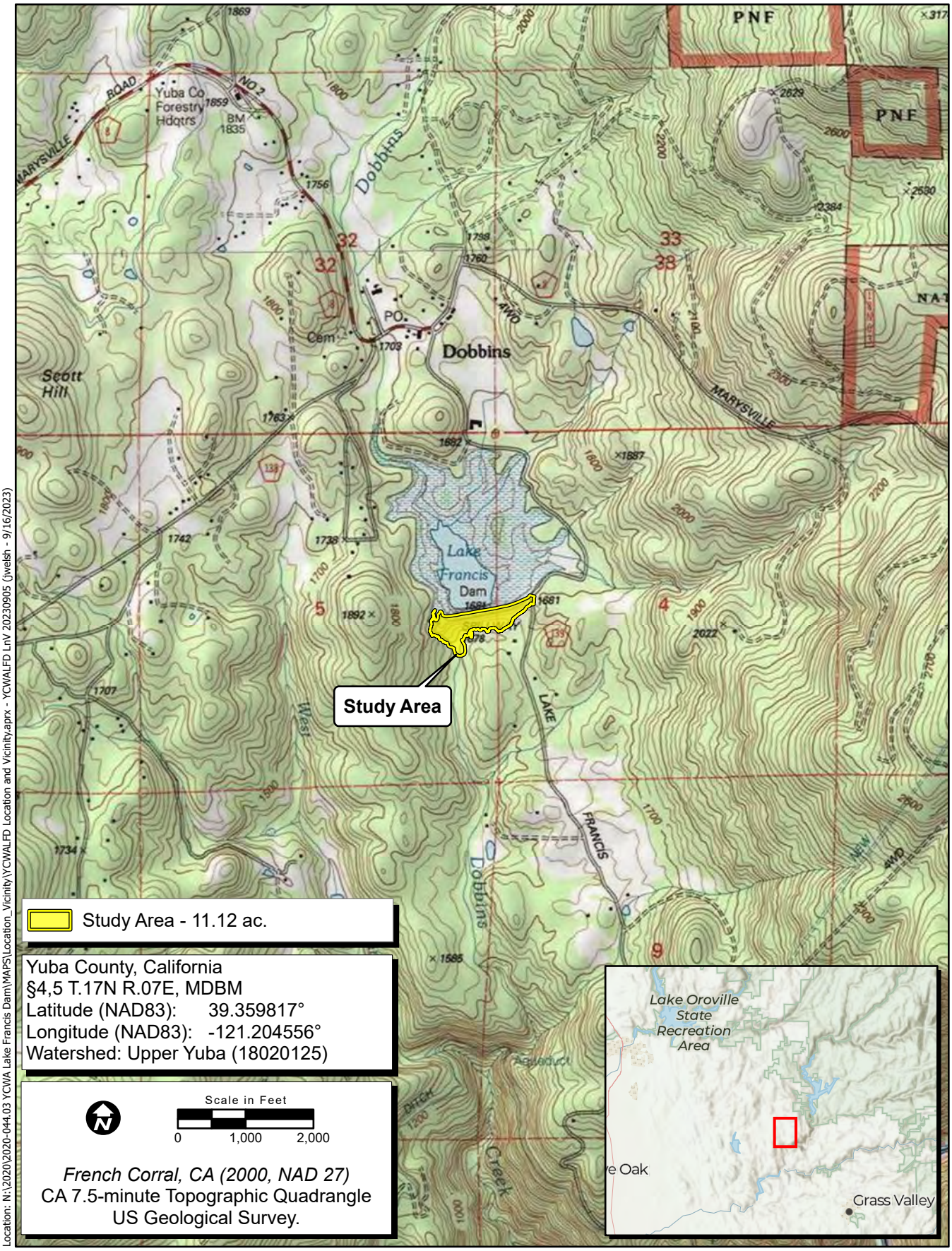
3.0 PROJECT DESCRIPTION

3.1 Overview

YWA, the managing entity for Lake Francis Dam, is planning to install scientific measurement devices to monitor seepage flows at Lake Francis Dam and install two new structures on Dobbins Creek to prevent seepage from bypassing the existing flume. This work will include rock-slope protection on the left bank to prevent flows from further eroding the bank at this location. Additionally, YWA plans to install five different sensor types at various locations on the surface of the dam and at the existing weir structures.

Construction of the Proposed Project is expected to be initiated in August 2024 and will require approximately 2.5 months to complete. Project activities are expected to be complete before the end of October.

Construction equipment to be used during construction of the Proposed Project is shown in Table 1. Equipment and materials will be staged on the gravel toe access road and gravel surface adjacent to the toe drain and low-level outlet (Figure 3). Brief descriptions of the seepage cutoff structure, new weir plate, and the 11 sensors to be installed are described below. Complete engineering drawings are attached as Appendix A.



Location: N:\2020\2020-044.03 YCWA Lake Francis Dam\MAPS\Location_Vicinity\YCWALFD Location and Vicinity.aprx - YCWALFD LnV 20230905 (jwelsh - 9/16/2023)

Map Date: 9/5/2023
Sources: ESRI, USGS

Figure 1. Project Location and Vicinity

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2020-044.03 YCWA Lake Francis Dam

Location: N:\2020\2020-044.03 YCWA Lake Francis Dam\MAPS\Aerial_Maps\YWA Lake Francis Dam 20231108.aprx - YWA Lake Francis Dam 20231108 (lgalvez - 11/8/2023)

Map Date: 11/8/2023

Sources: Yuba County Water Agency, ESRI, Maxar (2021)

Figure 2. Project Area - Aerial View

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2020-044.03 Yuba Water Agency Lake Francis Dam

Location: N:\2020\2020-044.03 YCWA Lake Francis Dam\MAPS\Preserve_Impact\YCWA LFD Impact.aprx - YCWA Aquatic Impacts 20231120 (kedwards - 11/29/2023)

Map Date: 11/29/2023

Sources: Esri Imagery, Maxar (2022)

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Figure 3: Site Plan and Impacts to Aquatic Features

2020-044.03 YCWA Lake Francis Dam

3.1.1 Sensor Types to Be Installed

Five sensor types will be installed in various locations within the Project Area. These sensors are a precipitation gauge, barometer, unvented vibrating-wire piezometer, vented vibrating-wire piezometer, and vented weir monitor. The location of these sensors is shown on Figure 3 and in Attachment A.

3.1.2 Seepage Cutoff Wall

The new seepage cutoff wall will be constructed in alignment with the existing concrete flume structure within Dobbins Creek downstream of the confluence of the low-level outlet (LLO) channel and the spillway channel. The total length of the cutoff wall is approximately 10 feet, and the alignment was chosen to limit seepage from bypassing the downstream left bank at the existing flume structure (Parshall flume). The existing left bank has signs of scour, and this new wall will constrict the lower stage flows to convey through the new weir that will be adhered on the downstream center face of the existing flume structure. The wall will allow ponding of seepage water behind the existing flume and new weir. The concrete wall footing will be embedded a minimum of 12 inches into bedrock. The wall is also designed as a free-standing cantilever wall to support the drained condition because the creek does not always convey flow and is typically a shallow depth.

3.1.3 Weir Plate

The new stainless-steel weir will be bolted to the existing concrete flume (Parshall flume) that has a 5-foot opening and 32-inch depth to subgrade on the downstream face. This new weir (W2) will be located further downstream in Dobbins Creek and is intended to capture total seepage flows from four toe dam drains and from the spillway relief drain, located upstream of this proposed location. The design flow rate was assumed to be 0.66 cubic feet per second based on previous work at Lake Francis Dam and assumes a design value of three times of the existing weir's (W1) capacity, which is located upstream in the channel and captures two of the dam toe drains that discharge in the LLO pool. The weir provides seepage flow monitoring for various flow rates and creates a stilling pond for flow depth measurement. This new monitoring location will also be equipped with a manual staff gauge and a vibrating-wire weir monitor with the Automated Data Acquisition System.

Table 1. Construction Equipment to be Used During Construction of the Proposed Project.

Equipment	Use
Pickup Trucks	Transport crew and small equipment to the work site
	Trim and remove tree debris
Hand and Walk Behind Compactors	Culvert trenches, retaining wall compaction
Ride-on Compactors (dual or single drum)	Embankments and subgrades, seepage cutoff wall compaction
Dozers	Clearing, grubbing, excavation, general grading cut/fill

Table 1. Construction Equipment to be Used During Construction of the Proposed Project.	
Equipment	**Use**
Backhoes or Excavators	Clearing, grubbing, excavation, general grading cut/fill
Haul (Dump) Trucks	Transfer of fill materials including rock, soil, and disposal of debris
Hydroseeding Equipment	Erosion control
Chippers	Tree debris removal
Skidders	Brush removal
Forklift	Equipment and material access
Water Truck / Water Pump	Obtain, transport, and distribute water
Hoe Ram or Similar	Borrow site rock processing

3.2 Project Phases

The Project would be implemented in the following phases, described in the sections below.

1. Site Access, Mobilization, and Staging.
2. Site Clearing, Grubbing, and Preliminary Rough Grading.
3. Sensor, Weir Plate, and Weir Monitor Installation.
4. Seepage Cutoff Wall Installation.
5. Placement of Rock Slope Protection.
6. Site Restoration.

3.2.1 Site Access, Mobilization, and Staging

The Project Area will be accessed via Lake Francis Road and one of two toe drain access roads at the base of Lake Francis Dam. Mobilization of equipment will occur primarily through this route. This access will not require grading of new roads or staging areas. An existing access road on the dam crest will provide access to sensor installation locations on the dam itself. An older access road provides access to the Parshall Flume and downstream weir locations. No additional access roads or staging areas will be created as a part of this Project. Equipment and materials will be staged on the gravel surface east of toe drain number 2 (Figure 3).

3.2.2 Site Clearing, Grubbing, and Preliminary Rough Grading

Vegetation removal will be avoided to the maximum extent possible to minimize impacts to sensitive natural communities in the Project Area. Sensor installation on the dam will require minimal site clearing activities due to the small footprint of the sensor equipment. However, small quantities of vegetation may be cleared in the footprint of the seepage cutoff wall and rock slope protection. Removal of trees greater than 4 inches in diameter at breast height will be avoided, and trimming of trees may occur to allow access for equipment. Rough grading to support rock slope protection and equipment access will occur concurrently with site clearing activities.

3.2.3 Sensor, Weir Plate, and Weir Monitor Installation

After the site has been cleared, sensors in the dam will be installed including the cables that connect each sensor to the dataloggers. A weir monitor will be installed at the existing weir structure and weir plate located at the outlet of the pond created by toe drain numbers 1 and 2. This monitor will be connected to a remote datalogger adjacent to the weir structure. Before the second weir monitor is installed, a weir plate will be installed on the downstream weir structure. The new stainless-steel weir will be bolted to an existing concrete flume that has a 5-foot opening and 32-inch depth to subgrade on the downstream face. A weir monitor will then be installed at this location and connected to a remote datalogger via buried conduit. A manual staff gauge will be installed on this weir plate to monitor pond depth behind the weir and additional staff gauge will be installed on boulders west of the flume structure to monitor water levels in Dobbins Creek during high flows.

3.2.4 Seepage Cutoff Wall Installation

The new seepage cutoff wall will be constructed in alignment with the existing concrete flume structure within Dobbins Creek downstream of the confluence of the low-level outlet channel and the spillway channel. The total length of the cutoff wall is approximately 10 feet, and the alignment was chosen to limit seepage from bypassing the downstream left bank at the existing flume structure. The existing left bank has signs of scour, and this new wall will constrict the lower stage flows to convey through the new weir that will be adhered using water-insensitive epoxy on the downstream center face of the existing flume structure. The concrete wall footing will be embedded a minimum of 12 inches into bedrock. The wall is also designed as a free-standing cantilever wall to support the drained condition since the creek does not always convey flow and is typically a shallow depth.

3.2.5 Placement of Rock Slope Protection

Rock slope protection will be placed using an excavator. Rip-rap will be placed at the top of the left bank and will extend to the edge of the seepage cutoff wall for a total width of approximately 20 feet. The rip-rap will extend from approximately 12 feet downstream of the flume structure to approximately 100 feet upstream along the left bank.

3.2.6 Site Restoration

After construction is complete, the contractor will hydroseed and/or stabilize the soils and slopes and restore portions of the Project Area that will be temporarily impacted. All trash and debris shall be removed. The contractor will then demobilize from the site.

4.0 POTENTIAL PROJECT-RELATED ENVIRONMENTAL EFFECTS AND APPLICABILITY OF A CATEGORICAL EXEMPTION TO THE PROPOSED PROJECT

4.1 Class 1 Categorical Exemption: Existing Facilities

The Proposed Project is exempt from further environmental review under the requirements of the California Environmental Quality Act (CEQA; Public Resources Code Sections 21000 et seq.) because it falls under the list of classes of projects that have been determined not to have a significant effect on the environment and have been declared exempt by the Legislature in accordance with the CEQA Guidelines. The Project is consistent with Categorical Exemption Class 1(c), Existing Facilities, as specified by CEQA Guidelines:

> *Class 1 consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use. The key consideration is whether the project involves negligible or no expansion of use (CEQA Guidelines § 15301).*
>
> *(m) Minor repairs and alterations to existing dams and appurtenant structures under the supervision of the Department of Water Resources*

The Proposed Project would consist of minor alterations to Lake Francis Dam and an appurtenant structures (the downstream weirs and Parshall flume) by installing sensors, weir monitors, and a seepage cutoff wall, which is consistent with the description provided.

4.2 Existing Conditions

The Project Area is located on moderately hilly terrain adjacent to a water storage reservoir (Lake Francis) in the northern Sierra Nevada foothills. The Project Area is situated at an elevational range of approximately 1,600 to 1,688 feet above mean sea level in the High Sierra Nevada Subregion within the Sierra Nevada Region of the California floristic province (Jepson eFlora 2023). The average winter low temperature is 34.2 degrees Fahrenheit (˚F) and the average summer high temperature is 91.2˚F; the average annual precipitation is approximately 46.3 inches at the Dobbins 1S station, which is approximately 500 feet from the Biological Study Area (BSA; National Oceanic and Atmospheric Administration 2023).

The BSA is largely a heavily managed dam with associated infrastructure, including a spillway, toe drains, concrete weir and Parshall Flume. Undeveloped portions of the BSA primarily include disturbed lands, valley oak riparian woodland, valley oak woodland, Ponderosa pine woodland, and lacustrine communities. Land uses surrounding the BSA include recreational activities in and around the lake, viticulture, and rural residential. Representative photographs of the BSA are provided in Appendix B.

Permanent impacts are only expected for a small area within the Proposed Project (0.001 acre) while a larger area is expected to be temporarily impacted (0.056 acre; Figure 3). ECORP does not expect the level of impact for the Proposed Project to reach levels that would result in adverse effects for special-status species that may occur in the Project Area. However, to minimize the potential for impacts to special-status species, YWA intends to implement avoidance and minimization measures to ensure there is no take of special-status plants or wildlife. These measures are described in the following sections.

4.3 Potential Project-Related Environmental Impacts

A Categorical Exemption may not be used for projects where there is potential to significantly affect the environment. This section presents information on the existing conditions of environmental resources at the Project Site and summarizes evaluations of the potential Project-related environmental effects to support the determination that the Project will not result in significant effects to the environment.

A search of the California Natural Diversity Data Base (CNDDB), California Native Plant Society (CNPS) Rare Plant Inventory, and the U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation revealed 64 special status species that may occur in the Project Area (Table 2). However, after further review, 30 species were determined to be absent from the Project Area. The following sections will discuss potential impacts to the remaining 34 special status species, as well as birds protected under the Migratory Bird Treaty Act (MBTA).

