
PRE-CONSTRUCTION NOTIFICATION

WHITEHOUSE POOL SEDIMENT REDUCTION PROJECT

MARIN COUNTY, CALIFORNIA

Submitted To:

U.S. Army Corps of Engineers
San Francisco District
450 Golden Gate Ave
4th Floor
San Francisco, CA 94102

Prepared For:

Marin County Department of Public Works
3501 Civic Center Drive, Suite 304
San Rafael, CA 94903

Contact:

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Date: July 2023

WRA Project No.: 320130



REGULATORY PERMIT APPLICATION PACKAGE CONTENTS

- Part 1.** Nationwide Permit Pre-Construction Notification
- Part 2.** Supplemental Information
- Part 3.** Figures
- Part 4.** Jurisdictional Wetland Delineation (WRA, Inc. 2022)

PART 1 – NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION

U.S. Army Corps of Engineers (USACE)
NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)

33 CFR 330. The proponent agency is CECW-CO-R.

Form Approved -
OMB No. 0710-0003
Expires: 02-28-2022

DATA REQUIRED BY THE PRIVACY ACT OF 1974

- Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Program of the Corps of Engineers (Corps); Final Rule 33 CFR 320-332.
- Principal Purpose** Information provided on this form will be used in evaluating the nationwide permit pre-construction notification.
- Routine Uses** This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process.
- Disclosure** Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see *sample drawings and/or instructions*) and be submitted to the district engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Betsy Middle - Last - Swenerton Company - Marin County Department of Public Works Company Title - Senior Project Manager E-mail Address - bswenerton@marincounty.org	8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - Erik Middle - Last - Schmidt Company - WRA, Inc. E-mail Address - schmidt@wra-ca.com
6. APPLICANT'S ADDRESS Address- 3501 Civic Center Drive, Suite 304 City - San Rafael State - CA Zip - 94903 Country - USA	9. AGENT'S ADDRESS Address- 2169-G East Francisco Boulevard City - San Rafael State - CA Zip - 94901 Country - USA
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile (415) 473-6680	10. AGENT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile (415) 524-7361

STATEMENT OF AUTHORIZATION

11. I hereby authorize, WRA, Inc. to act in my behalf as my agent in the processing of this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

Digitally signed by Betsy Swenerton Date: 2022.07.05 12:42:42 -07'00' Betsy Swenerton	2022-07-05
SIGNATURE OF APPLICANT	DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)
 Whitehouse Pool Sediment Removal Project

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

13. NAME OF WATERBODY, IF KNOWN (if applicable) Silver Hills Creek, Old Bear Valley Creek	14. PROPOSED ACTIVITY STREET ADDRESS (if applicable) Mile Post 25.00 Sir Francis Drake Boulevard
15. LOCATION OF PROPOSED ACTIVITY (see instructions) Latitude °N Longitude °W 38.034195 -122.485890	City: State: Zip: Tomales Bay CA

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID	Municipality	
Section	Township	Range

17. DIRECTIONS TO THE SITE
To reach the site from the south, head north on CA-1 until the intersection with Sir Francis Drake Boulevard. Take a left onto Sir Francis Drake Boulevard and continue approximately 0.7 mile before arriving at the Project Area. When approaching from the north, head south on CA-1 and take a right at the intersection with Sir Francis Drake. Continue for the same distance until reaching the Project Area.

18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE
NWP 31 - Maintenance of Existing Flood Control Facilities

19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY (see instructions)
See Section 2 in Part 2. Supplemental Information for a complete description of the proposed project.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (see instructions)
The areas impacted by the Project will be monitored for a 2-year period to determine if any adverse direct or indirect impacts to beneficial uses occur following Project completion and to verify the Project’s temporarily impacted areas have sufficiently revegetated. Annual monitoring will assess the stream and riparian conditions as well as the overall Project success. If it appears temporarily disturbed areas may not return to their pre-Project condition, DPW will document those observations in the annual reports and make recommendations for remedial actions, as necessary. If any adverse impacts to Federal or State waters are observed during the monitoring period, additional mitigation will be proposed as riparian native revegetation.

21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY (Describe the reason or purpose of the project, see instructions)
To prevent flooding and loss of access at the intersection of SFD Boulevard and Bear Valley Road in the upcoming winter rainy season, Marin County Department of Public Works (DPW) proposes to implement the Whitehouse Pool Sediment Removal Project (Project) to remove accumulated sediment from approximately 970 linear feet of Silver Hills Creek and Old Bear Valley Creek in the Whitehouse Pool area in summer-fall 2022.

22. QUANTITY OF WETLANDS, STREAMS, OR OTHER TYPES OF WATERS DIRECTLY AFFECTED BY PROPOSED NATIONWIDE PERMIT ACTIVITY (see instructions)

Acres	Linear Feet	Cubic Yards Dredged or Discharged
0.135	970	752

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. (see instructions)
N/A

24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity.

25. Is any portion of the nationwide permit activity already complete? Yes No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (see instructions)

California red-legged frog (*Rana draytonii*)
Coho salmon (*Oncorhynchus kisutch*)
Central California steelhead (*Oncorhynchus mykiss*)
Western pond turtle (*Emys marmorata*)
Tidewater goby (*Eucyclogobius newberryi*)

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (see instructions)

N/A

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

N/A

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? Yes No

If "yes", please provide the date your request was submitted to the Corps district:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

No additional information required for this NWP.

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Betsy Swenerton Digitally signed by Betsy Swenerton
Date: 2022.07.05 12:42:18 -07'00'

SIGNATURE OF APPLICANT

2022-07-05

DATE

Jemma Williams Digitally signed by Jemma Williams
Date: 2022.07.05 13:46:02 -07'00'

SIGNATURE OF AGENT

2022-07-05

DATE

The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

PART 2 – SUPPLEMENTAL INFORMATION

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1.0 INTRODUCTION AND PURPOSE

1.1 *Project Objective*

Following an atmospheric river storm event in October 2021, and previous annual deposition occurrences, large amounts of decomposed granite sediment have accumulated in culverts and drainage ditches upstream and downstream of mile post (MP) 25.00 of Sir Francis Drake (SFD) Boulevard between the communities of Point Reyes Station and Inverness, West Marin County, California (Figure 1. Project Overview). To prevent flooding and loss of access at the intersection of SFD Boulevard and Bear Valley Road in the upcoming winter precipitation season, the Applicant, Marin County Department of Public Works (DPW) proposes to implement the Whitehouse Pool Sediment Removal Project (Project) to remove accumulated sediment from approximately 970 linear feet of Silver Hills Creek and Old Bear Valley Creek in the Whitehouse Pool area (Project Area) in summer-fall 2022. The project will also restore open water flow in Old Bear Valley Creek, which will benefit salmonids and tidewater goby which typically inhabit the creek and use it for refugia during high flows in Lagunitas Creek and off-channel rearing habitat. The length, width and volume of sediment removal is wholly consistent with historic maintenance completed periodically at this location in past decades, the most recent event occurring in 2015.