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Plants					
Sanborn's onion *(Allium sanbornii* var. *sanbornii)*	–	–	4.2	Chaparral, cismontane woodland, and lower montane coniferous forests, usually with gravelly, serpentine soil. Elevation: 855'–4,955' Bloom Period: May–September	Low potential. There are no suitable soils within the BSA, however the ponderosa pine forest and woodland and valley oak woodland provide marginally suitable habitat.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
True's manzanita *(Arctostaphylos mewukka* ssp. *truei)*	–	–	4.2	Chaparral and lower montane coniferous forest, sometimes on roadsides. Elevation: 1,395'–4,560' Bloom Period: February–July	Potential. Suitable habitat present within ponderosa pine forest and woodland.
Valley brodiaea (*Brodiaea rosea* ssp. *vallicola*)	–	–	4.2	Occurs in old alluvial terraces and silt, sandy, or gravelly soils in vernal pools and swales within valley and foothill grassland. Elevation: 35'–1,100' Bloom Period: April–May	Absent. No suitable habitat present within the BSA.
Sierra foothills brodiaea *(Brodiaea sierrae)*	–	–	4.3	Usually found on serpentine or gabbroic soils within chaparral or cismontane woodland. Elevation: 165'–3,215' Bloom Period: May–August	Low potential. The valley oak woodland riparian habitat within the BSA provides marginally suitable habitat. Gabbroic soils occur within the BSA.
Stebbins' morning-glory *(Calystegia stebbinsii)*	FE	CE	1B.1	Gabbroic or serpentine soils in chaparral and cismontane woodland. Elevation: 605'–3,575' Bloom Period: April–July	Potential. The valley oak woodland provides suitable habitat within the BSA. Gabbroic soils occur within the BSA.
Sierra arching sedge *(Carex cyrtostachya)*	–	–	1B.2	Meadows and seeps, marshes and swamps, in mesic areas of lower montane coniferous forest, and margins of riparian forests. Elevation: 2,000'–4,460' Bloom Period: May–August	Potential. The mesic areas within the ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA. There is one CNDDB occurrence within five miles of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Chaparral sedge *(Carex xerophila)*	–	–	1B.2	Serpentine or gabbroic soils within chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 1,445'–2,525' Bloom Period: March–June	Potential. The ponderosa pine forest and woodland, valley oak woodland, and valley oak woodland riparian provide suitable habitat within the BSA. Gabbroic soils occur within the BSA.
Brandegee's clarkia *(Clarkia biloba* ssp. *brandegeeae)*	–	–	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts. Elevation: 245'–3,000' Bloom Period: May–July	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA. There are two CNDDB occurrences within five miles of the BSA.
Mosquin's clarkia (*Clarkia mosquinii*)	–	–	1B.1	Rocky soils and roadsides of cismontane woodland and lower montane coniferous forest. Elevation: 605'–4,890' Bloom Period: May–July	Absent. No rocky soils present within the BSA.
Sierra clarkia (*Clarkia virgata*)	–	–	4.3	Cismontane woodland and lower montane coniferous forest. Elevation: 1,310'–5,300' Bloom Period: May–August	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA.
Clustered lady's-slipper *(Cypripedium fasciculatum)*	–	–	4.2	Usually in serpentine, seeps or streambanks of lower montane coniferous forest, and North Coast coniferous forest. Elevation: 330'–7,990' Bloom Period: March–August	Low potential. There are no suitable soils within the BSA, however Dobbins Creek provides marginally suitable habitat.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Dwarf downingia *(Downingia pusilla)*	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species has also been found in disturbed areas such as tire ruts and scraped depressions (CDFW 2021). Elevation: 5'–1,460' Bloom Period: March–May	Absent. No suitable habitat is present within the BSA.
Northern Sierra daisy *(Erigeron petrophilus* var. *sierrensis)*	–	–	4.3	Cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest; sometimes on serpentine soils. Elevation: 985'–6,800' Bloom Period: June–October	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA.
Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii*)	–	–	1B.2	Serpentine soils, slopes, or openings of chaparral and cismontane woodland. Elevation: 1,310'–6,560' Bloom Period: June–September	Absent. No suitable soils present within the BSA.
Minute pocket moss (*Fissidens pauperculus*)	–	–	1B.2	Damp coastal soil within north coast coniferous forest. Elevation: 35'–3,360' Bloom Period: N/A	Absent. No suitable habitat present within the BSA. There is one CNDDB occurrence within 5 miles of the BSA.
Pine Hill flannelbush *(Fremontodendron decumbens)*	FE	CR	1B.2	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland. Elevation: 1,395'–2,495' Bloom Period: April–July	Absent. No rocky outcrops present within the BSA. There is one CNDDB occurrence within 5 miles of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Butte County fritillary *(Fritillaria eastwoodiae)*	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentine soils. Elevation: 165'–4,920' Bloom Period: March–June	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA. There are four CNDDB occurrences within 5 miles of the BSA.
Sierra Starwort (*Hartmannella sierrae*)	–	–	4.2	Chaparral, cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest. Elevation: 4,020'–7,200' Bloom Period: May–August	Absent. The BSA is significantly outside of the known elevational range for this species.
Finger rush *(Juncus digitatus)*	–	–	1B.1	Openings within cismontane woodland and lower montane coniferous forest, as well as xeric vernal pools. Elevation: 2,165'–3,595' Bloom Period: May–June	Low potential. The ponderosa pine forest, woodland, and valley oak woodland provide marginally suitable habitat within the BSA.
Dubious pea *(Lathyrus sulphureus* var. *argillaceus)*	–	–	3	Cismontane woodland, lower montane coniferous forest and upper montane coniferous forest. Elevation: 490'–3,050' Bloom Period: April–May	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Cantelow's lewisia *(Lewisia cantelovii)*	–	–	1B.2	In granitic or sometimes serpentine soils within mesic areas and sometimes seeps of broad–leaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 1,085'–4,495' Bloom Period: May–October	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA. Granitic soils are present within the BSA.
Humboldt lily *(Lilium humboldtii* ssp. *humboldtii)*	–	–	4.2	Occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 295'–4,200' Bloom Period: May–July	Potential. The ponderosa pine forest, woodland, and valley oak woodland provide suitable habitat within the BSA.
Quincy lupine (*Lupinus dalesiae*)	–	–	4.2	Often disturbed areas or openings in chaparral, cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest. Elevation: 2,805'–8,205' Bloom Period: May–August	Absent. The BSA is significantly outside of the known elevational range for this species.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Elongate copper moss (*Mielichhoferia elongata*)	–	–	4.3	Metamorphic rock that is usually acidic, usually vernally mesic, often on roadsides, and sometimes carbonate in broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, and subalpine coniferous forest. Elevation: 0'–6,430' Bloom Period: Any Season	Absent. No suitable soils present within the BSA. There is one CNDDB occurrence within 5 miles of the BSA.
Shevock's copper moss (*Mielichhoferia shevockii*)	–	–	1B.2	Mesic metamorphic rock in cismontane woodlands. Elevation: 2,460'–4,595' Bloom Period: N/A	Absent. No suitable soils present within the BSA.
Layne's ragwort (*Packera layneae*)	FT	CR	1B.2	Rocky serpentine or gabbroic soil in chaparral and cismontane woodland communities. Elevation: 655'–3,560' Bloom Period: April–August	Low potential. The valley oak woodland riparian provides marginally suitable habitat within the BSA. Gabbroic soils occur within the BSA.
Bacigalupi's yampah *(Perideridia bacigalupii)*	–	–	4.2	Serpentine soils of lower montane coniferous forest and chaparral. Elevation: 1,475'–3,395' Bloom Period: June–August	Absent. No suitable soils present within the BSA.
Cedar Crest popcorn flower *(Plagiobothrys glyptocarpus* var. *modestus)*	–	–	3	Cismontane woodland and mesic valley and foothill grasslands. Elevation: 2,855' Bloom Period: April–June	Absent. The BSA is significantly outside of the known elevational range for this species.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Sticky pyrrocoma (*Pyrrocoma lucida*)	–	–	1B.2	Alkaline clay in Great Basin scrub, lower montane coniferous forest, and meadows and seeps. Elevation: 2,295'–6,400' Bloom Period: July–October	Absent. No suitable soils present within the BSA.
Brownish beaked-rush *(Rhynchospora capitellata)*	–	–	2B.2	Mesic areas in lower montane coniferous forest, upper montane coniferous forests, meadows, seeps, marshes, and swamps. Elevation: 150'–6,560' Bloom Period: July–August	Potential. Mesic areas within the ponderosa pine woodland and forest provide suitable habitat for this species within the BSA. There is one CNDDB occurrence within 5 miles of the BSA.
Giant checkerbloom *(Sidalcea gigantea)*	–	–	4.3	Meadows and seeps within lower and upper montane coniferous forests. Elevation: 2,200'–6,400' Bloom Period: July–October	Absent. There is no suitable habitat and the BSA is significantly outside of the known elevational range for this species.
Scadden Flat checkerbloom *(Sidalcea stipularis)*	–	CE	1B.1	Montane freshwater marshes and swamps. Elevation: 2,295'–2,395' Bloom Period: July–August	Absent. There is no suitable habitat and the BSA is significantly outside of the known elevational range for this species.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Invertebrates					
Western bumble bee *(Bombus occidentalis)*	–	CC	–	Meadows and grasslands with abundant floral resources. Primarily nests underground. Largely restricted to high elevation sites in the Sierra Nevada, although rarely detected on the California coast. Survey Period: April-November	Absent. No suitable habitat is present.
Monarch butterfly (*Danaus plexippus*)	FC	–	–	Overwinters along coastal California in wind-protected groves of eucalyptus, Monterey pine and cypress with nearby nectar and water sources; disperses in spring throughout California. Adults breed and lay eggs during the spring and summer, feeding on a variety of nectar sources; eggs are laid exclusively on milkweed plants.	Absent. No suitable overwintering habitat is present.
Fish					
Chinook salmon (Central Valley spring-run Evolutionarily Significant Unit) (*Oncorhynchus tshawytscha*)	FT	CT	–	Undammed rivers, streams, creeks in the Sacramento and San Joaquin River systems. Survey Period: N/A	Absent. Englebright Dam, which is downstream of the BSA, is the upper limit of anadromous fish migration.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Steelhead (CA Central Valley Distinct Population Segment (DPS) (*Oncorhynchus mykiss irideus*)	FT	–	–	Fast-flowing, well-oxygenated rivers and streams below dams in the Sacramento and San Joaquin River systems. Survey Period: N/A	Absent. Englebright Dam, which is downstream of the BSA, is the upper limit of anadromous fish migration.
Amphibians					
California red-legged frog (*Rana draytonii*)	FT	–	SSC	Lowlands and foothills of the northern and southern Coast Ranges and Sierra Nevada. Found in deep standing or flowing water with dense shrubby or emergent riparian vegetation; requires 11-20 weeks of permanent water for larval development. Adults require aestivation habitat to endure summer dry down. Survey Period: January – Sept.	Low potential to occur. Lake Francis, the pond at the base of the low-level outlet, and Dobbins Creek provide marginally suitable habitat. The large number of bullfrogs present suggests the likelihood is low. There is one CNDDB occurrence within 5 miles of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Foothill yellow-legged frog North Feather River/Upper Feather River Watershed Clade (*Rana boylii*)	FT	CT	SSC	Partly shaded shallow streams and riffles in variety of habitats. Needs cobble-sized substrate for egg-laying and at least 15 weeks of permanent water to attain metamorphosis. Can be active all year in warmer locations; become inactive or hibernate in colder climates. Feather River watershed above Oroville. Survey Period: May–October.	Absent. BSA is outside of the range for this clade.
Foothill yellow-legged frog Northeast/Northern Sierra Clade (*Rana boylii*)	–	CT	SSC	Partly shaded shallow streams and riffles in variety of habitats. Needs cobble-sized substrate for egg-laying and at least 15 weeks of permanent water to attain metamorphosis. Can be active all year in warmer locations; become inactive or hibernate in colder climates. Yuba River to Middle Fork American River and Sutter Buttes. Survey Period: May–October.	Potential to occur. Dobbins Creek provides suitable habitat. Dense canopy does not provide many suitable basking sites. There are three CNDDB occurrences within 5 miles of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Reptiles					
Northwestern pond turtle (*Actinemys marmorata*)	–	FPT	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches. Survey Period: April-September	Potential to occur. There are two CNDDB occurrences within five miles of the BSA.
Blainville's ("Coast") horned lizard (*Phrynosoma blainvillii*)	–	–	SSC	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Also occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants (Stebbins and McGinnis 2012). In the northern Sacramento area, this species appears restricted to the foothills between 1000 to 3000 feet from Cameron Park (El Dorado County) north and west to Grass Valley and Nevada City. Survey Period: April-October	Absent. No suitable habitat within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Birds					
California black rail (*Laterallus jamaicensis coturniculus*)	–	CT	CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer, El Dorado counties). Nesting: March-September	Absent. No suitable habitat within BSA.
Golden eagle (*Aquila chrysaetos*)	–	–	CFP, CDFW WL	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/ savannah, and chaparral. Nesting occurs on cliff ledges, riverbanks, trees, and human-made structures (e.g., windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter. Nesting: February-August	Low potential to occur. Marginally suitable nesting habitat occurs in the forested areas of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Bald eagle (*Haliaeetus leucocephalus*)	De-listed	CE	CFP	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g., rivers, lakes), wetlands, flooded agricultural fields, open grasslands. Nesting: January-September	Potential to occur. Suitable nesting habitat occurs around Lake Francis and foraging habitat on the lake.
California spotted owl *(Strix occidentalis occidentalis)*	FPT	–	BCC, SSC	Found in the southern Cascade Range and northern Sierra Nevada from Pit River, Shasta County south to Tehachapi Mountains, Kern County, in the coastal ranges from Monterey County to Santa Barbara County, in Transverse and Peninsular Ranges south to northern Baja California. At lower elevations, they breed in hardwood forests and coniferous forests at higher elevations. They use forests with greater complexity and structure. Nesting: March-September	Low potential to occur. Marginally suitable nesting habitat occurs within the valley oak woodland habitat.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Great gray owl *(Strix nebulosa)*	–	CE	–	Found in the Cascade and Sierra Nevada Ranges south to Fresno County. Nesting occurs in deciduous and coniferous forests adjacent to meadows (in California, at elevations between 750-2,250 meters). Nest in broken-topped dead trees, old raptor nests, mistletoe brooms, or human-made platforms. Nesting: March-July	Absent. There is no suitable nesting habitat in the BSA due to human disturbances.
Long-eared owl *(Asio otus)*	–	–	BCC, SSC	Nests in open forests, riparian woodland, conifer forests, dense vegetation adjacent to grasslands, shrublands or other open communities. Nesting: March-August Wintering in Central Valley: November-March	Low Potential to occur. Marginally suitable nesting habitat occurs within the riparian woodland along Dobbins Creek and along the edge of the disturbed area where dense vegetation is present.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Lewis' woodpecker (*Melanerpes lewis*)	–	–	BCC	In California, breeds in Siskiyou and Modoc counties, Warner Mountains, inner coast ranges from Tehama to San Luis Obispo counties, San Bernardino Mountains, and Big Pine Mountain (Inyo County); nesting habitat includes open ponderosa pine forest, open riparian woodland, logged/burned forest, and oak woodlands. Does not breed on the west side of Sierran crest (Beedy and Pandalfino 2013). Nesting: April-September Wintering in Central Valley: September-March	Absent. Does not breed in the region.
American peregrine falcon *(Falco peregrinus anatum)*	De-listed	De-listed	CFP	In California, breeds in coastal region, northern California, and Sierra Nevada. Nesting habitat includes cliff ledges and human-made ledges on towers and buildings. Wintering habitat includes areas where there are large concentrations of shorebirds, waterfowl, pigeons or doves. CA Residents nest in February-June	Absent. No suitable nesting habitat is present within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Olive-sided flycatcher *(Contopus cooperi)*	–	–	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America. Nesting: May-August	Potential. Suitable breeding habitat is present within the BSA.
Willow flycatcher *(Empidonax traillii)*	–	CE	–	In California, breeding range includes Cascade-Sierra Nevada region (*brewsteri* subspecies); *extimus* subspecies found in southern California; nesting habitat includes moist, shrubby riparian willow thickets, often with standing or running water. Winters in Central and South America. Nesting: May-September	Absent. No suitable habitat is present within the BSA.
Oak titmouse (*Baeolophus inornatus*)	–	–	BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree). Nesting: March-July	Present. Suitable habitat is present within the valley oak woodlands.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Purple martin (*Progne subis*)	–	–	SSC	In California, breeds along coast range, Cascade-northern Sierra Nevada region and isolated population in Sacramento. Nesting habitat includes montane forests, Pacific lowlands with dead snags; the isolated Sacramento population nests in weep holes under elevated highways/bridges. Winters in South America. Nesting: May-August	Potential to occur. Suitable nesting habitat occurs in the valley oak woodland and Ponderosa pine woodland. Known breeding location 2.5 miles west.
Wrentit (*Chamaea fasciata*)	–	–	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens. Nesting: March-August	Present. Suitable nesting habitat is present within the riparian woodland, blackberry thickets, and edge of Ponderosa pine woodland.
California thrasher (*Toxostoma redivivum*)	–	–	BCC	Resident and endemic to coastal and Sierra Nevada-Cascade foothill areas of California. Nests are usually well hidden in dense shrubs, including scrub oak, California lilac, and chamise. Nesting: February-July	Absent. No suitable habitat is present within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Cassin's finch (*Haemorhous cassinii*)	–	–	BCC	Breeds throughout the conifer belts of North America's western interior mountains, from central British Columbia to northern New Mexico and Arizona; mostly between 3,000'-10,000' elevation. Often in mature forests of pine, spruce and aspen; especially open, dry pine forests. Some will breed in open sagebrush shrubland with scattered western junipers. Nesting: May-July	Absent. No suitable breeding habitat within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Lawrence's goldfinch (*Spinus lawrencei*)	–	–	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g., small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water. Nesting: March-September	Low potential to occur. The disturbed area along the woodland edge may provide marginally suitable nesting habitat.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Yellow-breasted Chat (*Icteria virens*)	–	–	SSC	Early successional riparian habitats with a well-developed shrub layer and an open canopy. Narrow borders of streams, creeks, sloughs, and rivers. Taller trees like cottonwood (*Populus* sp.) and alder (*Alnus* sp.) are necessary for song perches. Nesting: March-September	Potential to occur. Suitable nesting habitat is present in the valley oak riparian woodland.
Yellow warbler (*Setophaga petechia*)	–	–	SSC	Breeding range includes most of California, except Central Valley (isolated breeding locales on Valley floor, Stanislaus, Colusa, and Butte counties), Sierra Nevada range below tree line, and southeastern deserts. Nesting habitat includes riparian vegetation near streams and meadows. Winters in Mexico south to South America. Nesting: May-August	Potential to occur. Suitable nesting habitat occurs in the valley oak riparian woodland.

Table 2. Special-Status Species Evaluation					
Common Name (*Scientific Name*)	**Status**			**Habitat Description/ Species Ecology**	**Potential To Occur Onsite**
	FESA	**CESA/ NPPA**	**Other**		
Black-throated Gray warbler (*Setophaga nigrescens*)	–	–	BCC	Breeding habitat includes open coniferous or mixed coniferous-deciduous woodland with brushy undergrowth, pinyon-juniper and pine-oak associates, and oak scrub. Their deep cup nests are often built on horizontal branches and constructed of a variety of plant material, feathers, and mammal fur (Guzy and Lowther 2020). Nesting: May-July	Potential to occur. Suitable nesting habitat is present within the valley oak woodland and Ponderosa pine woodland.
Mammals					
Fisher- Northern California/Southern Oregon DPS *(Pekania pennanti)*	–	–	SSC	Coastal northern California and includes reintroduced populations in the northern Sierra Nevada and southern Oregon Cascades. Any season	Absent. No suitable habitat within BSA. There is one CNDDB occurrence within 5 miles of the BSA.
Sierra marten (*Martes caurina sierrae*)	–	–	FSS	High elevation, late-successional forests with a dense canopy and old-growth characteristics. Prefer riparian lodgepole communities at lower elevations and red fir communities at higher elevations. Occurs in southern Cascades and northern Sierra Nevada. Survey Period: N/A	Absent. No suitable habitat is present within the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Townsend's big-eared bat *(Corynorhinus townsendii)*	–	–	SSC	Occurs throughout the west and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the central and eastern United States. It has been reported in a wide variety of habitat types ranging from sea level to 3,300 meters. Habitat associations include coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Roosting can occur within caves, mines, buildings, rock crevices, trees. Survey Period: April-September	Low potential to occur. Marginally suitable habitat is present within the woodland habitats of the BSA. There is one CNDDB occurrence within 5 miles of the BSA.

Table 2. Special-Status Species Evaluation

Common Name (*Scientific Name*)	Status			Habitat Description/ Species Ecology	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other		
Western red bat (*Lasiurus frantzii*)	–	–	SSC	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2023**Error! Bookmark not defined.** or use current year). Survey Period: April-September	Potential to occur. Suitable roosting habitat is present within the woodland habitats of the BSA.

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered
FT	FESA listed, Threatened
FPT	Formally Proposed for FESA listing as Threatened
FC	Candidate for FESA listing as Threatened or Endangered
BCC	USFWS Bird of Conservation Concern (USFWS 2021)
CE	California ESA- or NPPA listed, Endangered
CT	California ESA- or NPPA-listed, Threatened
CR	California ESA- or NPPA-listed, Rare
CC	Candidate for California ESA listing as Endangered or Threatened
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5050-reptiles/amphibians)
SSC	CDFW Species of Special Concern
CDFW WL	CDFW Watch List
1B	CRPR/Rare or Endangered in California and elsewhere

Table 2. Special-Status Species Evaluation						
Common Name (*Scientific Name*)	**Status**			**Habitat Description/ Species Ecology**	**Potential To Occur Onsite**
	FESA	**CESA/ NPPA**	**Other**		
2B	CRPR/Plants rare, threatened, or endangered in California but more common elsewhere				
3	CRPR/Plants About Which More Information is Needed – A Review List				
4	CRPR/Plants of Limited Distribution – A Watch List				
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)				
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)				
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)				
Delisted	Formally Delisted				
FSS	Forest Service Sensitive Species				
NPPA	Native Plant Protection Act				

4.3.1 Plants

There is potential for 17 special-status plant species to occur within the Project Area. In order to avoid or minimize impacts to special-status plant species, biologists at ECORP Consulting, Inc. will conduct special-status plant surveys according to protocols approved by USFWS, CDFW, and CNPS (CDFW 2018; USFWS 1996; CNPS 2001). If special-status plant species are found within the Project Area, avoidance zones will be clearly established and demarcated until the completion of the Proposed Project. These avoidance zones will include all special-status plants and a 50-foot buffer, unless otherwise determined by a qualified biologist. If avoidance is not feasible, mitigation for impacts to special-status plant species may be required. With the implementation of these measures, the Proposed Project is not expected to have an impact on special-status plant species.

4.3.2 Reptiles and Amphibians

There is potential for both the federally threatened California red-legged frog (CRLF) and state threatened foothill yellow-legged frog (FYLF; northern Sierra DPS) to occur onsite. Project implementation could result in take of listed frog species, if present, through vehicular traffic on-site near Dobbins Creek, or during installation of the weir structure and seepage cutoff wall on Dobbins Creek. Indirect effects such as habitat alteration will be temporary and habitat will be restored to pre-Project conditions after the Project has been completed. The quality of habitat and level of impact at the site does not warrant a protocol-level habitat assessment and survey, however, ECORP recommends the following measures to avoid potential impacts to CRLF and FYLF:

- A qualified biologist will conduct a preconstruction clearance survey for both species within the Project footprint in areas where CRLF and FYLF are most likely to be impacted by Project activities within 48 hours of the start of construction. The biologist will search for all life stages during this survey.
- A biological monitor shall be present when activities occur within 100 feet of suitable habitat for either CRLF or FYLF.
- If either CRLF or FYLF are found, the qualified biologist will notify CDFW immediately and consult on appropriate actions to be taken before construction begins.
- Areas impacted within the BSA that represent suitable habitat for listed frog species shall be restored to pre-project conditions after Project completion.

The BSA supports suitable habitat for the northwestern pond turtle. Project implementation could result in direct effects such as fatalities to northwestern pond turtle through vehicular traffic and other construction activity adjacent to the low-level outlet pond and Dobbins Creek. Indirect effects such as habitat alteration may also result in take of this species. The following measures are recommended to avoid or minimize potential effects to northwestern pond turtle:

- A qualified biologist will perform a preconstruction clearance survey within 24 hours of the initiation of Project activities.
- If northwestern pond turtles are found within the Project footprint, they will be allowed to move out of the Project Area on their own volition.
- Areas impacted within the BSA that represent suitable habitat for northwestern pond turtle shall be restored to pre-project conditions after Project completion. If no northwestern pond turtles are found during clearance survey, no further measures are necessary.

4.3.3 Birds

The BSA supports suitable habitat for nesting birds, including raptors and other birds protected by the MBTA. The Project could result in direct effects such as nest destruction and abandonment. Potential indirect effects include changes in nesting and foraging behavior due to Project activities.

There is potential for Bald Eagle to occur within the Project Area. The following measures are recommended to avoid or minimize potential effects to nesting bald eagles:

- If Project activities, including tree and other vegetation removal, begin during the nesting season, between January 1 and September 30, a qualified biologist shall conduct a preconstruction survey for bald eagles to identify active nests on and within 500 feet of the Project Site. The surveys shall be conducted within 14 days before the beginning of any construction activities.
- If active bald eagle nests are found, they shall be avoided by establishing avoidance buffers to be determined by a qualified biologist in consultation with CDFW. The buffer area shall remain in

place until a qualified biologist has determined, in coordination with CDFW, that the young have fledged or the nest is no longer active,

- If no active nests are found during preconstruction surveys, no further measures relating to bald eagles are necessary.