1.2 *Project Background*

The DPW road maintenance division removes accumulated sediment at multiple locations in West Marin County, primarily at culverted road crossings and short sections up and downstream of the culverts and within related drainage ditches. The objective of this proposed work is to maintain flow capacity within these drainages, to prevent flooding, maintain emergency access, and avoid damage to both County and community road-related infrastructure. The primary cause of clogged drainages is deposition of decomposed granite emanating from steep slopes on surrounding hillsides throughout West Marin. DPW has conducted sediment removal in numerous locations in West Marin, including at the Project Area, for decades, to maintain access and public safety. Sediment was most recently removed at the Project Area in 2013.

Silver Hills Creek drains a small watershed on the eastern slope of Inverness Ridge, flowing to Bear Valley Road, where it is conveyed under the Bear Valley Road through a culvert and into a ditch paralleling SFD Boulevard in an easterly direction. This ditch joins Old Bear Valley Creek, which drains a larger watershed further south along Inverness Ridge and flows in a northerly direction, at a confluence on the upstream side of MP 25.00. The channel of Old Bear Valley Creek conveys the combined flows through a culvert under SFD Boulevard and then downstream approximately 400 LF into Lagunitas Creek.

SFD Boulevard serves as a major connector road for the communities in West Marin, and for access to Point Reyes National Seashore west of the Project Area. The double box culvert under the roadway at MP 25.00, at an area known as Whitehouse Pool, is prone to filling with sediment from the Silver Hills drainage of Inverness Ridge. Heavy rains in late 2021 and early 2022 brought large additional quantities of decomposed granite from neighboring slopes that were left bare by the Woodward Fire of 2020. As a result, sediment quickly added to typical annual accumulations and has reached the point where stream flow from the Silver Hills through the culvert at MP 25.00 and into Lagunitas Creek is completely blocked. With the channel's capacity at this stream crossing nearly non-existent, potentially severe flooding of SFD and its intersection with Bear Valley Road can be anticipated in the winter rainy season of 2022-2023 and in succeeding years. Accumulated sediment must be cleared to prevent flooding, allow safe access along

this key roadway to and from Inverness and Point Reyes National Seashore, and to preserve fish passage through the culvert to the stream habitat in Silver Hills Creek and Old Bear Valley Creek upstream of the culvert.

1.3 Permitting History

The Project has been permitted previously, both as part of the DPW’s culvert and channel maintenance program with multiple work sites, and as a stand-alone sediment removal project. The proposed Project does not differ from previously approved sediment removal at the Project site, with respect to location, work activities, dimensions, or equipment. Permits and authorizations, and certification of environmental review, that have been issued for the Project include the following:

Table 1. Permitting and Environmental Review History

Permit/ Environmental Review	Permit/ Determination	Date of Most recent Permit	Project Area
CEQA	Initial Study/ Mitigated Negative Declaration	1-20-2011	West Marin County culverts
Corps	404/10 Nationwide Permit	9-17-2010	Whitehouse Pool
RWQCB	401 Water Quality Certification	6-30-2010	Whitehouse Pool
Coastal Commission	Coastal Development Permit	1-6-2011	West Marin culverts
CDFW	1602 Agreement	9-25-2015 (extended through December 2024)	Whitehouse Pool
NMFS	Sec. 7 BO	7-19-2010	Whitehouse Pool
USFWS	Sec. 7 BO	4-17-2016	Whitehouse Pool and 9 other West Marin sites

1.2 Project Setting

The Project Area is located in the vicinity of SFD Boulevard, Bear Valley Road, and Lagunitas Creek. To the north of the Project Area, SFD crosses largely undeveloped land in Point Reyes National Seashore. Surrounding land in this vicinity is mostly pasture for dairy cattle. SFD Boulevard crosses Inverness Ridge before entering the town of Inverness and turns south along the western margin of Tomales Bay before intersecting with Highway 1 south of Point Reyes Station.

The Project Area lies just west of the San Andreas fault zone, where the Pacific and North American tectonic plates meet. Bedrock of the Point Reyes area west of the fault includes Tertiary marine sediments un-conformably overlying granitic and older metamorphic rocks. Land uses surrounding the area include dairy cattle pastures in the northern portion and rural residences and small businesses in the vicinities of Inverness, Inverness Park, Point Reyes Station and Olema. Much of the land in the vicinity is largely undeveloped open space.

2.0 PROJECT DESCRIPTION

2.1 *General Project Description*

At MP 25.00 of SFD, DPW will excavate sediment to clear the clogged double box culvert under the roadway and remove excess sediment from associated channels upstream and downstream of the culvert. An estimated total of 970 linear feet of channel in Silver Hills Creek and Old Bear Valley Creek will be excavated, consistent with the areas of past maintenance. Sediment removal will be accomplished using a Gradall or long-reach excavator operating from the streambank or roadway, a small skid steer loader and/or bulldozer (6 feet in width by 4 feet in height) operating in the channel to push the sediment towards the excavators, dump trucks to receive and haul away excavated material, and crane pads in the lower channel to prevent equipment from sinking. The Project has been broken into multiple reaches described below and included as Figure 1. Whitehouse Pool Sediment Removal Project Overview.

Construction activities will require dewatering of Old Bear Valley Creek with the installation of two temporary cofferdams. Table 1 summarizes the dimensions and volume of sediment removal in the stream reaches discussed below. Table 2 summarizes the dimensions and volume of temporary cofferdam fill required to dewater the channel and protect aquatic resources and water quality during work activities.

Altogether, sediment will be removed from a total of approximately 0.08 acres of wetlands and 0.05 acres of unvegetated Waters of the U.S. (see Table 2 below). Given the conditions present at the site and observations from past sediment removal activities, vegetation within the areas of sediment excavation are anticipated to quickly recover current levels of cover and species diversity.

2.2 *Work Activities by Reach*

Reach A: Sediment removal in Silver Hills Creek ditch along Bear Valley Road

The southernmost area of sediment removal will occur in a ditch along Bear Valley Road. This wetland ditch is a segment of Silver Hills Creek that supports wetland vegetation and conveys water to a downstream culvert that runs under Bear Valley Road. Sediment will be removed along a stretch of 120 linear feet using an Gradall operating outside of the ditch from Bear Valley Road. The reach will be excavated to a depth of approximately two feet and a width of approximately four feet. The total volume of sediment estimated to be removed is approximately 18 cubic yards (CY).

Reach B: Sediment removal in the drainage ditch along Sir Francis Drake Boulevard

Reach B is a drainage ditch that starts at the intersection of Bear Valley Road and SFD Boulevard and runs west to east paralleling SFD Boulevard. This drainage feature supports wetland vegetation and conveys flows from Silver Hills Creek downstream to a double box culvert that runs under SFD Boulevard. At the box culvert Silver Hills Creek joins Old Bear Valley Creek coming from the south through the Olema Marsh. Old Bear Valley Creek then flows under Sir Francis Drake Blvd. downstream until it reaches the confluence with Lagunitas Creek. Sediment will be removed from an approximately 422-foot-long stretch of this drainage ditch using a Gradall placed along SFD Boulevard. The ditch will be excavated to a depth of two feet and width of four feet. A total of approximately 125 CY of sediment will be removed.

Reach C: Sediment removal immediately upstream of culvert beneath SFD Boulevard at MP 25.00

At the confluence of Silver Hills Creek and Old Bear Valley Creek, immediately upstream of the culvert under SFD Boulevard, an area approximately 6 feet in depth, 13 feet in length, and 17 feet in width will be excavated to capture sediment coming from both drainages before entering the culvert. This work will be completed with an excavator from the roadway, removing approximately 49 CY of material.

Reach G: Sediment removal in Old Bear Valley Creek immediately downstream of the culvert along Sir Francis Drake Boulevard

Sediment removal will occur along the northern edge of SFD Boulevard just downstream of the box culverts. Work in this stream reach will be completed with an excavator operating from SFD Boulevard. Sediment will be excavated to a depth of approximately six feet and a width of 17 feet along a total length of 25 feet. In total 94 CY of sediment will be removed from this reach.

Reach 1-10: Sediment removal in Old Bear Valley Creek from Reach G to the downstream trench

Sediment removal will occur from the end of Reach G and will continue for approximately 366 feet, through ten separate numbered reaches, and will terminate at a downstream trench adjacent to Whitehouse Pool. Of the 366 linear feet to be cleared of sediment, approximately 280 linear feet are freshwater stream, and 86 linear feet are tidally influenced brackish wetlands.

Excavation will be completed with a small skid steer loader and/or a small dozer operating in the channel. The in-channel equipment will push the sediment to designated areas at the up and downstream boundaries of the project, where it can be loaded into the excavator on the roadway or bank and transferred into dump trucks to be hauled offsite for disposal. The low-flow channel will be excavated to a depth of four feet and a width of eight feet resulting in 434 CY of sediment removed.

Reach 11: Sediment removal in Old Bear Valley Creek between the downstream trench and confluence with Lagunitas Creek

Between the cofferdam and Lagunitas Creek, approximately 24 linear feet of tidally influenced brackish marsh will be excavated to open the channel mouth to a width of 4 feet and a depth of 4 feet. A total of approximately 14 CY will be excavated in this reach.

Table 2. Dimensions and volume of sediment removal in Silver Hills Creek and Old Bear Valley Creek

Roadway	Creek	Reach Name	LOCATION (Starts at top of project DS to Lag Ck)	Length (Linear feet)	Width (Feet)	Depth (Feet)	Feature Type	Area (Square Feet)	Area (Acres)	Volume of Sediment (CY)	Frequency of Maintenance (Yrs.)
Bear Valley Road	Silver Hills Creek	A	Drainage ditch along Bear Valley Rd (ditch only; 3 sed basins removed from project)	120	4	2	Wetland ditch	480	0.011	36	1+
Sir Francis Drake	Silver Hills Creek	B	Drainage Ditch along SFD US of box culverts	422	4	2	Wetland ditch	1,688	0.037	125	3+
Sir Francis Drake	Silver Hills Creek	C	Drainage Area US of box culverts under SFD	13	17	6	Riparian wetland	221	0.005	49	3+
Sir Francis Drake	Old Bear Valley	G	Area DS of box culverts under SFD	25	17	6	Freshwater marsh	425	0.010	94	3+
Sir Francis Drake	Old Bear Valley	1-7	Low-flow channel DS reach	280	8	4	Perennial stream	2,240	0.051	332	5+
Sir Francis Drake	Old Bear Valley	8-10	Low-flow channel DS reach	86	8	4	Brackish marsh	688	0.016	102	5+
Sir Francis Drake	Old Bear Valley	11	DS trench channel to confluence with Lag Ck.	24	4	4	Brackish marsh	96	0.002	14	5+
Total				970				5,838	0.132	752	

2.3 Dewatering

Two temporary cofferdams, totaling approximately 150 square feet in size and 22 cubic yards in volume, will be installed within the channel to facilitate stream dewatering and sediment removal while protecting water quality and aquatic life. The upstream cofferdam in Silver Hills Creek will be installed within the ditch, upstream of the work area. The cofferdam will be approximately 3 feet in length, 10 feet in width, and 3 feet deep. The downstream cofferdam will be installed in Old Bear Valley Creek approximately 24 feet above the confluence with Lagunitas Creek. This cofferdam will be approximately 4 feet in length, 30 feet in width and 4 feet deep. The temporary cofferdams will be used to dewater the creek channel, isolate the work area, and protect water quality and aquatic resources during sediment removal operations. Cofferdams will be removed in their entirety from the channels following sediment excavation.

Table 3. Temporary Impacts from Cofferdam Installation

Project Reach	Cofferdam Dimensions	Habitat Type	Temporary Impacts		
			linear feet	square feet	acres
Reach B: Silver Hills Creek drainage ditch	3' L x 10' W x 3' D	Riparian Wetlands	3	30	0.0007
Reach 11: Old Bear Valley Creek Channel	4' L x 30' W x 4' D	Brackish Marsh	4	120	0.003
Totals			7	150	0.004

2.4 Equipment, Staging, and Access

Equipment for the proposed Project includes a skid steer loader, small dozer, Gradall, excavators, dump trucks, pumps, generators, and crane pads. Excavators and dump trucks required to receive extracted sediment from the channel to haul off-site will be staged in upland locations only, including 1) in the Whitehouse Pool paved parking lot (also where equipment will be stored overnight), 2) on the roadway of Sir Francis Drake Boulevard, and 3) an upland area adjacent to the Whitehouse Pool pedestrian bridge and trail. Equipment needed for in-channel work includes a skid steer loader and/or small dozer, which will enter the channel immediately east of the box culverts from SFD.

Crane pads could be deployed within the lower channel if tidal areas are too wet and cause equipment to sink. A small dozer with lighter ground pressure would also be used in the lower channel for this same reason. The downstream access area would be accessed via an existing unpaved access road spanning from Sir Francis Drake Boulevard to staging area #3 (see Figure 1. Project Overview).

2.5 *Project Schedule*

- June 1-August 31: Obtain regulatory permits and finalize construction plans.
- September 1-October 15: Sediment removal activities are expected to take approximately two weeks. Work will be limited to daylight hours only, starting at 7:00 am and ending 30 minutes before dusk. Prior to start of construction, pre-construction biological surveys will be completed in accordance with permit requirements.
- Post-construction erosion control and seeding of temporarily disturbed areas to occur prior to the rainy season.
- If needed, revegetation will occur after the rainy season has begun and prior to April 1 of the following year.