The following measures are recommended to avoid or minimize potential effect to all other special-status birds and birds (and their nests) protected under the MBTA:

- To the extent feasible, Project activities shall occur when nesting is less likely, October 1 through December 31.
- If Project activities, including tree and other vegetation removal, begin during the nesting season, between January 1 and September 30, a qualified biologist shall conduct a preconstruction nesting bird survey for within 300 feet of the Project site for raptors, and within 100 feet for all other nesting birds. The surveys shall be conducted within 14 days before the beginning of any construction activities.
- If active nests are found, they shall be avoided by establishing avoidance buffers to be determined by a qualified biologist in consultation with CDFW. The buffer area shall remain in place until a qualified biologist has determined, in coordination with CDFW, that the young have fledged or the nest is no longer active. If no active bird nests are found during preconstruction surveys, no further measures relating to protected birds is necessary.

4.3.4 Mammals

Project activities could result in direct effects such as fatalities and roost destruction due to vegetation removal or disturbance. Indirect effects such as roost abandonment and young abandonment, loss of roosting habitat and foraging habitat are also possible For The following measures are recommended to avoid or minimize potential effect to special-status bats:.

- If tree or vegetation removal will occur, bat roost surveys shall be conducted by a qualified wildlife biologist within 14 days before any Project initiation. Locations of vegetation and tree removal or excavation will be examined for potential bat roosts. Specific survey methodologies will be determined in coordination with CDFW, and may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., SonoBat, Anabat).
- Disturbance of any roost sites found will be avoided to the extent feasible.
- If it is determined that an active roost site cannot be avoided, CDFW will be notified and consulted on appropriate bat exclusion methods and roost removal procedures. Once it is confirmed that all bats have left the roost, no further measures pertaining to bats are necessary.
- If no active bat roosts are found during the preconstruction survey, no further measures relating to special-status bats are necessary.

4.4 Exceptions

The following provides information regarding potential exceptions defined under the CEQA Guidelines Section 15300.2 that, if triggered, might bar the Proposed Project from being exempt from CEQA compliance. Database searches were conducted using the California Department of Toxic Substances Control ENVIROSTOR list of hazardous waste sites, and U.S. Environmental Protection Agency National Priorities List of Superfund hazardous waste cleanup sites, with the results indicating that the Project Area is not in, or near, any designated site with known hazards on any list compiled pursuant to Section 65962.5 of the Government Code. The Project Area also is not located adjacent to, or visible from, any designated state or federal scenic highway. The nearest potentially scenic highway is California State Highway 49, located approximately 4 miles from the Project Area, which is listed as an eligible scenic highway but has not been officially designated. Finally, the Proposed Project would involve only minor disturbances as the Project occurs primarily within the footprint of an existing dam and flume structure, thus the minor effects would not generate or contribute to any cumulatively significant environmental impacts.

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APPENDIX A

Engineering Plans

YUBA WATER AGENCY

PROJECT PLANS FOR CONSTRUCTION OF

GEOTECHNICAL INSTRUMENTATION AND AUTOMATED DATA ACQUISITION SYSTEM

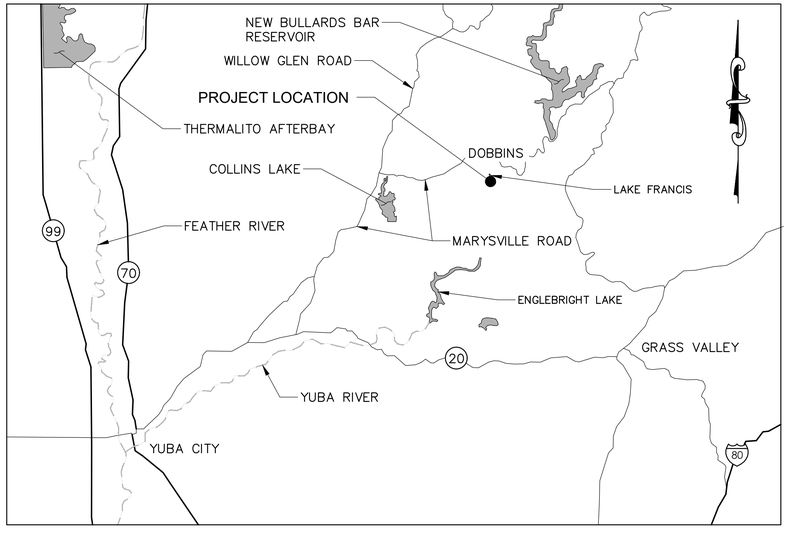
LOCATED AT

LAKE FRANCIS DAM
YUBA COUNTY, CA

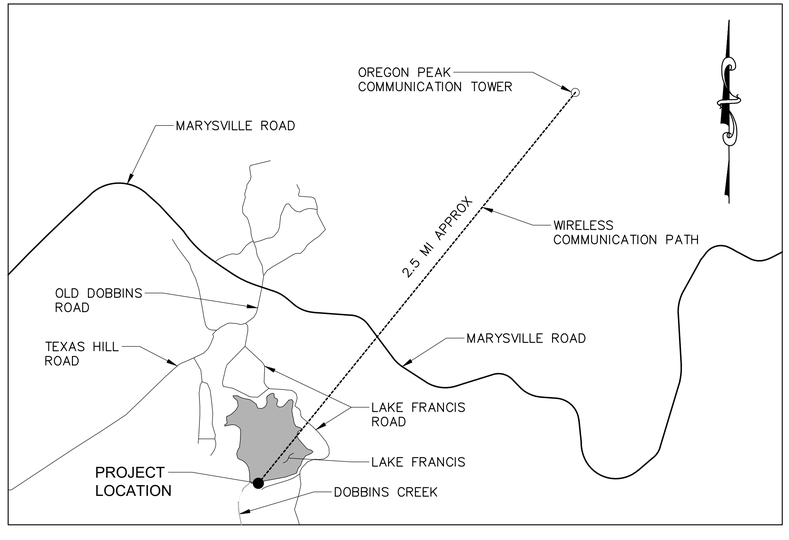
SUMMARY OF WORK

INSTALL NEW AUTOMATED DATA ACQUISITION SYSTEM, INCLUDING SENSORS, DATALOGGERS, SOLAR PANELS, RESERVE BATTERIES, MEASUREMENT AND COMMUNICATION PERIPHERAL DEVICES, ENCLOSURES AND PROTECTIVE HOUSING, GROUNDING ELEMENTS, CONDUIT, MOUNTING POLES AND CONCRETE FOUNDATIONS:

- INSTALL ONE (1) NEW BATTERY ENCLOSURE STATION ADJACENT TO THE EXISTING RESERVOIR LEVEL MONITORING STATION ON THE DAM CREST, INSTALL ONE (1) NEW CENTRAL DATALOGGER WITHIN THE EXISTING STATION ENCLOSURE.
- DRILL AND INSTALL ONE (1) NEW OPEN STANDPIPE PIEZOMETER IN PROXIMITY TO THE NEW BATTERY CLOSURE STATION, INCLUDING INSERTION OF A VENTED VIBRATING–WIRE PIEZOMETER PRESSURE TRANSDUCER.
- DRILL AND INSTALL ONE (1) NEW FULLY GROUTED, SEALED VIBRATING–WIRE PIEZOMETER PRESSURE TRANSDUCER AND RISER ON THE DAM CREST IN PROXIMITY TO THE EXISTING RESERVOIR LEVEL MONITORING STATION.
- INSTALL FOUR (4) NEW REMOTE DATALOGGER STATIONS AND FOUR (4) FULLY GROUTED, SEALED VIBRATING–WIRE PIEZOMETER PRESSURE TRANSDUCERS ON THE DAM CREST AND DAM EMBANKMENT.
- INSTALL TWO (2) NEW REMOTE DATALOGGER STATIONS AND TWO (2) NEW WEIR MONITOR SENSORS AT THE EXISTING AND PROPOSED SEEPAGE WEIR STRUCTURES;
- INSTALL ONE (1) NEW VENTED VIBRATING–WIRE PRESSURE TRANSDUCER UPSTREAM OF THE EXISTING PARSHALL FLUME STRUCTURE;
- INSTALL ONE (1) NEW SEEPAGE CUTOFF RETAINING WALL AND ROCK SLOPE PROTECTION AT THE EXISTING PARSHALL FLUME STRUCTURE TO RESTORE LEFT CHANNEL BANK; AND
- INSTALL ONE (1) NEW CREEK STAFF GAUGE DOWNSTREAM ON THE RIGHT SIDE OF THE EXISTING PARSHALL FLUME.



AREA MAP
NOT TO SCALE

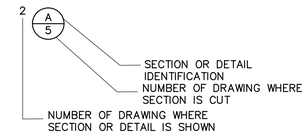


VICINITY MAP
NOT TO SCALE

LEGEND & ABBREVIATIONS

AC	ALTERNATING CURRENT
ADAS	AUTOMATED DATA ACQUISITION SYSTEM
Ah	AMP HOUR
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GAUGE
B/M	BILL OF MATERIALS
BAT	BATTERY
CDL	CENTRAL DATALOGGER
CH	CHANNEL
CHG	CHARGE
CJ	COLD JOINT
CL	CENTERLINE
COMM	COMMUNICATIONS
CONC	CONCRETE
CONST	CONSTRUCTION
CSI	CAMPBELL SCIENTIFIC, INC.
dB	DECIBEL
DIA	DIAMETER
DIM	DIMENSION
DL	DATALOGGER
D/S	DOWNSTREAM
DWG	DRAWING
(E)	EXISTING FEATURE
EG	EXISTING GRADE
EL	ELEVATION
ENC	ENCLOSURE
EQ	EQUAL
EW	EACHWAY
FG	FINISH GRADE
FTG	FOOTING
FV	FIELD VERIFY
GB	GIGABYTE
GEOKON	GEOKON, INC.
GND	GROUND
GPM	GALLONS PER MINUTE
H	HEIGHT
HORIZ	HORIZONTAL
IN	INCH(ES)
kPa	KILOPASCAL
LLO	LOW LEVEL OUTLET
MANUF	MANUFACTURER
mA	MILLIAMP
MIN	MINIMUM
MUX	MULTIPLEXER
(N)	NEW FEATURE
NO.	NUMBER
OAE	OR APPROVED EQUAL
OD	OUTSIDE DIAMETER
OC	ON CENTER
OSP	OPEN STANDPIPE
P	PIEZOMETER
PCF	POUNDS PER CUBIC FOOT
PE	PROFESSIONAL ENGINEER
PIP	PROTECT IN PLACE
PNL	PANEL
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RDL	REMOTE DATALOGGER
RES	RESET
REV	REVISION
RGS	RIGID GALVANIZED STEEL
RMC	RIGID METAL CONDUIT
RSP	ROCK SLOPE PROTECTION
SCH	SCHEDULE
SD	SECURE DIGITAL
SIG	SIGNAL
SIM	SIMILAR
SS	STAINLESS STEEL
STD	STANDARD
TBD	TO BE DETERMINED
TEMP	TEMPORARY
TOC	TOP OF CONCRETE
TOT	TOTAL
TOS	TOP OF STEEL
TYP	TYPICAL
U	UNIVERSAL
U/S	UPSTREAM
V	VOLT
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VERT	VERTICAL
VWP	VIBRATING–WIRE PIEZOMETER
W	WATT
YWA	YUBA WATER AGENCY

FLOW ⇨
(E) FEATURE
(N) FEATURE
(E) MAJOR CONTOUR —3500—
(E) MINOR CONTOUR
(N) MAJOR CONTOUR —3500—
(N) MINOR CONTOUR



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PROJECT CONTACTS

ENGINEER OF RECORD

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JERRY PASCOE

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PROJECT MANAGER

YUBA WATER AGENCY

CASEY PETERSON

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811 Know what's below. Call before you dig.

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REGISTERED PROFESSIONAL ENGINEER — JERRY S. PASCOE — No. CS8156 — CIVIL — STATE OF CALIFORNIA

7-5-23

NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	CMR/JFR	PAB	PP/MVB
REVISIONS	100% FINAL SUBMITTAL			

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM
TITLE SHEET, LEGEND, & ABBREVIATIONS
ADAS
LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 1 OF 11 | SHT 1

0 1" REFERENCE SCALE

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:15:41 PM BY: REILLY, CAITLIN CTB: ---- TAB: 1
FILE: C:\Users\creilly\Gannett Fleming Inc\068343-YCWA-Lake Francis Dam Instr Eng - GFV\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-001.dwg

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS.
3. THE NOTES PROVIDED ON THESE DRAWINGS DO NOT REPRESENT A COMPLETE DESCRIPTION OF THE WORK TO BE PERFORMED AND ARE INTENDED TO COMPLIMENT THE SPECIFICATIONS BY GANNETT FLEMING. TECHNICAL SPECIFICATIONS ASSOCIATED WITH THIS WORK ARE AS FOLLOWS:
   A. GEOTECHNICAL INSTRUMENTATION (310913)
4. LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES AND FEATURES HAVE NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL CONTROLLING DIMENSIONS OF NEW AND EXISTING FEATURES PRIOR TO ORDERING OR FABRICATING MATERIAL OR CONSTRUCTING PROPOSED IMPROVEMENTS. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION OF THE FEATURE IN QUESTION.
5. PRIOR TO THE START OF CONSTRUCTION, LOCATE ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. VERIFY THAT THE PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH EXISTING OR PROPOSED UTILITIES OR THAT APPROPRIATE MEANS ARE PROVIDED FOR REROUTING, SUPPORTING, PROTECTING, OR OTHERWISE INCORPORATING THE UTILITIES INTO THE CONSTRUCTION.
6. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT FROM DAMAGE EXPOSED SUBGRADES, EXISTING IMPROVEMENTS, AND SURVEY MONUMENTS THAT ARE TO REMAIN IN PLACE. SUBGRADES AND IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED. THE CONTRACTOR SHALL NOTIFY YWA OF DAMAGE AND OBTAIN APPROVAL TO REPAIR ALL DAMAGE BEFORE REPAIR WORK IS PERFORMED.
7. DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL VISUALLY MONITOR THE WORK AREA AND ADJACENT IMPROVEMENTS ON A DAILY BASIS FOR INDICATIONS OF MOVEMENT. THE CONTRACTOR SHALL STOP OPERATIONS IF DEFLECTION OR DISTRESS IS OBSERVED AND SHALL IMMEDIATELY NOTIFY YWA AND THE ENGINEER.
8. NOTIFY THE OWNER AND/OR ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THESE DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS.
9. PRODUCTS REFERENCE ON THE DRAWINGS SHALL BE CONSTRUCTED, INSTALLED, AND/OR APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS UNLESS OTHERWISE NOTED.
10. DO NOT SCALE DRAWINGS. CONTACT THE ENGINEER FOR ANY DIMENSIONS OR SPECIFIC DETAIL NOT SHOWN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING RECORDS SUITABLE FOR DEVELOPING "AS-BUILT" DRAWINGS THROUGHOUT THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, THE LOCATIONS AND GRADES OF ALL UNDERGROUND AND SURFACE IMPROVEMENTS. THESE RECORDS SHALL BE MARKED IN RED, GREEN, BLUE STANDARD FORMAT AND SHALL BE DELIVERED TO YWA WITHIN 30 DAYS AFTER COMPLETION OF ADAS COMMISSIONING.
12. WORK LIMITS AND CONSTRUCTION OF IMPROVEMENTS SHOWN HEREIN ARE SUBJECT TO CHANGE BASED ON FIELD EVALUATION BY YWA AND THE ENGINEER.

DESIGN BASIS AND LOADING

1. THE DESIGNS DEPICTED IN THESE DRAWINGS ARE BASED ON INFORMATION PROVIDED IN THE FOLLOWING REFERENCES:
   - TOPOGRAPHIC BASE MAP, PROVIDED BY PACE ENGINEERING, DATED JUNE 5, 2020
   - TOPOGRAPHIC BASE MAP, PROVIDED BY YWA MARCH 2016.
   - GEOTECHNICAL INSTRUMENTATION & ADAS CALCULATION REPORT, 100% FINAL SUBMITTAL, PREPARED BY GANNETT FLEMING, INC., DATED JULY 2023.
2. DESIGN IS IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
   - ACI 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - ACI 350-06, CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
   - AISC STEEL CONSTRUCTION MANUAL, 14TH EDITION
   - 2019 CALIFORNIA BUILDING CODE
   - 2022 CALTRANS STANDARD SPECIFICATIONS
3. SOIL DESIGN PARAMETERS (ASSUMED, NATIVE SILTY/SANDY GRAVEL):
   - ACTIVE PRESSURE = 42 PCF
   - UNIT WEIGHT = 125 PCF
   - FRICTION ANGLE = 30°
   - SOIL BEARING PRESSURE = 3000 PSF
4. DESIGN LOADS:
   - DEAD LOADS :
     - CONCRETE = 150 PCF
     - STEEL = 490 PCF
     - HYDRAULIC LOAD = 62.4 PCF
5. SEISMIC DESIGN PARAMETERS: N/A FOR LOW WALLS (LESS THAN 6 FT TALL)
6. HYDRAULIC DESIGN CRITERIA:
   - DESIGN FLOW = 300 GPM (0.66 CFS)
7. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES ONLY. PROTECT THE STRUCTURE WHERE EXCESSIVE CONSTRUCTION LOADS MAY OCCUR.

0 REFERENCE SCALE

SURVEY

1. HORIZONTAL COORDINATE SYSTEM:
   - NAD83 CALIFORNIA STATE PLANE, ZONE 2
   - VERTICAL DATUM: LOCAL "LAKE FRANCIS DATUM," TO OBTAIN NAVD88 VALUES, ADD 1.08 FEET TO THE ELEVATIONS SHOWN.
2. UNITS: US SURVEY FEET

DEWATERING

1. GROUNDWATER AND/OR SURFACE WATER MAY BE ENCOUNTERED DURING EXCAVATION AND SUBGRADE PREPARATION. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS NECESSARY TO MAINTAIN STABLE AND CLEAN EXCAVATIONS. DIRECT DISCHARGE OF AFOREMENTIONED GROUNDWATER/SURFACE WATER INTO STREAMBED IS NOT PERMISSIBLE. FINAL DISCHARGE POINTS FOR ALL DEWATERING SHALL BE APPROVED BY YWA.
2. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL REQUIRED TEMPORARY BYPASS SYSTEMS INCLUDING SUMPS, BYPASS CHANNELS, ANY PIPING NECESSARY AND/OR OTHER BYPASS EQUIPMENT REQUIRED FOR THE WORK AREAS; 300 GPM (MAX).
3. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL BYPASS FACILITIES FOLLOWING COMPLETION OF THE PROPOSED WORK.
4. ALL PERMANENT IMPROVEMENTS SHALL BE CONSTRUCTED IN DRY CONDITIONS FREE FROM WATER.
5. CONTRACTOR SHALL PROVIDE A DAM SEEPAGE/BYPASS PLAN PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL BY THE ENGINEER.

EXCAVATION

1. NOTIFY UNDERGROUND SERVICE ALERT (USA NORTH) TO IDENTIFY THE LOCATION OF EXISTING UTILITIES AT LEAST TWO WORKING DAYS PRIOR TO ANY EXCAVATION WORK: (800)-642-2444 OR WWW.USANORTH811.ORG.
2. THE CONTRACTOR IS RESPONSIBLE FOR STABILITY AND SHORING OF TEMPORARY CUT SLOPES AND TRENCHES, AND SHALL CONFORM TO THE REQUIREMENTS OF CAL-OSHA.
3. EXCAVATIONS SHALL BE KEPT CLEAN AND DRY FOR THE DURATION OF THE WORK PERFORMED.