3.0 AVOIDANCE AND MINIMIZATION MEASURES

3.1 *General Measures for Protection of Biological Resources*

1. The County will assign an Environmental Site Coordinator (ESC) to oversee implementation of the project. The ESC will understand biological resources, missions of regulatory agencies, and regulations as they may affect species within the context of the proposed project and any permits issued. Before commencement of work activity, the ESC will review information on the type, location and extent of the activity and associated areas of disturbance (e.g., proposed staging, stockpile and sediment disposal areas, etc.).
2. The ESC will ensure that pre-construction surveys are completed in a timely manner before the maintenance activity begins.
3. The ESC will implement a monitoring and reporting program that will include, but not be limited to, project activity oversight during construction, photo documentation, and post-construction restoration/revegetation evaluation, if necessary. Reporting regarding project impacts to listed species will be performed in accordance with the terms and conditions of the Biological Opinions issued for the Project by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) and in accordance with the California Department of Fish and Wildlife (CDFW) Sec. 1600 permit.
4. The ESC will coordinate with the Project Manager to stop any activity a qualified biologist deems may result in take or destruction beyond what would be considered incidental. Work would not be allowed to resume until appropriate corrective measures have been completed. The ESC will immediately report any unauthorized impacts to the Army Corps of Engineers (USACE), USFWS, NMFS, California Coastal Commission (CCC), Regional Water Quality Control Board (RWQCB) and CDFW.
5. All on-site maintenance activity personnel will receive instruction from a qualified biologist regarding the presence and description of listed species and the importance of avoiding impacts to these species and their habitats before the start of work.
6. Timing: To avoid impacts to aquatic habitat, the project activities carried out will comply with the following measures.
 - a. Work is restricted to the period of June 15 to October 15. This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period for salmon and steelhead.

- b. The permissible work window for individual work sites may be further constrained as necessary to avoid adverse impacts to special-status species (see mitigation measures for specific timing of work activities, by species) and the nesting or breeding seasons for fish, birds, amphibians and terrestrial animals.
 - c. At most sites with potential for raptor and migratory bird nesting, if work is conditioned to start after July 31, potential impacts will be avoided, and no surveys will be required. However, if work in the riparian zone will occur between June 15 and September 1, the ESC will conduct a survey for nesting birds within one week prior to the proposed vegetation removal and/or construction activities. Work can proceed if surveys determine that nesting birds will not be impacted. If active nests are found within the project area, a qualified biologist will consult with CDFW for recommendations for creating a buffer around the nest site to assure that no work occurs until young have left the nest and will no longer be impacted by the Project.
 - d. If trees greater than 4" dbh are to be removed from the riparian zone, they will be replaced at a 3:1 ratio within the Project Area. Revegetation will begin after sufficient rainfall has occurred to ensure the best chance of survival of the plants. Reseeding for erosion control for temporary impacts can occur as soon as the Project is complete.
7. During all activities at Project work sites, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas and disposed of in a certified landfill. All sediment will be hauled to the DPW Nicasio Corporation Yard for reuse for road surfacing. All green material will be taken to the compost facility across from the Nicasio Corporation Yard.
8. Staging/storage areas for equipment, materials, fuels, lubricants, and solvents will be located outside of the channel and associated riparian area. Stationary equipment such as motors, pumps, and generators adjacent to the stream, will be positioned over drip-pans. Equipment will be moved out of the stream prior to refueling and lubricating. The DPW Project Manager will ensure that contamination of habitat does not occur during such operations. Best Management Practices (BMPs) covering Chemical Use (Spill Prevention and Control), contained in the BASMAA Flood Control Facility Maintenance Best Management Practices Manual (EOA, Inc. 2000a) will be followed. These BMPs are designed to prevent the discharge of chemicals to flood control channels and storm drain systems and allow prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take will a spill occur.
9. The ESC will ensure that the spread or introduction of invasive exotic plants will be avoided to the maximum extent possible. When practicable, invasive exotic plants and animals at the work site will be removed.
10. The number of access routes, number and size of staging areas, and the total area of the work site activity will be limited to the minimum necessary to complete the proposed activity.

11. Any work using equipment within the stream channel will be performed in isolation from the flowing stream. If there is flow in the channel prior to construction, DPW will construct cofferdams upstream and downstream of the excavation site to divert all flow from upstream and to prevent tidal flow moving upstream into the Project area. The cofferdam in the lower channel will consist of an inflatable bladder and the cofferdam in the upper ditch will be constructed with sandbags filled with clean river/pea gravel or sandbags filled with local decomposed granite material and sealed with sheet plastic. Sandbags and sheet plastic will be removed from the stream upon Project completion.
12. Water quality will be protected through the use of sediment/erosion control measures, including silt fences, straw wattles, hydro-seeding using a native seed mix, and use of seed-free rice straw mulch, as appropriate. These measures will be appropriately located to prevent transporting and depositing sediment disturbed during maintenance activities outside of the maintenance activity zone.
13. If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe will be fitted with fish screens meeting CDFW and NOAA Fisheries' current criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state will be disposed of in an upland location (e.g., vegetated upland area via flexible pipe) where it will not drain directly into any stream channel.
14. An individual on foot to displace wildlife and prevent them from being crushed will precede any equipment entering the active stream (for example, in the process of installing a cofferdam, or movement of a dozer into the stream channel).
15. If any general wildlife species are encountered during the course of work activities, said wildlife will be allowed to leave the construction area unharmed, and will be flushed or herded in a safe direction away from the Project site. For example, if western pond turtles are found, they will be moved to suitable habitat upstream or downstream of the work site before work proceeds.
16. For any work sites containing western pond turtles, foothill yellow-legged frogs or tailed frogs, the ESC will consult with a qualified biologist and provide to the Project Manager a list of the exclusion measures that will be used at the work site to prevent take or injury to any individual pond turtles or frogs that could occur on the site. The DPW Project Manager will ensure that the approved exclusion measures are in place prior to construction. Prior to work activities, any such turtles or frogs found within the exclusion zone will be moved to suitable habitat upstream or downstream of the work site.

3.2 *Dewatering*

1. If there is no flow in the channel or the work can be done at low tide to avoid working in then active channel, then no dewatering will be required. If water is flowing in the project area or tidal water is present within the work area during low tide, the area where excavation will occur will be dewatered. If dewatering activities occur, the following measures will be implemented:
 - a. Cofferdams will be constructed upstream and downstream of the entire work area within the stream banks. Clean river/pea gravel or local decomposed granite material will be

used to fill sandbags used to construct cofferdams. The downstream coffer dam will be a rubber bladder installed in the tidal zone.

- b. Installation of any necessary cofferdams and exclusionary fencing will occur at periods of low tide.
- c. A pump will be used to dry out the area of channel to be de-watered. Pump discharge must be directed into a settling or filtering basin to allow silt removal. Any turbid water pumped from the work site itself to maintain it in a dewatered state will be disposed of in an upland location (e.g., vegetated upland area via flexible pipe) where it will not drain directly into any stream channel. The intake of any pumps used for dewatering will be fitted with fish screens meeting CDFW and NOAA Fisheries' current criteria to prevent entrainment or impingement of small fish.
- d. Filtering basins will be located away from the stream channel as possible to reduce the likelihood of discharge of muddy or silty water into the stream.