EARTHWORK

1. FOUNDATION FOOTINGS SHALL BEAR IN FIRM, UNDISTURBED COMPETENT ROCK, AT OR EXCEEDING DEPTH SHOWN ON DRAWINGS.
2. ALL FOOTING EXCAVATIONS SHALL BE NEAT. PREPARE DESIGNATED FILL AREAS BY GRUBBING AND STRIPPING VEGETATION, REMOVING DEBRIS, AND SCARIFYING TO A MINIMUM DEPTH OF 8 INCHES PRIOR TO MATERIAL PLACEMENT.
3. EARTH FILL MATERIAL SHALL BE VISUALLY INSPECTED TO ASSURE THAT IT IS SUBSTANTIALLY FREE OF VEGETATION, ORGANICS, ROOTS, AND UNSUITABLE SUBSTANCE.
4. FILL MATERIAL SHALL BE FREE OF ORGANIC MATERIALS AND ROCKS OR LUMPS LARGER THAN FOUR (4) INCHES IN THE GREATEST DIMENSION. ALL FILL MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.
5. EXCAVATING, FILLING, BACKFILLING, AND GRADING WORK SHALL NOT BE PERFORMED DURING INCLEMENT WEATHER CONDITIONS WHICH MIGHT DAMAGE OR BE DETRIMENTAL TO THE CONDITION OF EXISTING GROUND, IN-PROGRESS WORK, OR COMPLETED WORK. WHEN THE WORK IS INTERRUPTED BY RAIN, EXCAVATING, FILLING, BACKFILLING, AND GRADING WORK SHALL NOT RESUME UNTIL THE SITE AND SOIL CONDITION (MOISTURE CONTENT) ARE SUITABLE FOR COMPACTION. THE TOP THREE INCHES OF THE CONTACT SURFACE, AFFECTED BY RAIN, SHALL BE SCARIFIED AND RE-COMPACTED TO THE SPECIFIED CONDITIONS BEFORE PLACEMENT OF THE NEXT NEW LIFT OF FILL.
6. SOIL MATERIAL THAT IS TOO WET FOR COMPACTION SHALL BE LEFT TO DRAIN AND THEN AERATED AND DRIED BY DISKING AND HARROWING OR OTHER APPROVED METHODS UNTIL THE MOISTURE CONTENT OF THE AREA IS UNIFORM AND WITHIN THE SPECIFIED LIMITS.
7. ZONES OF SOFT OR SATURATED SOILS SHALL BE REMOVED TO EXPOSE FIRM AND COMPETENT FOUNDATION MATERIAL.
8. EXCAVATED MATERIALS THAT ARE UNSUITABLE FOR BACKFILL SHALL BE REMOVED FROM THE SITE OR OTHERWISE DISPOSED OF AS DIRECTED BY THE ENGINEER.
9. PERFORM GRADING TO THE LINES AND GRADES SHOWN. FINISHED SURFACES SHALL PROVIDE POSITIVE SURFACE DRAINAGE TO PREVENT PONDING.
10. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE.

TEMPORARY ENVIRONMENTAL/EROSION CONTROL

1. CONTAIN SURFACE RUNOFF AND CEMENTITIOUS MATERIAL DURING CONSTRUCTION TO CONTAMINATION OF GROUND AND SURFACE WATERS.
2. MAINTAIN THE SITE AND ADJACENT PROPERTY IN A CLEAN, SAFE, AND USABLE CONDITION.
3. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING ACTIVITY-SPECIFIC EROSION AND SEDIMENT CONTROL PLAN AND BEST MANAGEMENT PRACTICES (BMPS) IN ACCORDANCE WITH THE STATE'S GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES AND THE COUNTY ACCEPTED EROSION AND SEDIMENT CONTROL PLAN.
4. ALL DISTURBED EARTH OUTSIDE OF DOBBINS CREEK, UNLESS OTHERWISE NOTED, SHALL BE REVEGETATED AT THE CULMINATION OF THE PROJECT AS APPROVED BY YWA. REVEGETATION CAN CONSIST OF AN APPROVED CALIFORNIA NATIVE SEED MIX, EROSION CONTROL BMPS TO PROTECT SOIL COVER SUCH AS STRAW MULCH, AND BIODEGRADABLE SEDIMENT CONTROL BMPS SUCH AS FIBER ROLLS OR APPROVED EQUIVALENTS.

CONCRETE

1. CONCRETE WORK SHALL CONFORM TO ACI-318-19. HOT WEATHER CONCRETING SHALL CONFORM TO ACI 305. COLD WEATHER SHALL CONFORM TO ACI 306.
2. CONCRETE STRENGTH AND MIX REQUIREMENTS:
   - MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'c) = 4500 PSI
   - MAXIMUM WATER/CEMENT RATIO = 0.45
   - MAXIMUM AGGREGATE SIZE = 1-½"
   - AIR ENTRAINMENT = 5½%±1½% (FOR 1-½" AGGREGATE)
   - CEMENT = ASTM C150 TYPE II
   - EXPOSURE CLASSES:
     - FREEZING AND THAWING = F2
     - SULFATE = S0
     - PERMEABILITY = W1
     - CORROSION = C1
   - FOR OTHER AGGREGATE SIZES, SEE ACI 318-14 TABLE 19.3.3.1 FOR AIR ENTRAINMENT REQUIREMENTS.
3. FORMS SHALL BE PROVIDED TO ACHIEVE LINES, GRADES, AND GEOMETRY OF CONCRETE STRUCTURES AS INDICATED ON THESE DRAWINGS.
4. TWO TOOL JOINTS FOR (N) CONCRETE STRUCTURE SHALL BE LOCATED ON EITHER SIDE OF PROPOSED STRUCTURE SPACED EQUALLY.
5. EXPOSED CONCRETE EDGES SHALL HAVE A ¾" CHAMFER.
6. CONCRETE SURFACES SHALL BE CLASS B FOR AS-CAST SURFACE FINISH-2.0 (SF-2.0).
7. REINFORCING STEEL:
   - DEFORMED REBAR = ASTM A615, GRADE 60 (fy = 60 KSI)
   - REINFORCEMENT SPACING SHOWN IS CENTER TO CENTER OF BARS
8. UNLESS OTHERWISE NOTED, MAINTAIN COVERAGE TO THE FACE OF REBAR AS FOLLOWS:
   - CONCRETE CAST AGAINST EARTH = 3"
   - REINFORCEMENT EXPOSED TO EARTH OR WEATHER = 2"
9. MINIMUM LAP LENGTHS SHALL CONFORM TO #4 BAR = 36 INCHES.
10. STEEL SHALL BE KEPT CLEAN AND FREE OF RUST SCALES.
11. REINFORCING BARS SHALL BE PLACED IN LENGTHS AS LONG AS POSSIBLE. ALL REINFORCING STEEL SHALL BE COLD BENT.
12. REINFORCING AND INSERTS SHALL BE RIGIDLY HELD IN PLACE PRIOR TO CONCRETE PLACEMENT.
13. INSPECTION AND TESTING REQUIREMENTS FOR FIRST BATCH PRODUCED EACH DAY SHALL MEET THE FOLLOWING:
   - TEMPERATURE PER ASTM C172
   - AIR CONTENT PER ASTM C231
   - SLUMP PER ASTM C143
   - CONCRETE COMPRESSIVE STRENGTH PER ASTM C3, C39, C172 AND ACI 214 FOR SIX TEST CYLINDERS (1 AT 7 DAYS, 1 AT 14 DAYS, 2 AT 28 DAYS, AND ONE HOLD)

MISCELLANEOUS STEEL

1. WEIR PLATES, BOLTS AND NUTS SHALL CONFORM TO TYPE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.
2. CONTACT BETWEEN STAINLESS STEEL AND GALVANIZED STEEL IS NOT ALLOWED. FOR CONTACT BETWEEN DISSIMILAR METALS, CONTRACTOR SHALL PROPOSE INSULATING MATERIALS (E.G., APPROPRIATE FASTENERS, WASHERS, ETC.) AND SUBMIT PRODUCTS TO THE ENGINEER FOR APPROVAL.

AUTOMATED DATA ACQUISITION SYSTEM

1. THE INSTALLED DATA ACQUISITION SYSTEM COMPONENTS, PERIPHERAL EQUIPMENT AND MATERIALS, AND SENSORS WILL BE PROCURED NEW FROM THE MANUFACTURER BASED ON THE PART NUMBER, TYPE, AND REQUIREMENTS SHOWN ON THE PLANS AND BILL OF MATERIALS.
2. ALL ENCLOSURE ENTRY POINTS AND CONDUIT CONNECTORS WILL BE SEALED USING DUCT SEAL COMPOUND.
3. THE DATALOGGERS INSTALLED AT ADAS ENCLOSURES WILL BE PROGRAMMED TO:
   A. MEASURE SIGNALS FROM THE SENSORS.
   B. CONVERT RAW SENSOR SIGNAL MEASUREMENTS INTO ENGINEERING UNITS.
   C. STORE RAW AND CONVERTED SENSOR MEASUREMENT VALUES TO MEMORY. DATA STORAGE MEMORY WILL BE CONFIGURED AS RING-TYPE MEMORY.
   D. CONDITIONALLY EVALUATE MEASUREMENTS AGAINST PROGRAMMED ALERT LEVEL THRESHOLDS, WITH THE BASELINE THRESHOLD VALUES TO BE DETERMINED BY YWA.

CONDUIT

1. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE ½" AND 1" MILD STEEL AS SHOWN ON THE PLANS, HOT-DIP GALVANIZED INSIDE AND OUT. RGS CONDUITS AND ALL APPURTENANCES SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI C80.1 – RIGID STEEL CONDUIT, ZINC COATED, AND UL-6.
2. USE INSULATED THROAT GROUNDING BUSHINGS FOR ALL RGS CONDUIT ENDS. BUSHINGS SHALL BE THREADED ZINC-PLATED MALLEABLE IRON GROUNDING BUSHINGS WITH BONDING SCREW AND INSULATED THROAT RATED FOR 150 DEGREES.
3. WATERTIGHT HUBS FOR RGS CONDUIT SHALL BE MALE THREAD TYPE ZINC-PLATED MALLEABLE IRON WITH RECESSED "O" RING SEAL.
4. CONDUIT BODIES FOR RGS CONDUIT SHALL BE GALVANIZED CONDUIT BODIES AND COVERS WITH CAPTIVE STAINLESS STEEL SCREWS AND NEOPRENE GASKETS.
5. PULL TAPE SHALL BE INSTALLED IN ALL CONDUITS. PULL TAPE SHALL BE ½" WIDTH, SUITABLE FOR 1250 POUNDS PULL STRENGTH. PULL TAPE SHALL BE PRINTED WITH SEQUENTIAL FOOTAGE. ACCEPTABLE PRODUCTS: NEPTCO MULETAPE WP1250P, OR EQUAL.
6. ALL STEEL MEMBERS AND HARDWARE SHALL BE HOT DIP GALVANIZED. HOT DIP GALVANIZED STEEL TO BE IN ACCORDANCE WITH ASTM A123 FOR STRUCTURAL STEEL UNLESS OTHERWISE NOTED. HOT DIP GALVANIZING SHALL CONSIST OF MULTIPLE COATS TO A DRY FILM THICKNESS OF 8 MILS.
7. ALL FASTENERS AND COMPONENTS SHALL BE HOT-DIP GALVANIZED, IN ACCORDANCE WITH ASTM F2329. MATCHING BOLTS, NUTS AND WASHERS SHALL BE PROVIDED ASSEMBLED BY THE SAME SUPPLIER.
8. FLEXIBLE CONDUIT SHALL BE ANACONDA SEALTITE® NON METALLIC TYPE UA OR APPROVED EQUIVALENT.
9. ALL CONDUIT TERMINATIONS SHALL BE WEATHERPROOF.

RIPRAP

1. RIPRAP SHALL BE PLACED TO THE REQUIREMENTS OF CALTRANS METHOD B PLACEMENT.
2. RIPRAP SHALL BE 2.65 SPECIFIC GRAVITY AND COMPLY WITH CLASS V REQUIREMENTS PER CALTRANS SECTION 72-2. INSTALL RIPRAP OVER MIRAFI 180-N GEOTEXTILE OR AN APPROVED EQUIVALENT. THIS RIPRAP SPECIFICATION IS BASED ON INSPECTION OF EXISTING RIPRAP IN CHANNEL AND CONSERVATIVE CALCULATIONS.
3. THE AREA COVERED WITH RIPRAP SHALL BE CLEARED OF LOOSE SOIL AND DEBRIS. ALL EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF IN YWA DESIGNATED AREA OR OFF-HAULED TO AN ACCEPTABLE WASTE DISPOSAL.

INSPECTION AND OBSERVATION

1. CONTRACTOR SHALL PROVIDE QUALITY CONTROL, MATERIALS TESTING, AND SPECIAL INSPECTION RELATED TO THE PROPOSED WORK. CONTRACTOR SHALL PERFORM AND/OR RETAIN THE SERVICES OF A CERTIFIED TESTING LABRATORY TO PERFORM ALL QUALITY CONTROL TESTS OF THE PROPOSED WORK. ONLY CERTIFIED TESTS BY THE TESTING LABRATORY CAN BE USED TO VERIFY COMPLIANCE TO THE PROJECT DOCUMENTS. REFER TO THE TECHNICAL GEOTECHNICAL INSTRUMENTATION SPECIFICATIONS AND CONTRACT DOCUMENTS FOR ADDITIONAL QUALITY CONTROL/INSPECTION REQUIREMENTS.
2. CONTRACTOR SHALL SUBMIT PROPOSED MATERIALS AND PRODUCTS CALLED OUT FOR IN THE PLANS AND IN ACCORDANCE WITH THE TECHNICAL GEOTECHNICAL INSTRUMENTATION SPECIFICATIONS. SUBMITTALS REQUIRED AT A MINIMUM FOR APPROVAL BY YWA AND/OR THE ENGINEER INCLUDE:
   - STEEL REINFORCEMENT
   - CONCRETE MIX DESIGN
   - BACKFILL MATERIALS
   - INSTRUMENTATION EQUIPMENT
4. CONSTRUCTION OBSERVATION BY THE INSPECTOR OR THE ENGINEER IS REQUIRED AT THE FOLLOWING STAGES OF CONSTRUCTION:
   - EXCAVATION AND BACKFILL
   - DRILLING ON THE DAM EMBANKMENT
   - GEOTECHNICAL SENSOR INSTALLATION
   - PLACEMENT OF REINFORCEMENT
   - PLACEMENT OF CONCRETE
   - PLACEMENT OF RIPRAP
5. NOTIFY THE INSPECTOR/ENGINEER AT LEAST 48 HOURS BEFORE INSPECTION OR OBSERVATION IS NEEDED.

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REGISTERED PROFESSIONAL ENGINEER JERRY S. PASCHE No. C58156 CIVIL STATE OF CALIFORNIA
7-5-23

NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	CMR/JFR	PAB	PP/MVB
	100% FINAL SUBMITTAL			

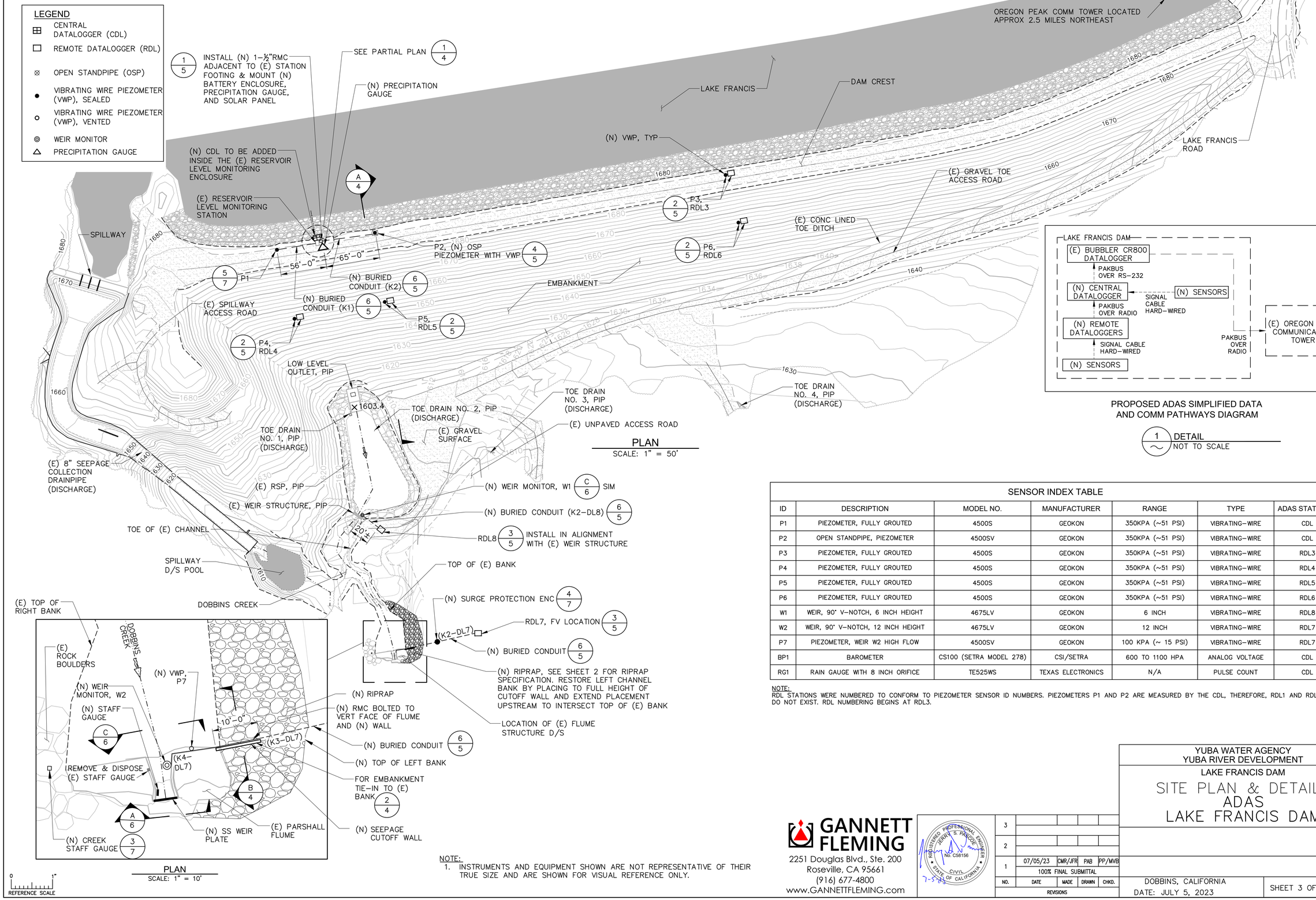
REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM
NOTES
ADAS
LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

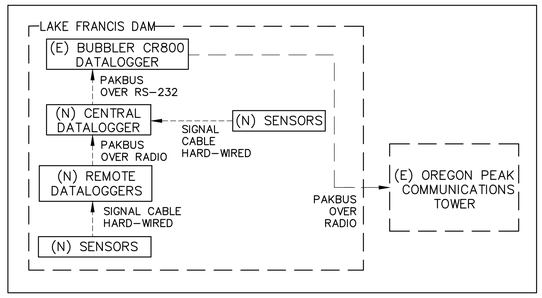
SHEET 2 OF 11 | SHT 2

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:15:47 PM BY: REILLY, CAITLIN CTB: ---- TAB: 2
FILE: C:\Users\creilly\Gannett Fleming Inc\06343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\Lakefrancis_Instru_Design\06_Drawing_Ref\068343-002.dwg



PLAN
SCALE: 1" = 50'

PLAN
SCALE: 1" = 10'



PROPOSED ADAS SIMPLIFIED DATA AND COMM PATHWAYS DIAGRAM

1 DETAIL
NOT TO SCALE

SENSOR INDEX TABLE

ID	DESCRIPTION	MODEL NO.	MANUFACTURER	RANGE	TYPE	ADAS STATION ID
P1	PIEZOMETER, FULLY GROUTED	4500S	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	CDL
P2	OPEN STANDPIPE, PIEZOMETER	4500SV	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	CDL
P3	PIEZOMETER, FULLY GROUTED	4500S	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	RDL3
P4	PIEZOMETER, FULLY GROUTED	4500S	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	RDL4
P5	PIEZOMETER, FULLY GROUTED	4500S	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	RDL5
P6	PIEZOMETER, FULLY GROUTED	4500S	GEOKON	350KPA (~51 PSI)	VIBRATING-WIRE	RDL6
W1	WEIR, 90° V-NOTCH, 6 INCH HEIGHT	4675LV	GEOKON	6 INCH	VIBRATING-WIRE	RDL8
W2	WEIR, 90° V-NOTCH, 12 INCH HEIGHT	4675LV	GEOKON	12 INCH	VIBRATING-WIRE	RDL7
P7	PIEZOMETER, WEIR W2 HIGH FLOW	4500SV	GEOKON	100 KPA (~ 15 PSI)	VIBRATING-WIRE	RDL7
BP1	BAROMETER	CS100 (SETRA MODEL 278)	CSI/SETRA	600 TO 1100 HPA	ANALOG VOLTAGE	CDL
RG1	RAIN GAUGE WITH 8 INCH ORIFICE	TE525WS	TEXAS ELECTRONICS	N/A	PULSE COUNT	CDL

NOTE:
RDL STATIONS WERE NUMBERED TO CONFORM TO PIEZOMETER SENSOR ID NUMBERS. PIEZOMETERS P1 AND P2 ARE MEASURED BY THE CDL, THEREFORE, RDL1 AND RDL2 DO NOT EXIST. RDL NUMBERING BEGINS AT RDL3.

NOTE:
1. INSTRUMENTS AND EQUIPMENT SHOWN ARE NOT REPRESENTATIVE OF THEIR TRUE SIZE AND ARE SHOWN FOR VISUAL REFERENCE ONLY.