3.3 *Restoration of Disturbed Areas*

1. Large woody vegetation that currently exists on stream channel banks will be left in place to the maximum extent feasible.). DPW will implement a riparian restoration and monitoring plan that includes planting vegetation between December 1 and April 1; and monitoring/watering during the dry season for at least two growing seasons or until plants stabilize. This plan will be deemed successful with greater than 70 percent survival of planted native willow cuttings. Plant growth will be inspected annually. If survival falls below 70 percent, areas will be re-planted with additional willow cuttings and watering re-initiated as needed. DPW will submit an annual status/monitoring report on the progress of the re-vegetation.

3.4 *Species-specific Conservation Measures*

3.4.1 California black rail and California clapper rail

1. Work will be performed during low tide. When working within 100 feet of salt or brackish marsh, presume presence for California black rail during the February 1 – August 31 breeding period, schedule work to begin no earlier than September 1, and a qualified biologist will survey these sites before work can proceed.

3.4.2 California red-legged frog

These measures generally follow the 2016 Biological Opinion for the Project and the Programmatic Biological Opinion for California red-legged frog (USFWS 1999)

1. No more than seven (7) days prior to commencement of work, a qualified biologist will conduct pre-construction surveys. If no CRLF are found, no further studies or CRLF protection measures would be required, and the maintenance activity would proceed.
2. If CRLF adults or tadpoles are found, the ESC will contact the USFWS to determine if moving any of these life-stages is appropriate. If the USFWS approves the moving of animals, a USFWS-

approved biologist will be allowed sufficient time to move CRLF from the work site before work activities begin.

3. If CRLF tadpoles are found, the project will be delayed until tadpoles complete their metamorphosis (e.g., approximately by early September).
4. Dewatering with cofferdams or pumps will be done with oversight by the USFWS-approved biologist.
5. DPW will designate a person, which will be the ESC or designee, to monitor all work and on-site compliance. The qualifications of the biologist(s) will be submitted to the Service for review and written approval at least thirty (30) calendar days prior to the date construction at the Project site. The monitor will coordinate with the DPW Project Manager to halt any action that might result in more than incidental take of CRLF. If work is stopped, the USACE and USFWS will be notified immediately by the monitor/ESC.
6. If CRLF are found and the maintenance activity site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh no larger than five millimeters to prevent CRLF from entering the pump system. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.
7. For any work sites containing CRLF, the ESC will provide to the DPW Project Manager a list of the exclusion measures that will be used at the work site to prevent take or injury to any individual frogs that could occur on the site. The DPW Project Manager will ensure that the approved exclusion measures are in place prior to construction. Prior to work activities, any such frogs found within the exclusion zone will be moved to suitable habitat upstream or downstream of the work site.
8. Before Project commencement, the ESC will provide instruction to on-site maintenance personnel covering a description of CRLF, habitat requirements, and the importance of avoiding impacts to this species.
9. To the maximum extent practicable, no construction activities will occur during rain events or within 24-hours following a rain event.
10. Stormwater and non-stormwater discharges -- Protective measures will include, at a minimum, those listed below:
 - a. No discharge of pollutants from vehicle or equipment cleaning will be allowed into any storm drains or water courses.
 - b. Vehicle and equipment fueling, and maintenance operations will be at least 50 feet away from water courses, except at established commercial gas stations or established vehicle maintenance facilities.
 - c. Spill containment kits will be maintained onsite at all times during construction operations and/or staging or fueling of equipment.
 - d. The Applicant will maintain all construction equipment to prevent leaks of fuels, lubricants, or other fluids.

11. Each encounter with the CRLF will be treated on a case-by-case basis in coordination with the Service, but the general procedure is as follows: (1) the animal will not be disturbed if it is not in danger; or (2) the animal will be moved to a secure location if it is in any danger. These procedures are further described below:
 - a. When a CRLF is encountered in the Project Area, all activities which have the potential to result in the harassment, injury, or death of the individual will be immediately halted. The Service-approved biologist will determine a course of action that will avoid or minimize adverse effects to the animal. To the maximum extent possible, contact with the frog will be avoided and the applicant will allow it to move out of the potentially hazardous situation to a secure location on its own volition. This procedure applies to situations where a CRLF is encountered while it is moving to another location. It does not apply to animals that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the species should the individual move away from the hazardous location.
 - b. CRLF that are in danger will be relocated and released by the Service-approved biologist outside the construction area within the same riparian area or watershed. If relocation of the frog outside the fence is not feasible (i.e., there are too many individuals observed per day), the biologist will relocate the animals to a Service-preapproved location.
 - c. The USFWS-approved biologist will limit the duration of the handling and captivity of the CRLF to the minimum amount of time necessary to complete the task. If the animal must be held in captivity, it will be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. The container used for holding or transporting the individual will not contain any standing water.
 - d. DPW will immediately notify the USFWS once the CRLF and the site is secure.
12. Uneaten human food and trash attracts crows, ravens, coyotes, and other predators of the CRLF. A litter control program will be instituted at the Project work sites. All workers will ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. The trash containers will be removed from the Project site at the end of each working day.
13. Habitat contours will be returned to their original configuration at the end of Project activities. This measure will be implemented in all areas temporarily disturbed by activities associated with the Project, unless the USFWS and DPW determine that it is not feasible, or modification of original contours would benefit the CRLF.
14. Loss of soil from runoff or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of the CRLF.
15. DPW will not apply insecticides or herbicides at the Project site during construction or long-term operational maintenance where there is the potential for these chemical agents to enter creeks, streams, water bodies, or uplands that contain potential habitat for the CRLF.
16. No pets will be permitted at the Project site, to avoid and minimize the potential for harassment, injury and death of CRLF.

17. Overnight staging of pipes, conduits and other materials that could provide shelter for CRLF will be capped and elevated above ground level. This is intended to reduce the potential for animals to climb into the conduits and other materials.
18. Prior to construction activities resuming, a USFWS-approved biologist will inspect the Project Area and all equipment/materials for the presence of CRLF. The animals will be allowed to move away from the Project site of their own volition or moved by the USFWS-approved biologist.
19. To the maximum extent practicable, night-time construction will be minimized or avoided by the Applicant. Because dusk and dawn are often the times when the CRLF is most actively moving and foraging, to the maximum extent practicable, earthmoving and construction activities will cease no less than 30 minutes before sunset and will not begin again prior to no less than 30 minutes after sunrise. Except when necessary for driver or pedestrian safety, to the maximum extent practicable, artificial lighting at a Project site will be prohibited during the hours of darkness.
20. Plastic monofilament netting (erosion control matting), loosely woven netting, or similar material in any form will not be used at the Project site because CRLF can become entangled and trapped in them. Any such material found on site will be immediately removed by the Service-approved biologist, construction personnel, or the Applicant. Materials utilizing fixed weaves (strands cannot move), polypropylene, polymer or other synthetic materials will not be used.
21. Trenches or pits one (1) foot or deeper that are going to be left unfilled for more than forty-eight (48) hours will be securely covered with boards or other material to prevent CRLF from falling into them. If this is not possible, the Applicant will ensure wooden ramps or other structures of suitable surface that provide adequate footing for CRLF are placed in the trench or pit to allow for their unaided escape. Auger holes or fence post holes will be immediately filled or securely covered so they do not become pitfall traps for CRLF. The Service-approved biologist will inspect the trenches, pits, or holes prior to their being filled to ensure there are no CRLF in them prior to initiation of work and after work has ceased to ascertain whether any individuals have become trapped. If the escape ramps fail to allow the animal to escape, the Service-approved biologist will remove and transport it to a safe location or contact the Service for guidance.
22. The Service-approved biologist(s) will permanently remove any aquatic exotic wildlife species, such as bullfrogs and crayfish from the project site to the maximum extent possible.
23. The Applicant will report any information to the USFWS about take or suspected take of listed wildlife species not exempted by the biological opinion. The Service will be notified via electronic mail and telephone within twenty-four (24) hours from the time the information is received by the Applicant. Notification will include the species, number of individuals, sex (if known), date, time, location of the incident or of the finding of a dead or injured animal, how the individual was taken, photographs of the specific animal, and names of the persons who observe the take and/or found the animal. The individual animal will be preserved, as appropriate, and held in a secure location until instructions are received from the Service

regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Chief of the Coast Division, Endangered Species Program, Sacramento Fish and Wildlife Office at (916) 414-6600, and Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 569-8444.

24. If verbally requested before, during, or upon completion of ground disturbance and construction activities, the Applicant will ensure the Service, CDFW and/or their designated agents can immediately and without delay, access and inspect the Project site for compliance with the Project description, conservation measures, and reasonable and prudent measures of the applicable biological opinions, and to evaluate Project effects to the CRLF and its habitat.
25. The number of access routes, size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the Project goal. Environmentally sensitive areas (ESAs) will be clearly identified with 5-foot-tall bright orange plastic fencing, to confine access routes and construction areas to the minimum area necessary to complete construction and minimize the impact to CRLF habitat; this goal includes locating access routes and construction areas outside of wetlands and riparian areas to the maximum extent practicable. When fencing is constructed for multi-day work, the fencing will be inspected by the USFWS approved biologist and maintained daily by the Applicant until the last day that construction equipment is at the site.

3.4.3 Anadromous salmonids

1. Measures will be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:
 - a. Fish relocation and dewatering activities will only occur between June 15 and October 15.
 - b. DPW's road maintenance staff and/or Contractor will minimize the amount of wetted stream channel that is dewatered at the project site to the fullest extent possible.
 - c. Before Project construction, a qualified biologist will conduct fish relocation activities, and immediately release captured fish to suitable habitat near the Project site.
 - d. Dewatering with cofferdams or pumps will be done with oversight by the qualified biologist.
 - e. Screens will be placed on pumps used for dewatering the work area in accordance with NOAA Fisheries' current fish screening criteria). Appropriately sized screens (i.e., 3/32-inch mesh screen) on pumps and water diversion intake structures will be used to prevent fish from entering the diversion structure. The ESC will be on-site during the dewatering phase to ensure that any fish that may have remained within the maintenance area are relocated to suitable habitat near the Project site.
 - f. All electrofishing will be performed by a qualified fisheries biologist and conducted according to the current NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act).
2. If for some reason these mitigation measures cannot be implemented, or the Project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse impacts to anadromous salmonids or their habitat, then activity at that work site will be discontinued and further technical assistance and approval from NMFS requested.

3.4.4 Tidewater goby

1. Construction is limited to the dry season (June 15 to October 15). If no water is present in the channel after October 15, it may be possible, with USFWS and CDFW approval, to continue work until the first predicted rainfall of one-half inch of rain or more within a 24-hour period.
2. Erosion control measures will be employed to reduce the potential for increasing turbidity conditions downstream of the excavation area.
3. To account for changes to habitat conditions that may have occurred, prior to the start of sediment removal activities, a preconstruction survey by a qualified biologist should be conducted within two weeks of planned sediment removal to determine if the Project Area contains suitable habitat for tidewater goby. If potentially suitable aquatic habitat is observed in the Project Area, then fish relocation and dewatering procedures identified below will take place. If suitable habitat is not present because the site is dry, contains only saturated soils, and/or does not receive tidal inundation and no dewatering activities would be required to conduct sediment removal, then no fish relocation is required for the work to take place.
4. If suitable tidewater goby habitat is identified during the preconstruction survey, and fish relocation will be required, suitable relocation sites should be identified for USFWS approval. These locations will be included in a letter report summarizing the results of the preconstruction survey.
5. Fish removal activities for tidewater goby must be carried out by a qualified biologist approved by USFWS. DPW will send prospective biologist's resume and credentials to USFWS for approval before the Project gets underway.
6. Release location will be identified during the preconstruction survey. Tidewater goby will be released in the closest suitable habitat that is outside of the impact area for the excavation and dewatering footprint. Ideally, the relocation site would be an area that tidewater goby likely currently occupy based on the presumed known occurrences. Tidewater goby will be held in well oxygenated holding coolers, separate from larger fish. Holding time for tidewater goby will be limited, and the status of held fish evaluated by the biologist to reduce the effects of stress on the organisms to the greatest extent possible.
7. Fish removal activities will begin during a high tide which will allow the majority of fish to be ushered out of the work area with seine nets. This allows fish to move downstream to suitable habitat without being handled. Block nets will be used to prevent fish from moving back into the work area. Seine nets, dip nets and block nets will be used to relocate tidewater goby from the dewatered area. Backpack electrofishers will not be used to capture and relocate tidewater goby. Reporting regarding fish captured and relocated and potential impacts to tidewater goby will be performed in accordance with the terms and conditions of the 2016 Biological Opinion issued by USFWS. No heavy equipment will operate in the live stream, except as may be necessary to construct cofferdams to divert stream flow and isolate the work site. An exception is at sites where a small (6-foot wide by 4-foot high) dozer is used for sediment excavation purposes and to facilitate sediment removal or minimize loss of riparian vegetation. For example, the dozer will move the material to a central area for removal, rather than impact the linear riparian corridor.

8. Suitable large woody debris that is not within the sediment removal area will be left within the riparian zone to provide a source for future recruitment of wood into the stream.
9. If for some reason these mitigation measures cannot be implemented, or the Project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse impacts to anadromous salmonids or their habitat, then activity at that work site will be discontinued.

4.0 MONITORING AND REPORTING

Within 60 days of completion of the Project, DPW will submit to the regulatory agencies a report describing the amount (area and volume) of material removed, type of material removed, the method of removal, type and location of equipment used, and the location of the disposal site for excavated material.