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7-5-23

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REVISIONS	100% FINAL SUBMITTAL			

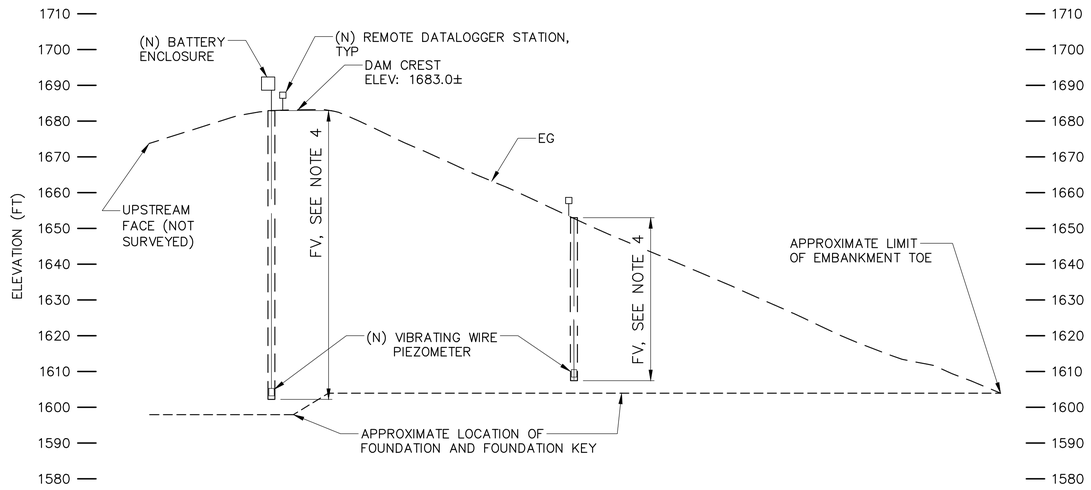
YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM

SITE PLAN & DETAILS ADAS LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

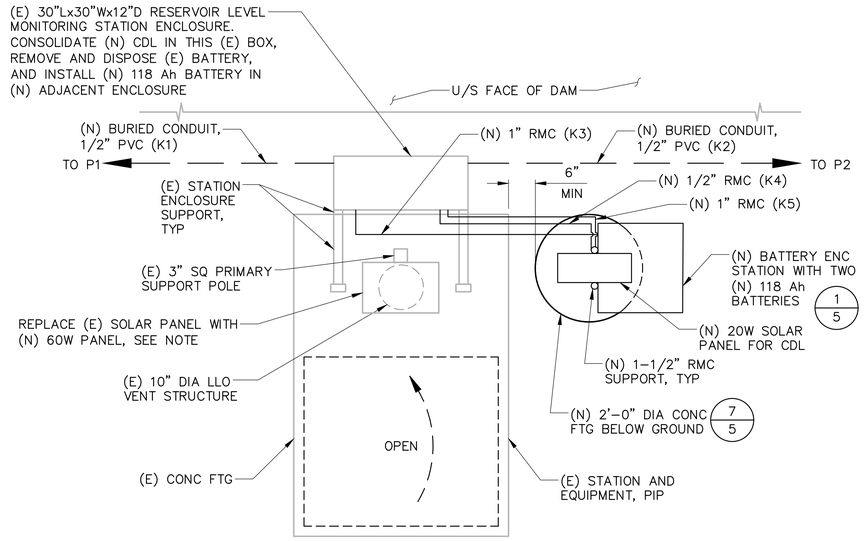
SHEET 3 OF 11 | SHT 3

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:15:56 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 3
FILE: C:\Users\creilly\Gannett Fleming Inc\068343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-003.dwg



3 A/4 SECTION
SCALE: 1" = 20'

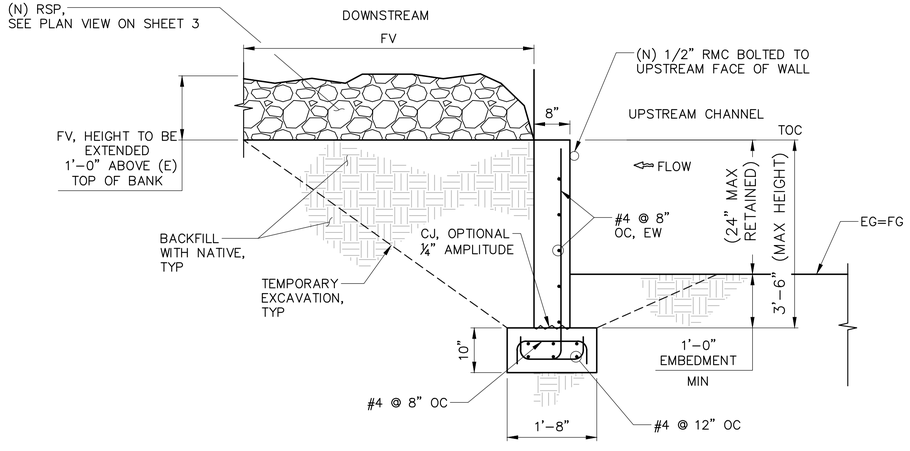
NOTES:
1. CROSS SECTION BASED ON TOPOGRAPHIC SURVEY PROVIDED BY PACE ENGINEERING, DATED JUNE 5, 2020.
2. FOUNDATION LIMITS BASED ON LAKE FRANCIS DAM REHABILITATION PROJECT, RECORD FOUNDATION EXCAVATION PLANS REVISION 5, BY HARLAN TAIT ASSOCIATES, DATED MAY 18, 1999.
3. ELEVATIONS SHOWN ARE BASED ON "LAKE FRANCIS DATUM." SEE SURVEY NOTES ON SHEET 2 FOR CONVERSION INFORMATION.
4. PIEZOMETER DESIGN DEPTHS TO BE ESTABLISHED BASED ON SUBSURFACE INVESTIGATION RESULTS AT TIME OF CONSTRUCTION. MAXIMUM PIEZOMETER DEPTH NOT TO EXCEED 80 FEET OR BEYOND FOUNDATION AND FOUNDATION KEY. REFERENCE TECHNICAL GEOTECHNICAL INSTRUMENTATION SPECIFICATIONS BY GANNETT FLEMING FOR DETAILED INFORMATION.



(N) BATTERY ENCLOSURE STATION AT (E) RESERVOIR LEVEL MONITORING STATION

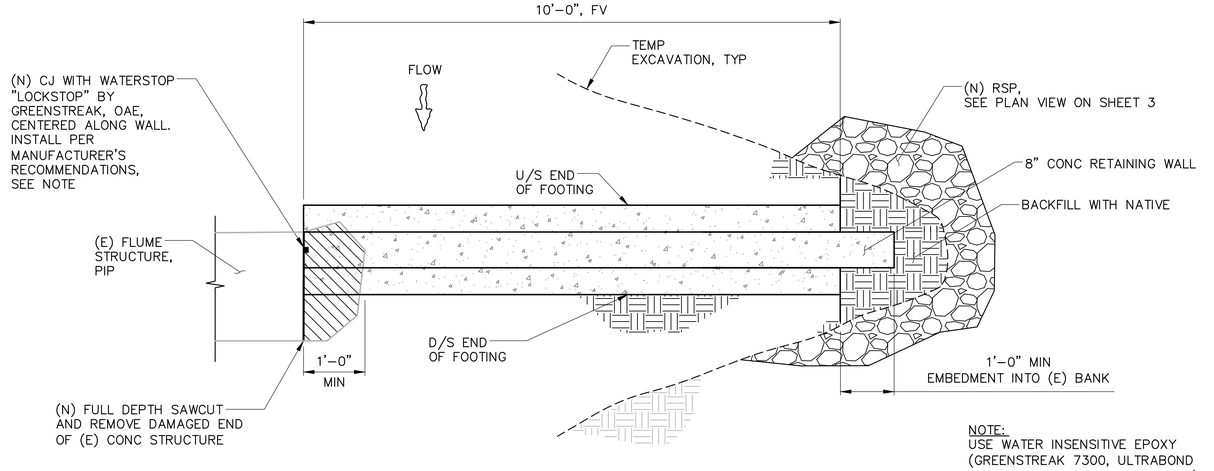
3, 7 1/4 PARTIAL PLAN
SCALE: 3/4" = 1'

NOTE:
REMOVE AND REPLACE EXISTING SOLAR PANEL WITH NEW 60W SOLAR PANEL. CONTRACTOR TO PROVIDE AND MATCH EXISTING HARDWARE FOR ATTACHMENT; INSTALL PER SOLAR PANEL MANUFACTURER'S RECOMMENDATIONS.



SEEPAGE CUTOFF RETAINING WALL

3 B/4 SECTION
SCALE: 3/4" = 1'



SEEPAGE CUTOFF WALL BANK TIE-IN

3 2/4 PARTIAL PLAN
SCALE: 3/4" = 1'

NOTE:
USE WATER INSENSITIVE EPOXY (GREENSTREAK 7300, ULTRABOND HS200, OR SIMPSON AT-XP, OAE) TO ADHERE WATERSTOP TO CONSTRUCTION JOINT SURFACE. PROVIDE 1" CLEAR COVER TO BAR.

0 1" REFERENCE SCALE

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REGISTERED PROFESSIONAL ENGINEER JERRY S. PASCOE No. C58156 CIVIL STATE OF CALIFORNIA 7-5-23

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	100% FINAL SUBMITTAL			

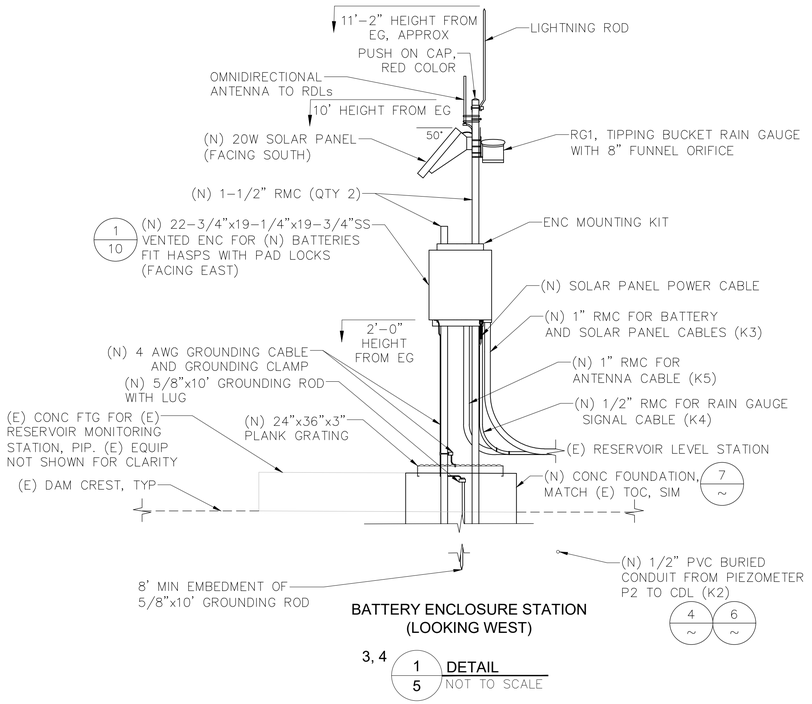
REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM

SECTIONS & PARTIAL PLANS ADAS LAKE FRANCIS DAM

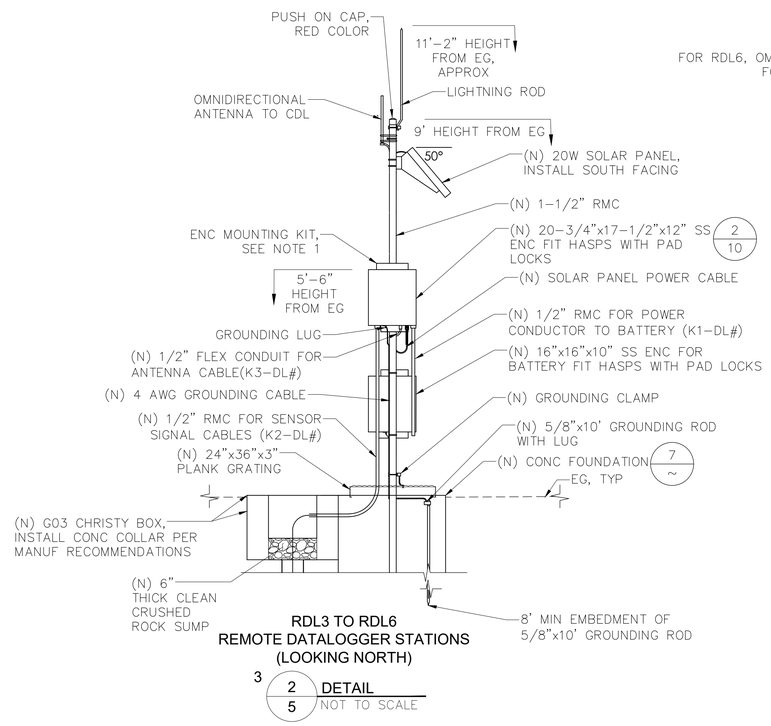
DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:02 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 4
FILE: C:\Users\creilly\Gannett Fleming Inc\068343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-004.dwg



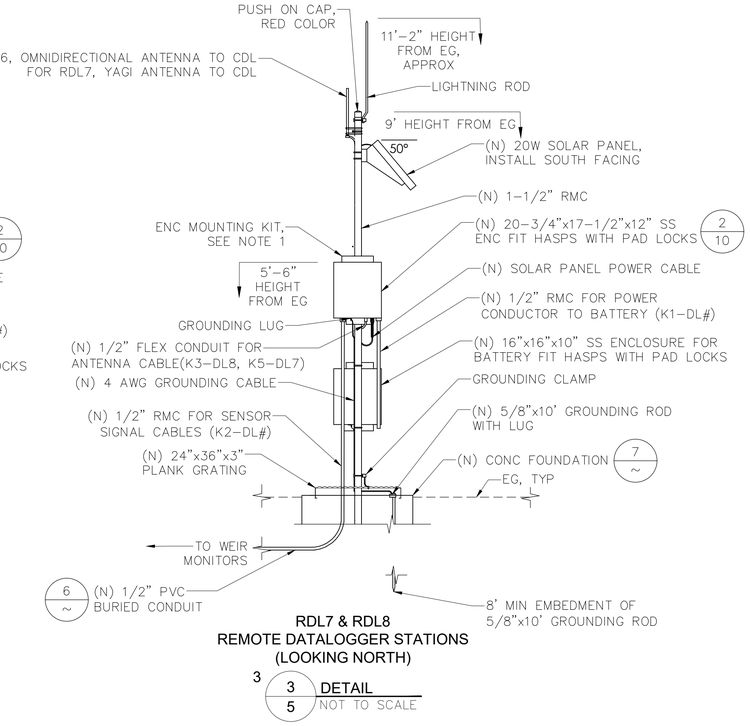
BATTERY ENCLOSURE STATION
(LOOKING WEST)

3, 4 — 1/5 DETAIL — NOT TO SCALE



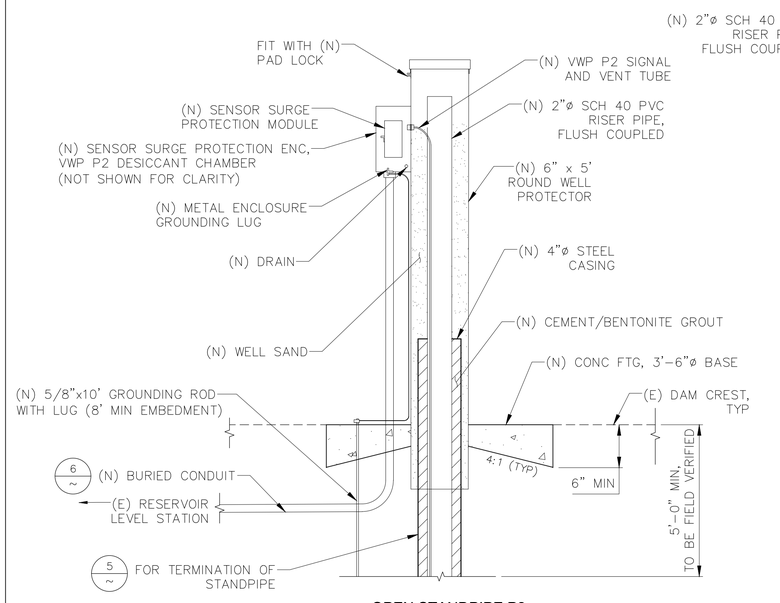
RDL3 TO RDL6
REMOTE DATALOGGER STATIONS
(LOOKING NORTH)

3 — 2/5 DETAIL — NOT TO SCALE



RDL7 & RDL8
REMOTE DATALOGGER STATIONS
(LOOKING NORTH)

3 — 3/5 DETAIL — NOT TO SCALE

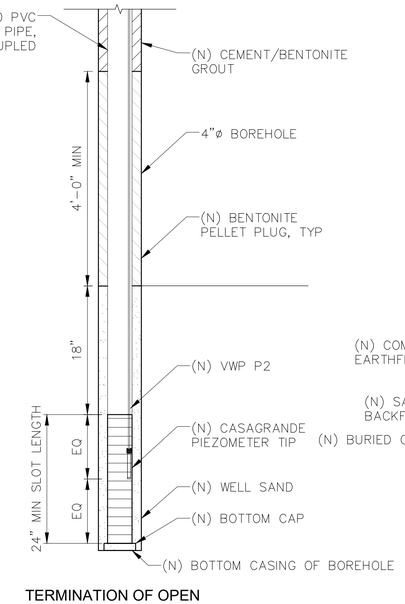


OPEN STANDPIPE P2

3 — 4/5 DETAIL — NOT TO SCALE

NOTE:
CONTRACTOR TO PROCURE SOUNDER/TAPE FOR THE OPEN STANDPIPE FOR MANUAL READINGS; SOLINST MODEL 101 P2 WATER LEVEL METER OR APPROVED EQUIVALENT. COORDINATE STORAGE LOCATION ONSITE WITH YWA.

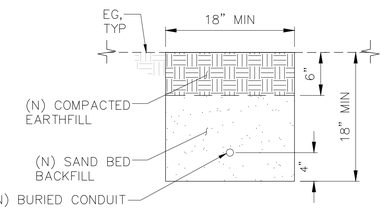
0 1" REFERENCE SCALE



TERMINATION OF OPEN STANDPIPE P2

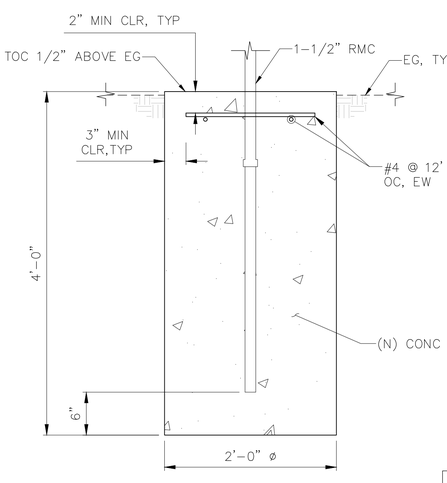
5/~ — DETAIL — NOT TO SCALE

INSTALLATION NOTE:
1. CAMPBELL SCIENTIFIC ENCLOSURE MOUNTING KITS TYPICALLY CONSIST OF 2" U-BOLTS, WASHERS, AND NUTS FOR ATTACHMENT TO 1-1/2" RMC USING ENCLOSURE MOUNTING TABS, TOP AND BOTTOM.