The areas impacted by the Project will be monitored for a 2-year period to determine if any adverse direct or indirect impacts to beneficial uses occur following Project completion and to verify the Project's temporarily impacted areas have sufficiently revegetated. Annual monitoring will assess the stream and riparian conditions as well as the overall Project success. If it appears temporarily disturbed areas may not return to their pre-Project condition, DPW will document those observations in the annual reports and make recommendations for remedial actions, as necessary. If any adverse impacts to Federal or State waters are observed during the monitoring period, additional compensation for the impacts will be proposed in the form of native riparian habitat revegetation. Annual monitoring reports will be submitted to the agencies by the end of each monitoring year as required by Project permits.

PART 3 – FIGURES

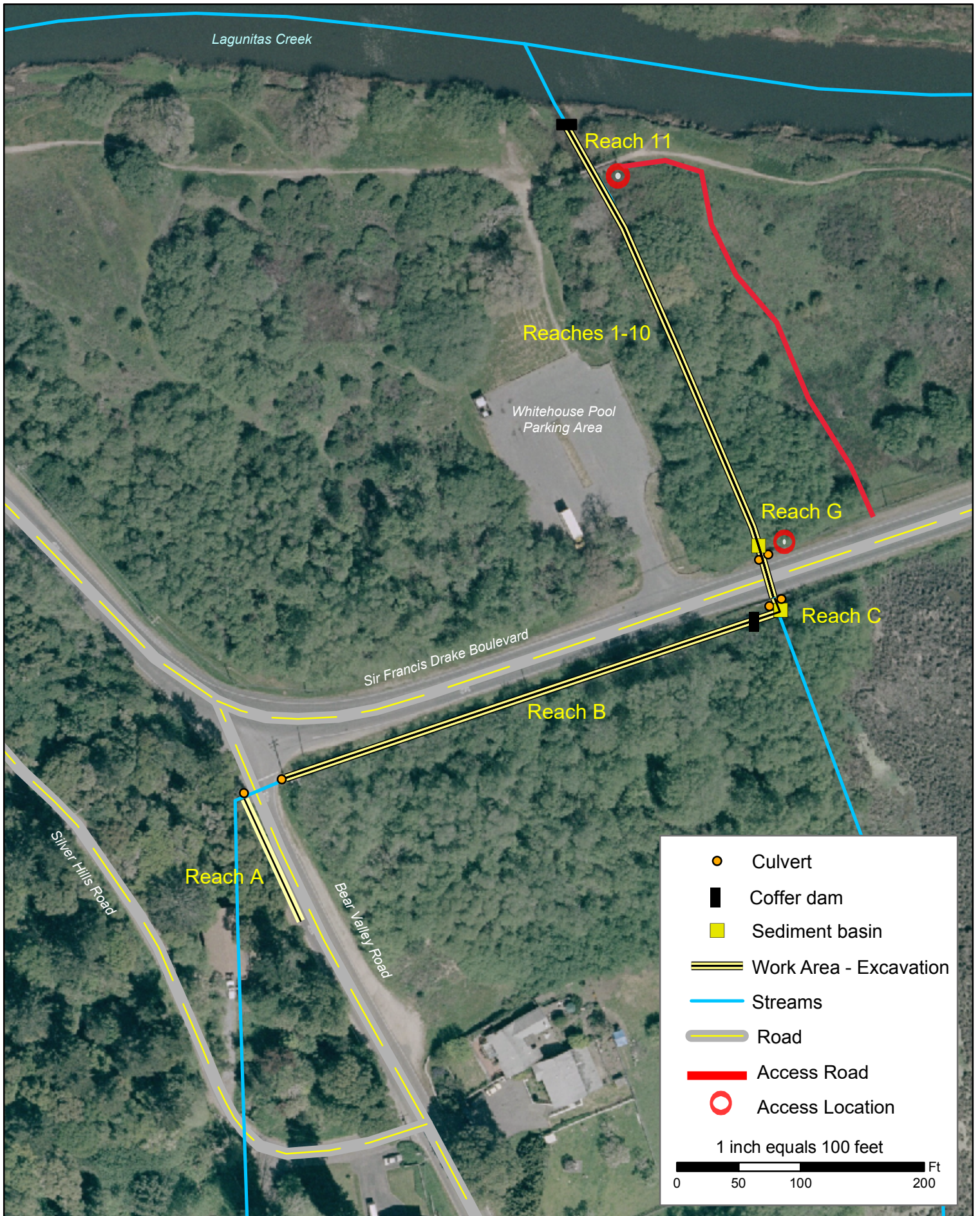


Figure 1. Whitehouse Pool Sediment Removal Project Overview
Mile Marker: 25.00 Sir Francis Drake Blvd
Project Plan

PART 4— JURISDICTIONAL WETLAND DELINEATION (WRA, INC. 2022)

MEMORANDUM

To: Betsy Swenerton, and Kallie Kull,
Marin County Department of Public
Works

From: Justin Semion
semion@wra-ca.com

Jemma Williams
williams@wra-ca.com

Date: June 30, 2022

Subject: Marin County Department of Public Works, Whitehouse Pool Sediment Removal Project:
Jurisdictional Wetland Delineation Summary

Introduction

On June 20, 2022, WRA conducted a site assessment for the Marin County Department of Public Works (DPW) Whitehouse Pool Sediment Removal Project (Project). The proposed Project aims to remove accumulated sediment from approximately 970 linear feet of Silver Hills Creek and Old Bear Valley Creek in the Whitehouse Pool area in the fall of 2022. The proposed Project Area includes a wetland ditch (Silver Hills Creek and Old Bear Valley Creek), riparian wetland, freshwater marsh, intermittent stream, and brackish marsh (tidally influenced) in an unincorporated area of Marin County, California.

The proposed Project involves removal of accumulated sediment at the culverted road crossing and sections up and downstream of the culvert within the related drainage ditches. The objective of the proposed work is to maintain flow capacity within these drainages, prevent flooding, avoid damage to both County and community road-related infrastructure, and improve flows for fish passage and juvenile rearing habitat. The primary cause of clogged drainages is deposition of decomposed granite emanating from steep slopes coming off the hillside of Inverness Ridge.

This memorandum describes the results of the site visit, which assessed the Project Area for a delineation of Waters of the United States under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA). The following sections summarize the methods and results of the delineation.

Methods

Prior to conducting the delineation site visits, reference materials were reviewed, including the soil map for Marin County in the Natural Resources Conservation Service's Web Soil Survey (NRCS 2022), National Wetland Inventory (NWI) data (USFWS 2022), the Inverness USGS 7.5' quadrangle, and aerial imagery of the Project Area (Google Earth 2022).