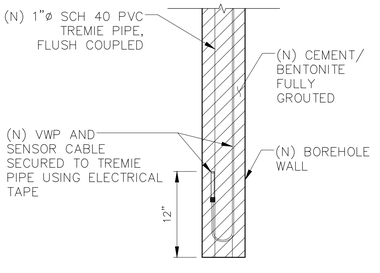
BURIED CONDUIT

3, 7 — 6/5 DETAIL — NOT TO SCALE



TYPICAL CONCRETE POLE FOUNDATION

3, 4, 7 — 7/5 DETAIL — NOT TO SCALE



TYPICAL VWP TERMINATION

8/5 DETAIL — NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER — JERRET S. PAULSON — No. C58156 — CIVIL — STATE OF CALIFORNIA — 7-5-23

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YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM

DETAILS ADAS LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 5 OF 11 | SHT 5

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:09 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 5
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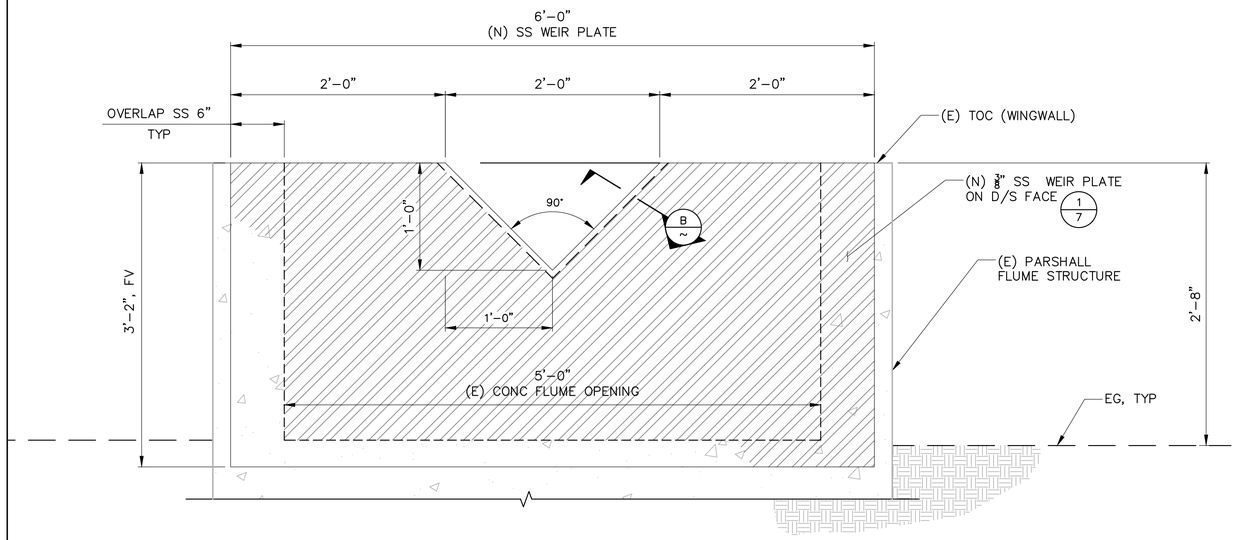
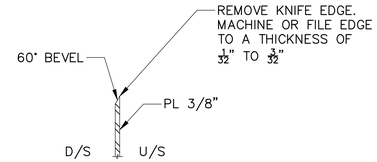


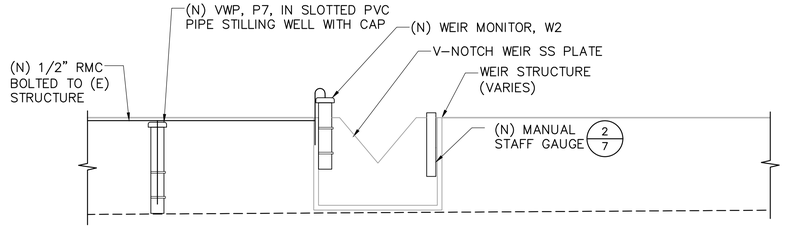
STAINLESS STEEL WEIR PLATE TO BE ATTACHED TO EXISTING STRUCTURE ON DOWNSTREAM FACE

3 A/6 ELEVATION
SCALE: 1-1/2" = 1-0"'



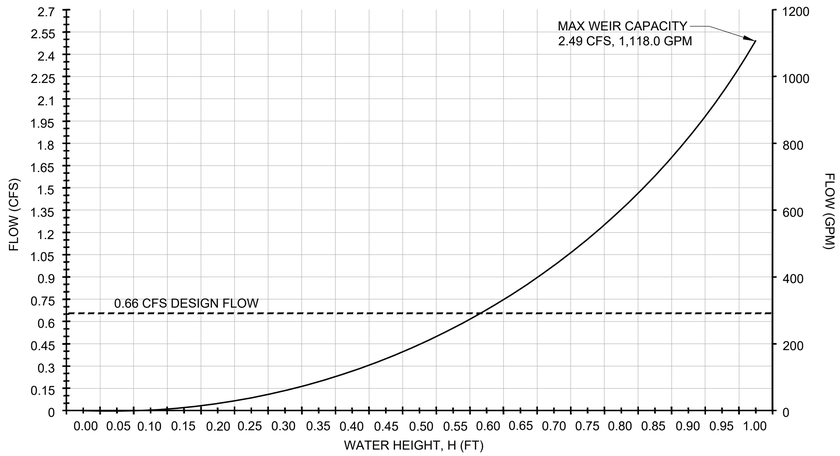
WEIR PLATE KNIFE EDGE

B/~ SECTION
NOT TO SCALE



TYPICAL SEEPAGE DRAIN WEIR SENSOR
FACING DOWNSTREAM

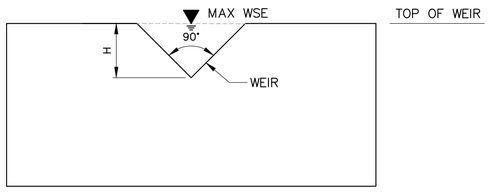
3 C/6 ELEVATION
NOT TO SCALE



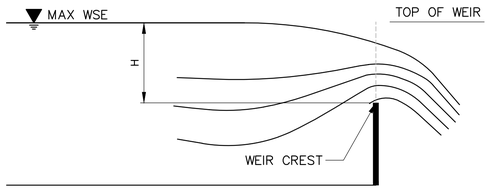
PROPOSED W2 FLOW RATING CURVE

V-NOTCH FLOW EQUATION:

$Q(CFS) = 2.49*H_1^{2.48}$



H=HEIGHT OF WATER OVER WEIR CREST (INCHES)



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REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM

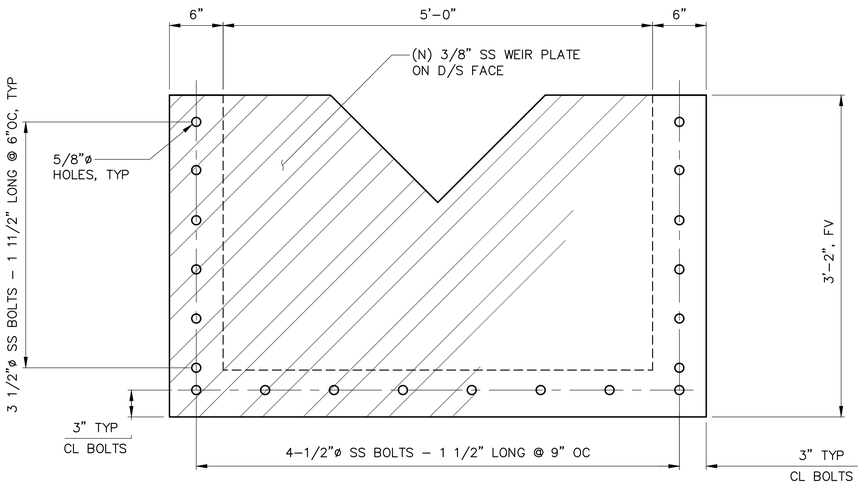
WEIR ELEVATION & DETAILS
ADAS
LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 6 OF 11 | SHT 6

0 1" REFERENCE SCALE

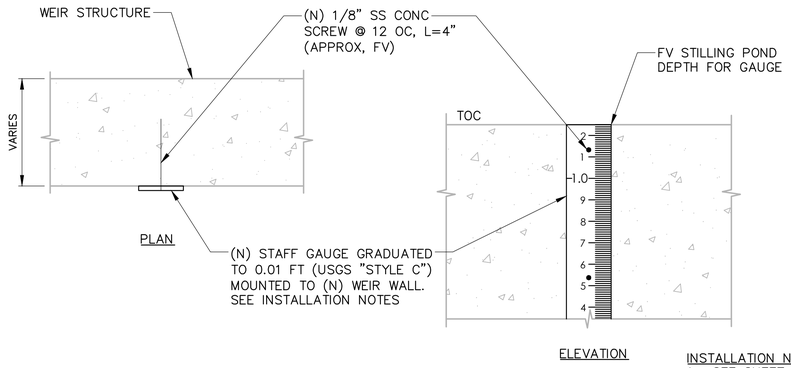
PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:12 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 6
FILE: C:\Users\creilly\Gannett Fleming Inc\06343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-006.dwg



ATTACH STAINLESS STEEL FRAME TO EXISTING PARSHALL FLUME OPENING - LOOKING UPSTREAM

6 (1/7) DETAIL NOT TO SCALE

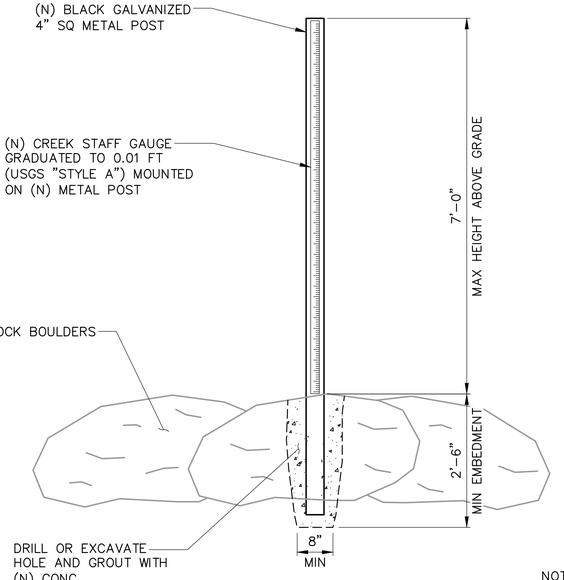
INSTALLATION NOTE:
DRILL AND ADHERE STAINLESS STEEL BOLTS USING HILTI HITRE500 OR SIMPSON SET–XP ADHESIVE.



WEIR STAFF GAUGE

5, 6 (2/7) DETAIL SCALE: 3" = 1'

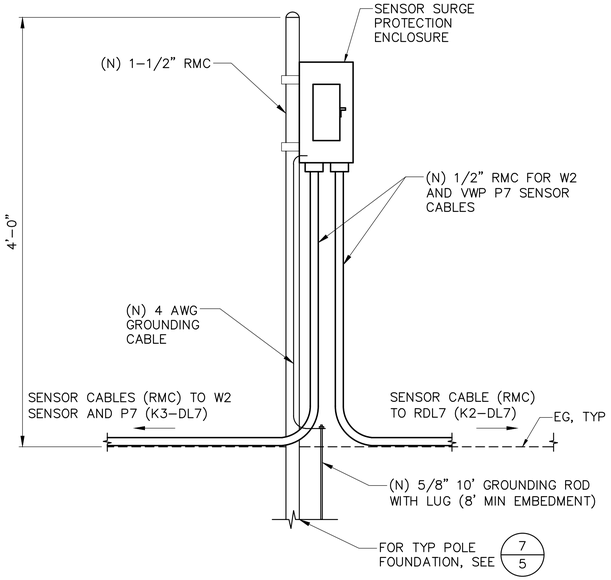
INSTALLATION NOTES:
1. SEE SHEET 3 FOR APPROXIMATE PLACEMENT LOCATION.
2. STAFF GAUGE SHALL BE INSTALLED ON A VERTICAL FACE.
3. SET 0.00' AT V–NOTCH ELEVATION.



CREEK STAFF GAUGE

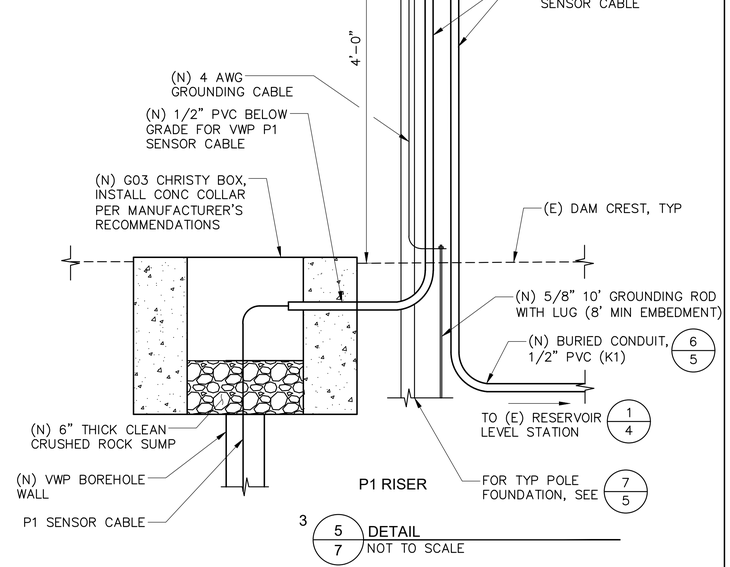
3 (3/7) DETAIL SCALE: 3/4" = 1'–0"

NOTES:
1. DESIGN IS BASED ON CALTRANS 2022 STANDARD PLAN A86 FOR SIMILAR METAL FENCE POSTS.
2. FIELD VERIFY LOCATION WITH YWA PRIOR TO INSTALLATION.



ALTERNATIVE SURGE PROTECTION ENCLOSURE MOUNT

3 (4/7) DETAIL SCALE: 1–1/2" = 1'–0"



3 (5/7) DETAIL NOT TO SCALE

0 1" REFERENCE SCALE

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:16 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 7
FILE: C:\Users\creilly\Gannett Fleming Inc\06343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\06343-007.dwg

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REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM

DETAILS ADAS LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 7 OF 11 | SHT 7

BILL OF MATERIALS

ITEM	QTY.	DESCRIPTION	CATALOG NO.	REFERENCE
1	7	CR6 MEASUREMENT AND CONTROL DATALOGGER, NO ADDITIONAL COMS (-NA), EXTENDED TEMPERATURE (-XT), STANDARD 3 YR WARRANTY (-SW), CAMPBELL CALIBRATION (-CC)	CAMPBELL SCIENTIFIC: CR6-NA-XT-SW-CC	RDL3 TO RDL8, CDL STATION
2	7	RF407 900 MHz SPREAD SPECTRUM RADIO	CAMPBELL SCIENTIFIC: RF407	RDL3 TO RDL8, CDL STATION
3	6	900 MHz 3 dBd OMNIDIRECTIONAL ANTENNA WITH MOUNTING HARDWARE	CAMPBELL SCIENTIFIC: 14221	RDL3 TO RDL6, RDL8, & CDL STATION
4	1	900 MHz 9 dBd YAGI ANTENNA WITH MOUNTING HARDWARE	CAMPBELL SCIENTIFIC: 14201	RDL7
5	7	RG8 ANTENNA CABLE WITH 2 TYPE N MALE CONNECTORS, 15 FEET LENGTH	CAMPBELL SCIENTIFIC: COAXNTN-L15	FROM SURGE PROT. TO ANTENNA
6	7	SURGE PROTECTION KIT, TYPE N TO RPSMA, 700 TO 2700 MHz	CAMPBELL SCIENTIFIC: 31314	FOR USE WITH ANTENNA CABLES
7	7	MORNING STAR SUNSAVER-10 CHARGE CONTROLLER, 10A, 12VDC LOAD OUTPUT	CAMPBELL SCIENTIFIC: 18529	RDL3 TO RDL8, CDL STATION
8	7	20 WATT SOLAR PANEL WITH POWER CABLE	CAMPBELL SCIENTIFIC: SP20	RDL3 TO RDL8, CDL STATION
9	1	60 WATT SOLAR PANEL WITH POWER CABLE	SOLARLAND SLP060-12U OR EQUIVALENT	RESERVOIR LEVEL DATALOGGER STATION
10	6	84Ah @ 24hr RATE, 12VDC SEALED RECHARGABLE BATTERY	SUNXTENDER: PVX-840T	RDL3 TO RDL8
11	2	118Ah @ 24hr RATE, GROUP 31, 12VDC SEALED RECHARGABLE BATTERY	SUNXTENDER: PVX-1180T	CDL & RESERVOIR LEVEL DATALOGGER
12	9	GEOKON LAB3 SURGE PROTECTION CIRCUIT BOARD, 5kA PEAK CURRENT	GEOKON: 4999-12L/E	FOR USE WITH PIEZOMETERS AND WEIR MONITORS
13	1	RAIN GAGE, 8 INCH ORFICE, 15' TINNED SIGNAL WIRES	CAMPBELL SCIENTIFIC: TE525WS-PT-15	CDL STATION
14	1	BAROMETRIC PRESSURE SENSOR	CAMPBELL SCIENTIFIC: CS100	CDL STATION
15	6	EXTREME ENVIROMENTS ENCLOSURE, 20" X 16" X 8", UNPAINTED STAINLESS STEEL 304, NEMA 4X, 14 GA, PADLOCKING HANDLE	HOFFMAN: XD201608E1PTSS4	RDL3 TO RDL8
16	6	BACK PANEL 17" X 13", POWDER COATED WHITE, MILD STEEL, 12 GA	HOFFMAN: A20P16	RDL3 TO RDL8
17	21	FUSE HOLDER, SINGLE POLE, CLASS CC TYPE FUSES, 30A, 600V	ALLEN-BRADLEY: 1492-FB1C30-L	
18	21	BUSSMAN FUSE, LOW PEAK TIME DELAY, CALSS CC, 600V, 10A	BUSSMAN: LP-CC-10	
19	21	TERMINAL BLOCK, BOLT CONNECTION, DIN RAIL MOUNT, 800V, 41A, GRAY	PHOENIX CONTACT: 0790404	
20	14	END CLAMP, DIN RAIL, 9.5mm, GRAY	PHOENIX CONTACT: 0800886	
21	2	DIN RAIL, 33MM, PREFORATED STEEL, 1 METER LENGTHS	PHOENIX CONTACT: 0801733	
22	7	ABSORPTION-RESISTANT PLASTIC SUBMERSIBLE CORD GRIP, SURE-GRIP, 0.25" TO 0.31" CORD OD, FOR 3/8 KNOCKOUT SIZE	McMASTER-CARR: 7695N12	FOR SOLAR PANEL POWER CABLE
23	26	COPPER SET SCREW LUG FOR 14-4 WIRE GAUGE, 2 EACH PER EQUIPMENT ENCLOSURE	McMASTER-CARR: 6923K62	FOR ENCLOSURE GROUNDING
24	13	HIGH-STRENGTH GRADE 8 STEEL HEX HEAD SCREW, ZINC-ALUMINUM COATED, 1/4"-20 THREAD SIZE, 1/2" LONG	McMASTER-CARR: 6923K62	FOR CONNECTING COPPER SET SCREW LUGS
25	13	HIGH-STRENGTH STEEL HEX NUT, GRADE 8, ZINC-ALUMINUM COATED, 1/4"-20 THREAD SIZE	McMASTER-CARR: 93827A211	FOR CONNECTING COPPER SET SCREW LUGS
26	22	GROUNDING CLAMP FOR 1/2" TRADE SIZE MEDIUM- AND THICK-WALL STEEL CONDUIT	McMASTER-CARR: 7513K251	FOR 1/2" RMC
27	6	BATTERY ENCLOSURE WITH VENTS, NEMA 4X, 20.6H"x17.5W"x12D", STAINLESS STEEL, PADLOCKABLE	AMERESCO SOLAR BBA-1	RDL3 TO RDL8
28	6	TWIST IN CONDUIT CONNECTION FOR LIQUID-TIGHT FLEXIBLE CONDUIT, 90 DEGREE ELBOW, 1/2", NYLON WITH ZINC LOCKNUT	McMASTER-CARR: 9106K52	ANTENNA CONDUIT CONNECTIONS
29	1	LIQUID-TIGHT FLEXIBLE PLASTIC CONDUIT, 1/2" TRADE SIZE, ABRASION AND CRUSH RESISTANT, 25FT LENGTH	McMASTER-CARR: 7581K42	ANTENNA CABLE CONDUIT
30	1	BATTERY ENCLOSURE WITH VENTS, NEMA 4X, 22.6H"x19.25W"x19.6D", STAINLESS STEEL, PADLOCKABLE	AMERESCO SOLAR: BBA-2	CDL BATTERY ENCLOSURE
31	13	THICK WALL (RIGID) STEEL CONDUIT, 1/2" TRADE SIZE, 10 FEET LENGTHS	McMASTER-CARR: 7307K21	FOR SENSOR SIGNAL WIRING
32	1	THICK WALL (RIGID) STEEL CONDUIT, 1" TRADE SIZE, 10 FEET LENGTHS	McMASTER-CARR: 7307K23	FOR CDL BATT ENCL CONDUIT ENTRY
33	2	GROUNDING CLAMP FOR 1" TRADE SIZE MEDIUM- AND THICK-WALL STEEL CONDUIT	McMASTER-CARR: 7513K252	FOR 1" RMC
34	4	SOUTHWIRE CABLE CONTROL 600V, 1/C #12 AWG, STRANDED COPPER, TYPE THHN, RED JACKET, 50 FEET	GRAINGER: 5FZY7	POSITIVE POWER CABLE FOR ENCLOSURES
35	4	SOUTHWIRE CABLE CONTROL 600V, 1/C #12 AWG, STRANDED COPPER, TYPE THHN, BLACK JACKET, 50 FEET	GRAINGER: 5FZY5	NEGATIVE POWER CABLE FOR ENCLOSURES
36	2	SOUTHWIRE CABLE CONTROL 600V, 1/C #12 AWG, STRANDED COPPER, TYPE THHN, GREEN JACKET, 50 FEET	GRAINGER: 5FZY8	EQUIPMENT GROUNDING CABLE FOR ENCLOSURES
37	7	CPI/RS-232 DATA CABLE, RJ45 TO DB9 MALE	CAMPBELL SCIENTIFIC: 31055	COMM CABLE FROM DATALOGGER TO RADIO
38	7	POWER CABLE, 12VDC PLUG TO PIGTAIL	CAMPBELL SCIENTIFIC: 14291	FOR RADIO POWER
39	1000FT	SIGNAL CABLE, 22 AWG, 0.250" OUTER DIAMERTER, 2 TWISTED SHIELDED PAIRS, GREEN POLYURETHANE JACKET	GEOKON: 02-250P4	PIEZOMETER SIGNAL CABLING
40	5	STANDARD PIEZOMETER, MODEL 4500S, 350 KPA (51 PSI) RANGE	GEOKON: 4500S	PIEZOMETER P1, P3, P4, P5, P6
41	1	STANDARD PIEZOMETER, VENTED, MODEL 4500SV, 350 KPA (51 PSI) RANGE	GEOKON: 4500SV	PIEZOMETER P2
42	1	STANDARD PIEZOMETER, VENTED, MODEL 4500SV, 100 KPA (14.5 PSI) RANGE	GEOKON: 4500SV	PIEZOMETER P7
43	2	WEIR MONITOR, GEOKON MODEL 4675LV, 600 MM (1-150mm(6in), 1-300mm(12in) RANGE	GEOKON: 4675LV	WEIR MONITOR W1, W2
44	24	RIGID PVC CONDUIT, 1/2" TRADE SIZE, 10 FEET LENGTHS	MCMASTER CARR: 7912K1	FOR BELOW GRADE CONDUITS
45	7	LIGHTNING ROD, FOR DATALOGGER STATION ANTENNA POLES	CAMPBELL SCIENTIFIC: 106090	
46	7	GALVANIZED STEEL PLANK GRATING, SERRATED, 24" WIDE X 3" HIGH X 7/64" THICK, 3 FT LENGTH	CAMPBELL SCIENTIFIC: 6855T67	FOR RDL STATION GROUNDING
47	2	GALVANIZED STEEL FASTENERS FOR SERRATED PLANK GRATING, PACK OF 20, FOR PLANK GRATING ANCHORAGE AND GROUNDING AT LARDL1 TO LARDL17 (5 PER RDL - 4 FOR ANCHORAGE, 1 FOR GROUNDING BOLT)	CAMPBELL SCIENTIFIC: 7012T5	PLANK GRATING HARDWARE
48	1	18-8 STAINLESS STEEL HEX HEAD SCREW, 5/16"-18 THREAD SIZE, 1-1/4" LONG, 25 PACK	CAMPBELL SCIENTIFIC: 92240A585	PLANK GRATING HARDWARE
49	1	18-8 STAINLESS STEEL HEX NUT, 5/16"-18 THREAD SIZE, ASTM F594, 50 PACK	CAMPBELL SCIENTIFIC: 92673A119	PLANK GRATING HARDWARE
50	10	4 AWG THHN INS COPPER STRANDED WIRE, 6 FT LENGTH	CAMPBELL SCIENTIFIC: 2833	FOR ENCLOSURE AND SURGE PROTECTOR GROUNDING
51	8	4 AWG THHN INS COPPER STRANDED WIRE, 3 FT LENGTH	CAMPBELL SCIENTIFIC: 2833	CONNECT POLE GROUNDING TO STRUT GROUNDING
52	14	CLAMP FOR LIGHTNING ROD, DAS EQUIPMENT, AND POLE GROUNDING, ALUMINUM DUAL-RATED WATERPIPE GROUND CLAMP, 6-250, WATER PIPE SIZE 1 1/2-2	BLACKBURN BY ABB: AJ-2	FOR ENCLOSURE GROUNDING
53	10	ERICO 615800 5/8X10FT COPPER GROUND ROD	GORDON ELECTRIC: 615800	FOR CDL, RDLs, AND SURGE PROTECTORS
54	8	THICK-WALL (RIGID) STEEL CONDUIT, 1-1/2 TRADE SIZE, 10 FEET LONG	MCMASTER CARR: 7307K25	FOR RDL3 TO RDL8 & CDL BATTERY ENCL POLES
55	8	THICK-WALL (RIGID) STEEL CONDUIT, 1-1/2 TRADE SIZE, 5 FEET LONG	MCMASTER CARR: 7307K15	FOR RDL3 TO RDL8 & CDL BATTERY ENCL POLES
56	8	ROUND CAPS FOR 1-7/8" TO 1-15/16" OD, 1-1/2" INSIDE HEIGHT, RED	MCMASTER CARR: 9753K449	FOR RDL3 TO RDL8 & CDL BATTERY ENCL POLES
57	6	ACCESS PORT FOR METAL CONDUIT, ALUMINUM 90 DEGREE ELBOW, 1/2" NPSM FEMALE	McMASTER-CARR: 7154K71	FOR RDL BATT ENCL CONDUIT ENTRY
58	1	ACCESS PORT FOR METAL CONDUIT, ALUMINUM 90 DEGREE ELBOW, 1" NPSM FEMALE	McMASTER-CARR: 7154K71	FOR CDL BATT ENCL CONDUIT ENTRY
59	2	SERVICE ENTRANCE WEATHERHEAD, 1/2" TRADE SIZE, FEMALE SCREW CLAMP CONDUIT CONNECTION	McMASTER-CARR: 9423N21	FOR ANTENNA AND RAIN GAGE CONDUITS AT BATT ENCL
60	3	FIBERGLASS CORROSION-RESISTANT WASHDOWN ENCLOSURE WITH LIFT-OFF COVER AND SCREW CLOSURE, 11-1/4" X 9-1/4" X 6"	McMASTER-CARR: 74995K63	FOR HOUSING SENSOR SURGE PROTECTION MODULES

0 1"
REFERENCE SCALE

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PRAVEEN PARASAD
No. E18573
ELECTRICAL
STATE OF CALIFORNIA
07/06/23

NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	MG	MG	PP
	100% FINAL SUBMITTAL			

REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT
LAKE FRANCIS DAM
BILL OF MATERIALS
ADAS
LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 8 OF 11 | SHT 8

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:22 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 8
FILE: C:\Users\creilly\Gannett Fleming Inc\06343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-008.dwg

CIRCUIT SCHEDULE

CENTRAL DATALOGGER STATION							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1	E1, E2	MANUFACTURER SUPPLIED	15	RESERVOIR LEVEL DATALOGGER SOLAR POWER SUPPLY	RESERVOIR LEVEL DATALOGGER SOLAR PANEL	RESERVOIR LEVEL DATALOGGER CHARGE CONTROLLER	EXISTING CONDUIT, FIELD ROUTE
C2	E3, E4,	MANUFACTURER SUPPLIED	15	CENTRAL DATALOGGER SOLAR POWER SUPPLY	CENTRAL DATALOGGER SOLAR PANEL	CENTRAL DATALOGGER CHARGE CONTROLLER	K3, FIELD ROUTE
C3	E5, E6	2-1/C #12, THHN, 600V	10	RESERVOIR LEVEL DATALOGGER BATTERY POWER SUPPLY	RESERVOIR LEVEL DATALOGGER RESERVE BATTERY	RESERVOIR LEVEL DATALOGGER CHARGE CONTROLLER	K3
C4	E7, E8,	2-1/C #12, THHN, 600V	10	CENTRAL DATALOGGER BATTERY POWER SUPPLY	CENTRAL DATALOGGER RESERVE BATTERY	CENTRAL DATALOGGER CHARGE CONTROLLER	K3
C5	E9, E10, E11, E12	1-2PR #22 W/SHIELD HDPP	155	PIEZOMETER P1 SIGNAL CABLE	PIEZOMETER P1	CENTRAL DATALOGGER	K1
C6	E13, E14, E15, E16	1-2PR #22 W/SHIELD HDPP	165	PIEZOMETER P2 SIGNAL CABLE	PIEZOMETER P2	CENTRAL DATALOGGER	K2
C7	E17, E18	MANUFACTURER SUPPLIED	15	RAIN GAUGE RG1 SIGNAL CABLE	RAIN GAUGE RG1	CENTRAL DATALOGGER	K4
C8	E19	RG8	15	CENTRAL DATALOGGER ANTENNA CABLE	CDL RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K5
REMOTE DATALOGGER STATION 3							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL3	E1-DL3, E2-DL3	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 3 SOLAR POWER SUPPLY	RDL3 SOLAR PANEL	RDL3 CHARGE CONTROLLER	FIELD ROUTE
C2-DL3	E3-DL3, E4-DL3	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 3 BATTERY POWER SUPPLY	RDL3 RESERVE BATTERY	RDL3 CHARGE CONTROLLER	K1-DL3
C3-DL3	E5-DL3, E6-DL3, E7-DL3, E8-DL3	1-2PR #22 W/SHIELD HDPP	100	PIEZOMETER P3 SIGNAL CABLE	PIEZOMETER P3	RDL3 DATALOGGER	K2-DL3
C4-DL3	E9-DL3	RG8	10	REMOTE DATALOGGER 3 ANTENNA CABLE	RDL3 RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K3-DL3
REMOTE DATALOGGER STATION 4							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL4	E1-DL4, E2-DL4	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 4 SOLAR POWER SUPPLY	RDL4 SOLAR PANEL	RDL4 CHARGE CONTROLLER	FIELD ROUTE
C2-DL4	E3-DL4, E4-DL4	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 4 BATTERY POWER SUPPLY	RDL4 RESERVE BATTERY	RDL4 CHARGE CONTROLLER	K1-DL4
C3-DL4	E5-DL4, E6-DL4, E7-DL4, E8-DL4	1-2PR #22 W/SHIELD HDPP	100	PIEZOMETER P4 SIGNAL CABLE	PIEZOMETER P4	RDL4 DATALOGGER	K2-DL4
C4-DL4	E9-DL4	RG8	10	REMOTE DATALOGGER 4 ANTENNA CABLE	RDL4 RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K3-DL4
REMOTE DATALOGGER STATION 5							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL5	E1-DL5, E2-DL5	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 5 SOLAR POWER SUPPLY	RDL5 SOLAR PANEL	RDL5 CHARGE CONTROLLER	FIELD ROUTE
C2-DL5	E3-DL5, E4-DL5	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 5 BATTERY POWER SUPPLY	RDL5 RESERVE BATTERY	RDL5 CHARGE CONTROLLER	K1-DL5
C3-DL5	E5-DL5, E6-DL5, E7-DL5, E8-DL5	1-2PR #22 W/SHIELD HDPP	100	PIEZOMETER P5 SIGNAL CABLE	PIEZOMETER P5	RDL5 DATALOGGER	K2-DL5
C4-DL5	E9-DL5	RG8	10	REMOTE DATALOGGER 5 ANTENNA CABLE	RDL5 RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K3-DL5
REMOTE DATALOGGER STATION 6							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL6	E1-DL6, E2-DL6	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 6 SOLAR POWER SUPPLY	RDL6 SOLAR PANEL	RDL6 CHARGE CONTROLLER	FIELD ROUTE
C2-DL6	E3-DL6, E4-DL6	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 6 BATTERY POWER SUPPLY	RDL6 RESERVE BATTERY	RDL6 CHARGE CONTROLLER	K1-DL6
C3-DL6	E5-DL6, E6-DL6, E7-DL6, E8-DL6	1-2PR #22 W/SHIELD HDPP	100	PIEZOMETER P6 SIGNAL CABLE	PIEZOMETER P6	RDL6 DATALOGGER	K2-DL6
C4-DL6	E9-DL6	RG8	10	REMOTE DATALOGGER 6 ANTENNA CABLE	RDL6 RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K3-DL6
REMOTE DATALOGGER STATION 7							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL7	E1-DL7, E2-DL7	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 7 SOLAR POWER SUPPLY	RDL7 SOLAR PANEL	RDL7 CHARGE CONTROLLER	FIELD ROUTE
C2-DL7	E3-DL7, E4-DL7	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 7 BATTERY POWER SUPPLY	RDL7 RESERVE BATTERY	RDL7 CHARGE CONTROLLER	K1-DL7
C3-DL7	E5-DL7, E6-DL7, E7-DL7, E8-DL7	1-2PR #22 W/SHIELD HDPP	100	PIEZOMETER P7 SIGNAL CABLE	PIEZOMETER P7	RDL7 DATALOGGER	K3-DL7, K2-DL7
C4-DL7	E9-DL7	RG8	10	REMOTE DATALOGGER 7 ANTENNA CABLE	RDL7 RF407 RADIO	YAGI ANTENNA	K5-DL7
C5-DL7	E10-DL7, E11-DL7, E12-DL7, E13-DL7	1-2PR #22 W/SHIELD HDPP	125	WEIR MONITOR W2 SIGNAL CABLE	WEIR MONITOR W2	RDL7 DATALOGGER	K4-DL7, K3-DL7, K2-DL7
REMOTE DATALOGGER STATION 8							
CIRCUIT NO.	**WIRE TAG**	**WIRE SIZE**	**LENGTH FT.**	**PURPOSE**	**FROM**	**TO**	**ROUTING**
C1-DL8	E1-DL8, E2-DL8	MANUFACTURER SUPPLIED	10	REMOTE DATALOGGER 8 SOLAR POWER SUPPLY	RDL8 SOLAR PANEL	RDL8 CHARGE CONTROLLER	FIELD ROUTE
C2-DL8	E3-DL8, E4-DL8	2-1/C #12, THHN, 600V	5	REMOTE DATALOGGER 8 BATTERY POWER SUPPLY	RDL8 RESERVE BATTERY	RDL8 CHARGE CONTROLLER	K1-DL8
C3-DL8	E5-DL8, E6-DL8, E7-DL8, E8-DL8	1-2PR #22 W/SHIELD HDPP	40	WEIR MONITOR W1 SIGNAL CABLE	WEIR MONITOR W1	RDL8 DATALOGGER	K2-DL8
C4-DL8	E9-DL8	RG8	10	REMOTE DATALOGGER 8 ANTENNA CABLE	RDL8 RF407 RADIO	OMNIDIRECTIONAL ANTENNA	K3-DL8

CONDUIT SCHEDULE

CENTRAL DATALOGGER STATION								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1	1/2"	RMC PVC	5 60	C5	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P1 TO: CDL EQUIPMENT ENCLOSURE
K2	1/2"	RMC PVC	5 70	C6	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P2 TO: CDL EQUIPMENT ENCLOSURE
K3	1"	RMC	10	C2 C3 C4	1 2 2	2/C 1/C 1/C	MFR. SUPP. #12 #12	FROM: CDL BATTERY ENCLOSURE TO: CDL EQUIPMENT ENCLOSURE
K4	1/2"	RMC	15	C7	1	1/PR	MFR. SUPP.	FROM: CDL RAIN GAUGE TO: CDL EQUIPMENT ENCLOSURE
K5	1"	RMC	5	C8	1	1	RG8	FROM: CDL EQUIPMENT ENCLOSURE TO: CDL ANTENNA
REMOTE DATALOGGER STATION 3								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL3	1/2"	RMC	2	C2-DL3	2	1/C	#12	FROM: RDL3 BATTERY ENCLOSURE TO: RDL3 EQUIPMENT ENCLOSURE
K2-DL3	1/2"	RMC PVC	5 5	C3-DL3	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P3 TO: RDL3 EQUIPMENT ENCLOSURE
K3-DL3	1/2"	FLEX	1	C4-DL3	1	1	RG8	FROM: RDL3 EQUIPMENT ENCLOSURE TO: RDL3 ANTENNA
REMOTE DATALOGGER STATION 4								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL4	1/2"	RMC	2	C2-DL4	2	1/C	#12	FROM: RDL4 BATTERY ENCLOSURE TO: RDL4 EQUIPMENT ENCLOSURE
K2-DL4	1/2"	RMC PVC	5 5	C3-DL4	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P4 TO: RDL4 EQUIPMENT ENCLOSURE
K3-DL4	1/2"	FLEX	1	C4-DL4	1	1	RG8	FROM: RDL4 EQUIPMENT ENCLOSURE TO: RDL4 ANTENNA
REMOTE DATALOGGER STATION 5								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL5	1/2"	RMC	2	C2-DL5	2	1/C	#12	FROM: RDL5 BATTERY ENCLOSURE TO: RDL5 EQUIPMENT ENCLOSURE
K2-DL5	1/2"	RMC PVC	5 5	C3-DL5	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P5 TO: RDL5 EQUIPMENT ENCLOSURE
K3-DL5	1/2"	FLEX	1	C4-DL5	1	1	RG8	FROM: RDL5 EQUIPMENT ENCLOSURE TO: RDL5 ANTENNA
REMOTE DATALOGGER STATION 6								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL6	1/2"	RMC	2	C2-DL6	2	1/C	#12	FROM: RDL6 BATTERY ENCLOSURE TO: RDL6 EQUIPMENT ENCLOSURE
K2-DL6	1/2"	RMC PVC	5 5	C3-DL6	1	2/PR	#22 W/SHLD	FROM: PIEZOMETER P6 TO: RDL6 EQUIPMENT ENCLOSURE
K3-DL6	1/2"	FLEX	1	C4-DL6	1	1	RG8	FROM: RDL6 EQUIPMENT ENCLOSURE TO: RDL6 ANTENNA
REMOTE DATALOGGER STATION 7								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL7	1/2"	RMC	2	C2-DL7	2	1/C	#12	FROM: RDL7 BATTERY ENCLOSURE TO: RDL7 EQUIPMENT ENCLOSURE
K2-DL7	1/2"	RMC PVC	5 40	C3-DL7, C5-DL7	2	2/PR	#22 W/SHLD	FROM: SURGE PROT. ENCL. TO: RDL7 EQUIPMENT ENCLOSURE
K3-DL7	1/2"	RMC PVC	25 20	C3-DL7, C5-DL7	2	2/PR	#22 W/SHLD	FROM: PIEZOMETER P7 TO: SURGE PROT. ENCL.
K4-DL7	1/2"	RMC	20	C5-DL7	1	2/PR	#22 W/SHLD	FROM: WEIR MONITOR W2 TO: PIEZOMETER P7
K5-DL7	1/2"	FLEX	1	C4-DL7	1	1	RG8	FROM: RDL7 EQUIPMENT ENCLOSURE TO: RDL7 ANTENNA
REMOTE DATALOGGER STATION 8								
CONDUIT NO.	**SIZE**	**KIND**	**LENGTH FT.**	**CONTAINS CIRCUIT NO.**	**NO.**	**CNDT**	**SIZE**	**ROUTING**
K1-DL8	1/2"	RMC	2	C2-DL8	2	1/C	#12	FROM: RDL8 BATTERY ENCLOSURE TO: RDL8 EQUIPMENT ENCLOSURE
K2-DL8	1/2"	RMC PVC	10 25	C3-DL8	1	2/PR	#22 W/SHLD	FROM: WEIR MONITOR W1 TO: RDL8 EQUIPMENT ENCLOSURE
K3-DL8	1/2"	FLEX	1	C4-DL8	1	1	RG8	FROM: RDL8 EQUIPMENT ENCLOSURE TO: RDL8 ANTENNA

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NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	MG	MG	PP
	100% FINAL SUBMITTAL			

REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT

LAKE FRANCIS DAM

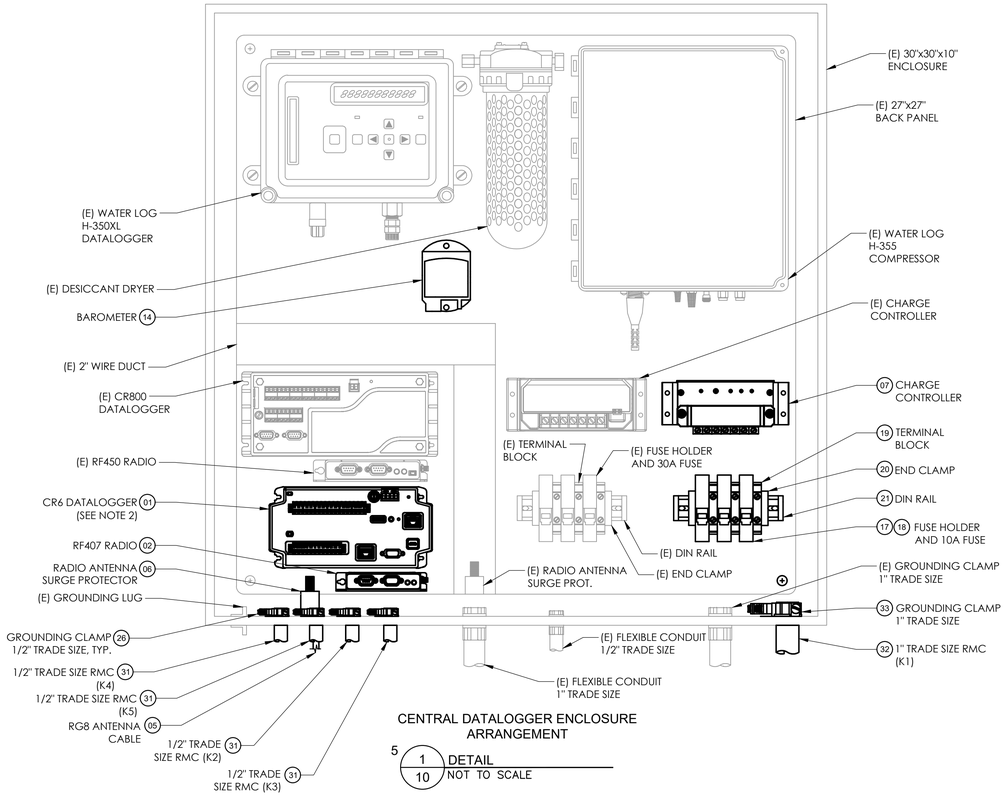
CIRCUIT & CONDUIT SCHEDULE
ADAS
LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 9 OF 11 | SHT 9

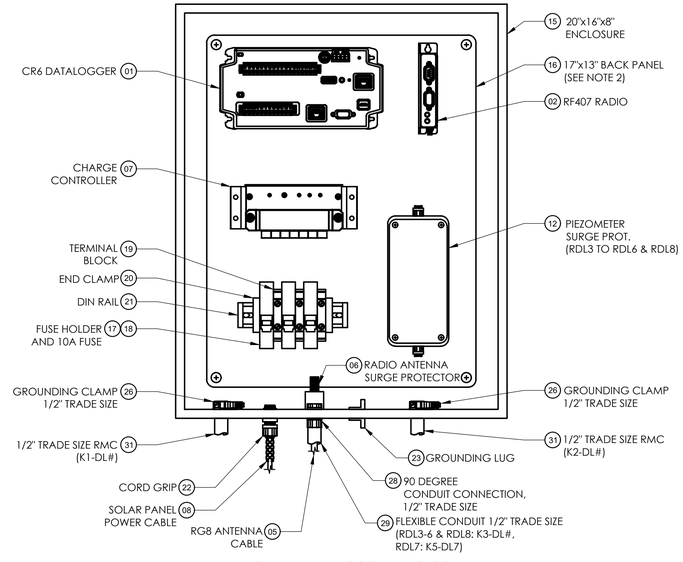
0 1" REFERENCE SCALE

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:27 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 9
FILE: C:\Users\creilly\Gannett Fleming Inc\068343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-009.dwg



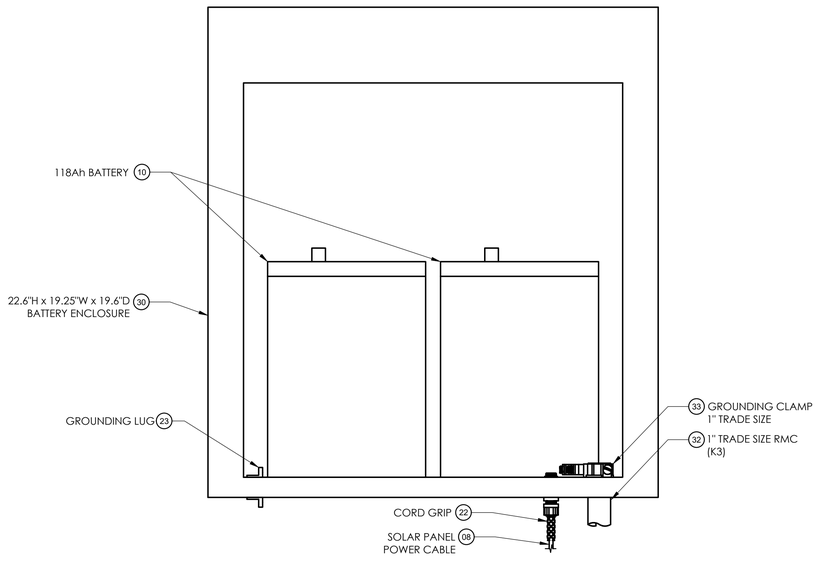
CENTRAL DATALOGGER ENCLOSURE ARRANGEMENT

5 1/10 DETAIL NOT TO SCALE



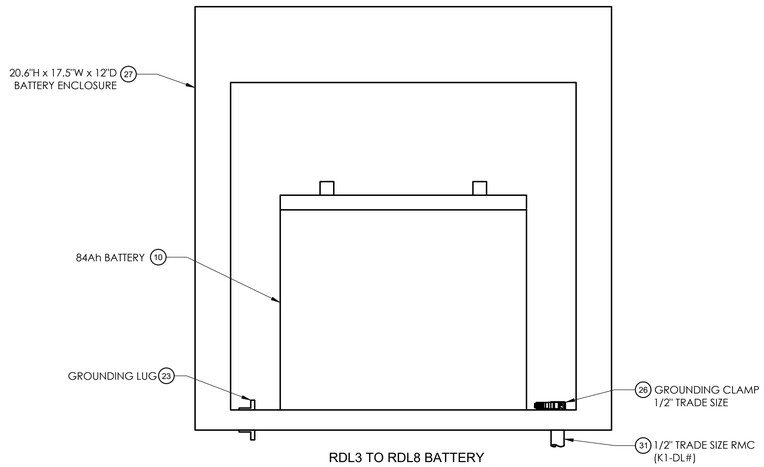
RDL3 TO RDL8 DATALOGGER ENCLOSURE ARRANGEMENT

5 2/10 DETAIL NOT TO SCALE



CENTRAL DATALOGGER BATTERY ENCLOSURE ARRANGEMENT

5 3/10 DETAIL NOT TO SCALE



RDL3 TO RDL8 BATTERY ENCLOSURE ARRANGEMENT

5 4/10 DETAIL NOT TO SCALE

NOTES:

1. BILL OF MATERIALS ITEMS MARKED WITH "E" INDICATE EXISTING EQUIPMENT.
2. DATALOGGERS AND ACCESSORIES WILL BE MOUNTED TO THE BACK PANEL USING #10 SCREWS. APPROPRIATE DRILL SIZE HOLES TO MATCH #10.

LEGEND:

(XX) BILL OF MATERIAL ITEM NUMBER

REFERENCE SCALE 0 1"

GANNETT FLEMING
2251 Douglas Blvd., Ste. 200
Roseville, CA 95661
(916) 677-4800
www.GANNETTFLEMING.com

REGISTERED PROFESSIONAL ENGINEER PRANEESH PRASAD No. E18573 ELECTRICAL STATE OF CALIFORNIA 07/06/23

NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	MG	MG	PP
	100% FINAL SUBMITTAL			

REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT

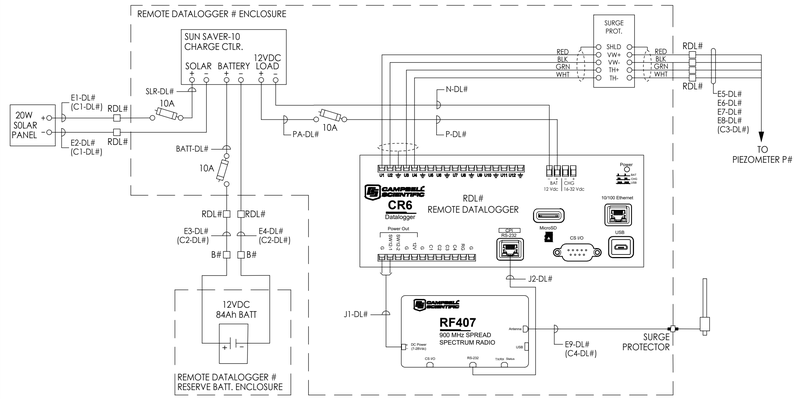
LAKE FRANCIS DAM

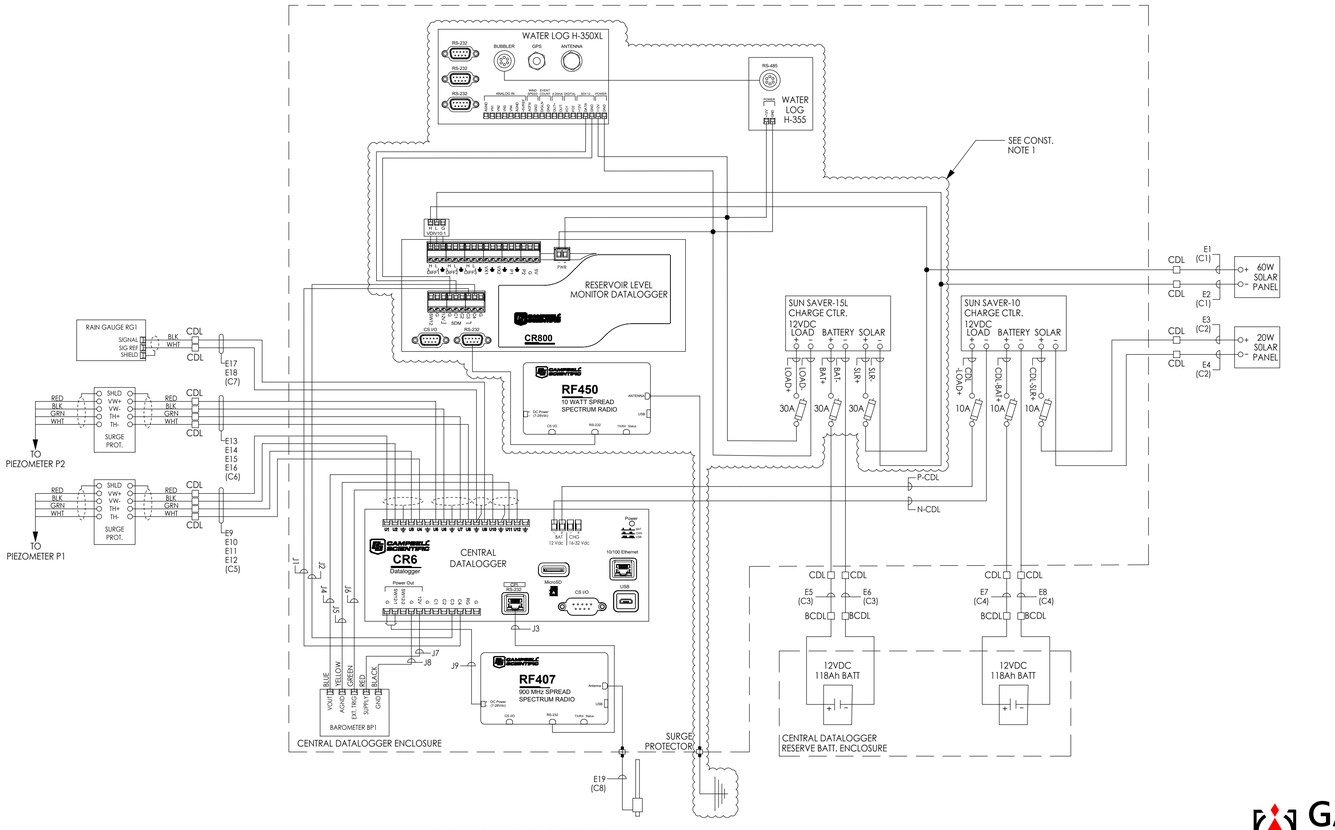
CDL/RDL ENCLOSURE DETAILS ADAS LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 10 OF 11 | SHT 10

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:34 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 10
FILE: C:\Users\creilly\Gannett Fleming Inc\068343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\LakeFrancis_Instru_Design\06_Drawing_Ref\068343-010_E3.dwg





0 1"
REFERENCE SCALE

CONSTRUCTION NOTES:

1. CLOUD DENOTES EXISTING EQUIPMENT AND WIRING.

NOTES:

1. "E" WIRE NUMBER DESIGNATIONS ARE INTERCONNECTIONS BETWEEN DATALOGGGER ENCLOSURE AND EXTERNAL EQUIPMENT. WIRE NO'S E1 THRU E100 ARE RESERVED FOR THIS SHEET. LAST E WIRE NO. USED IS E19.
   "J" WIRE NUMBER DESIGNATIONS ARE INTERCONNECTIONS BETWEEN DEVICES INSIDE THE SAME ENCLOSURE. WIRE NO'S J1 THRU J100 ARE RESERVED FOR THIS SHEET. LAST J WIRE NO. USED IS J9.
2. TYPICAL REPRESENTATION WIRE NUMBERS SHOW DL NO.

LEGEND:

- ☐ RDL#.....REMOTE DATALOGGER ENCLOSURE
- ☐ B#.....DATALOGGER RESERVE BATTERY ENCLOSURE
- ☐ CDL.....CENTERAL DATALOGGER ENCLOSURE

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REGISTERED PROFESSIONAL ENGINEER PRATEESH PRASAD No. E18573 ELECTRICAL STATE OF CALIFORNIA
07/06/23

NO.	DATE	MADE	DRAWN	CHKD.
3				
2				
1	07/05/23	MG	MG	PP
	100% FINAL SUBMITTAL			

REVISIONS

YUBA WATER AGENCY
YUBA RIVER DEVELOPMENT

LAKE FRANCIS DAM

ELECTRICAL SCHEMATIC ADAS LAKE FRANCIS DAM

DOBBINS, CALIFORNIA
DATE: JULY 5, 2023

SHEET 11 OF11 | SHT 11

PLOT DATE: Wednesday, July 05, 2023 TIME: 6:16:37 PM BY: REILLY, CAITLIN CTB: SAGE.CTB TAB: 11
FILE: C:\Users\creilly\Gannett Fleming Inc\06343-YCWA-Lake Francis Dam Instr Eng - GF\5_Working\Lakefrancis_Instru_Design\06_Drawing_Ref\068343-011_E4.dwg

APPENDIX B

Representative Photographs

Photo Point 1. View of dam and access road at toe of dam. The low level outlet structure can be seen on the right side of the photo.

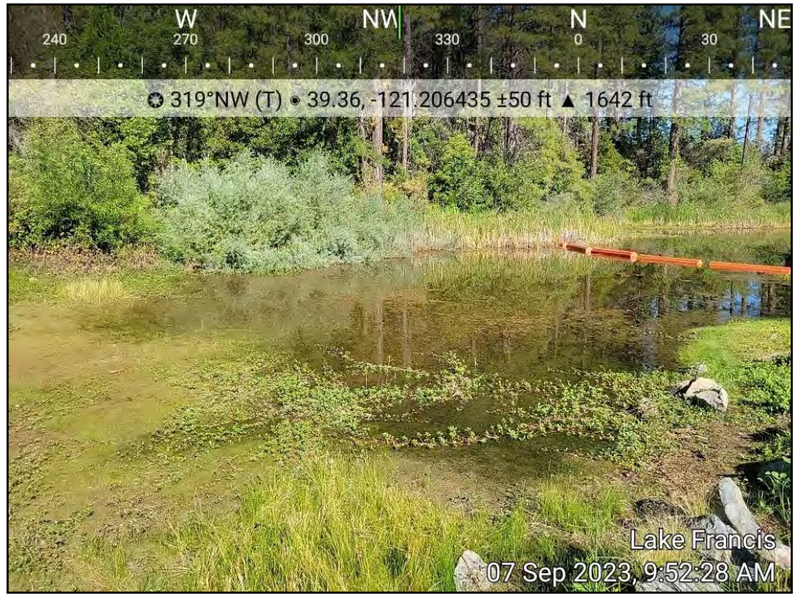

Photo Point 2. View of lake outlet at top of spillway.

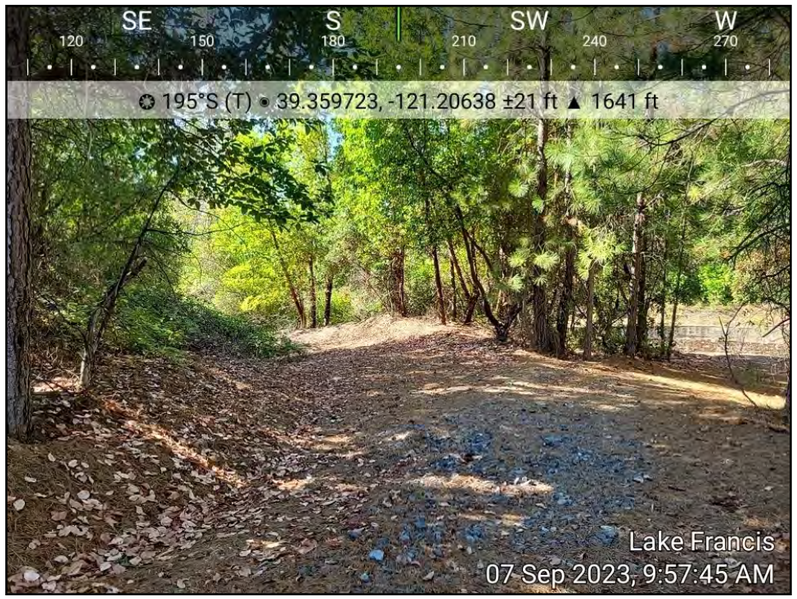

Photo Point 3. View of spillway access road. Spillway wall can be seen on the right side of photo.

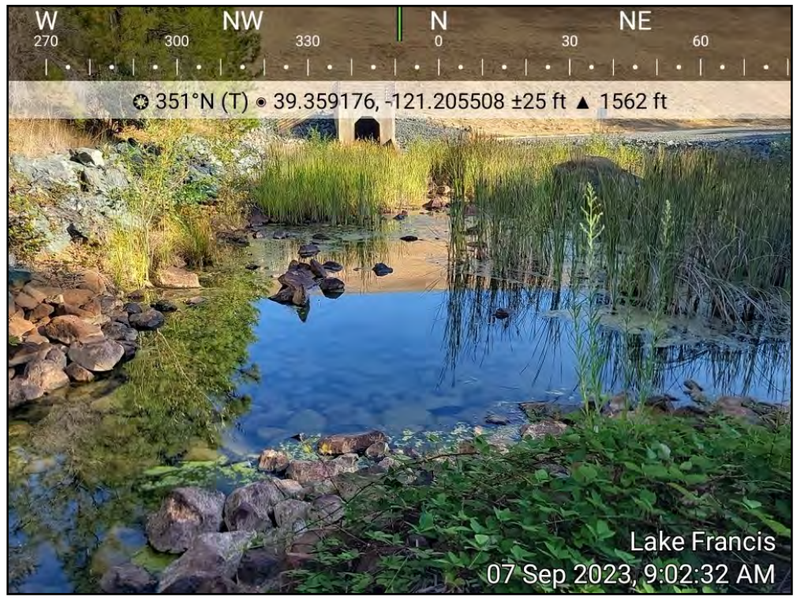

Photo Point 4. View of toe drain pool. Low level outlet structure can be seen in the background.

Photo Point 5. View of Dobbins Creek downstream of weir structure at outlet of toe drain.

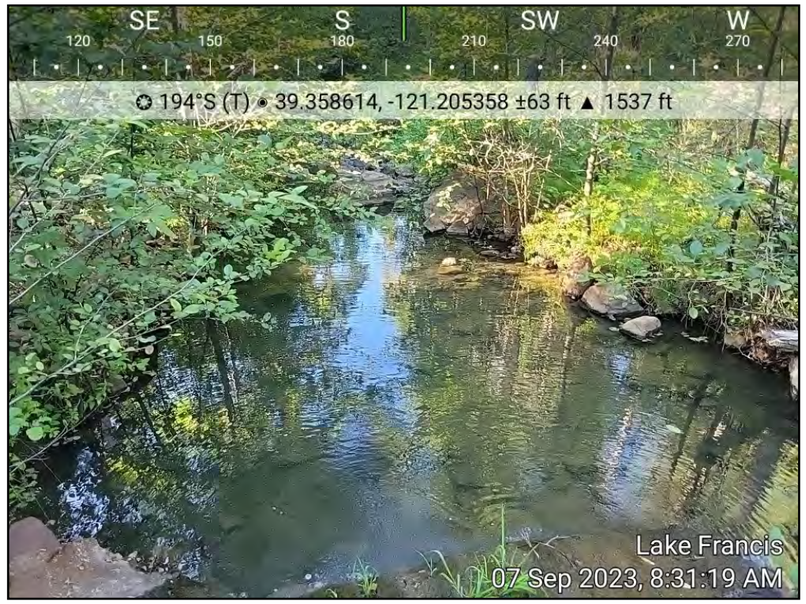

Photo Point 6. View of Dobbins Creek downstream of flume.

Photo Point 7. View of flume on Dobbins Creek.

Photo Point 8. View of dam face from access road.