On June 20, 2022, the Project Area was traversed on foot to conduct a routine jurisdictional delineation. The assessment is based on information at the time of the study and on-site conditions as observed in June 2022. The methods used in this study to delineate jurisdictional wetlands and waters are based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Supplement; Corps 2008). The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to Corps Section 404 and Section 10 jurisdiction within the Study Area. This method utilizes three parameters to delineate wetlands: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. The Project Area was evaluated for the presence or absence of the three wetland parameters.

This study also evaluated the presence of “waters of the U.S.” other than wetlands potentially subject to Corps jurisdiction under Section 404 of the CWA. Other areas, besides wetlands, subject to Corps jurisdiction include lakes, rivers, and streams (including intermittent and ephemeral streams). For tidal areas, Section 10 jurisdiction is mapped to include any areas below the elevation of the mean high water (MHW) level based on current tidal benchmark data. Jurisdiction in non-tidal areas extends to the ordinary high water mark (OHWM). Identification of the OHWM followed the Corps Regulatory Guidance Letter No. 05-05, *Ordinary High Water Mark Identification* (Corps 2005). Non-tidal areas in the Project Area are located in the northernmost end of the Project Area where Old Bear Creek, the intermittent stream in the Project Area, flows through the brackish marsh to Lagunitas Creek.

The tidally influenced areas are present at the confluence of the intermittent stream within the Project Area and Lagunitas Creek. The elevation of MHW was determined based on vegetation indicators and benchmark sheets from the National Oceanic and Atmospheric Administration (NOAA) and correlated to North American Vertical Datum (NAVD). The elevation of MHW was determined based on data reported by NOAA for Point Reyes (Station ID #9415020), correlated to correspond with NAVD88. The elevation of MHW was determined to be approximately 5.08 feet NAVD88. This elevation was used to map the jurisdictional extent of Corps of Engineers jurisdiction under Section 10 of the Rivers and Harbors Act.

The high tide line (HTL), which constitutes the upper limit of Corps jurisdiction under Section 404 of the Clean Water Act, was determined to be approximately 4.0 feet NAVD88 based on a combination of field observations and data reported for the Point Reyes tide station.

Results

The extent of Corps jurisdiction within the Project Area is based on the June 2022 delineation, as shown in Attachment A – Figure 1. Standard Corps Arid West delineation forms are included in Attachment B. Representative photographs of the Project Area are presented in Attachment C. A list of all plant species observed during the site visits is included in Attachment D. The acreage of potential jurisdictional areas is summarized in Table 1 below.

Table 1. Summary of Wetland and Non-Wetland Waters Mapped Within the Project Area

FEATURE TYPE	CLASSIFICATION ¹	POTENTIAL SECTION 404 WATERS OF THE U.S.	
		ACRES	LINEAR FEET
<i>Wetlands</i>			
Freshwater Marsh	PEM1E	0.01	-
Riparian Wetland	PFO1C	0.01	-
Brackish Marsh	PUB3Q	0.03	-
Wetland Ditch	R4SBJ	0.10	567
Sub-total		0.15	567
<i>Non-Wetland Waters</i>			
Intermittent Stream	R4SBQ	0.14	511
Sub-total		0.14	1,078
Total Jurisdictional Areas		0.29	1,078

¹See FGDC 2013

Freshwater Marsh (PEM1E)

On the northern side of SFDB, downstream of the culvert, a small wetland, fed by sub-surface flow occurs. Vegetation in this area included: cattail (*Typha* sp., OBL), hedge nettle (*Stachys ajugoides*, OBL), and panicked bulrush (*Scirpus microcarpus*, OBL) with a shrub stand overstory of coast twinberry (*Lonicera involucrata*, FAC) and arroyo willow. The freshwater marsh was determined by the dense hydrophytic vegetation exceeding 5% cover. This feature classification assigned in this study is palustrine, emergent, persistent, and seasonally flooded/saturated (PEM1E).

Riparian Wetland (PFO1C)

Riparian wetland occurs at the end of the wetland ditch on the southern side of the double box culvert that runs under SFDB. The area contained scour and shelving in areas that receive intermittent flow. A sample point was taken in this feature and the delineation form is included in Attachment B. Dominant vegetation in the overstory included box elder, white alder, and arroyo willow. Vegetation in the herb layer was dominated by water parsley, watercress, common bog rush (*Juncus effusus*, FACW); seep monkeyflower (*Erythranthe guttata*, OBL); and California bee plant. The soil was sandy, saturated, and contained sediment from runoff from upstream. Wetland soil indicator (S1) Sandy Mucky Mineral was observed within the first 6 inches of the soil profile. This feature classification assigned in this study is palustrine, forested, broad-leaved deciduous, and seasonally flooded (PFO1C).

Brackish Marsh (PUB3Q)

The Brackish marsh, located within Old Bear Valley Creek extends from Lagunitas Creek to just south of the HTL and MHW and has more than 5 % cover of hydrophytic vegetation. The area was partially inundated at the time of the site visit and soils were saturated. Vegetation in this feature was dominated by panicked bulrush and silver weed cinquefoil (*Potentilla anserina*, OBL). Vegetation on the surrounding banks consisted of California wild rose (*Rosa californica*, FAC), coast twinberry, arroyo willow, and box

elder. This feature classification assigned in this study is palustrine, unconsolidated bottom, mud, and regularly flooded-fresh tidal (PUB3Q).

Wetland Ditch (R4SBJ)

Portions of Silver Creek, a riverine system within Point Reyes Station, were classified as wetland ditches within the Project Area. The wetland ditch runs along the western side of Bear Valley Road (BVR) in a northerly direction until it passes through a culvert at the intersection of Sir Francis Drake Boulevard (SFDB) and BVR. The ditch continues east on the southern side of SFDB until it converges with Old Bear Creek before draining through a second, double box culvert. At the time of the site visit, water was flowing throughout the wetland ditch. The southernmost ditch was measured to be 3 feet between OHWM and the ditch running parallel SFDB was measured to be approximately 9-11 feet between OHWM.

Vegetation was growing within the ditch and alongside the margins. Vegetation was dominated by water parsley (*Oenanthe sarmentosa*, OBL), watercress (*Nasturtium officinale*, OBL), California blackberry (*Rubus ursinus*, FAC), and California bee plant (*Scrophularia californica*, FAC). The overstory contained box elder (*Acer negundo*, FACW), arroyo willow (*Salix lasiolepis*, FACW), and white alder (*Alnus rhombifolia*, FACW). This feature classification assigned in this study is riverine, intermittent, streambed, and intermittently flooded (R4SBJ).

Intermittent Stream (R4SBQ)

Old Bear Valley Creek, the intermittent stream within the Project Area, flows in a northerly direction connecting the freshwater marsh to the brackish marsh before draining to Lagunitas Creek. The stream was defined by an obvious low-flow channel with benching, and less than 5% cover of vegetation in the channel. The channel forks north of the freshwater marsh and consolidates before entering the brackish marsh towards Lagunitas Creek. Some topographically low locations within the creek were holding water, but sections of it were not, which is normal for this time of year. Vegetation on the banks consisted of arroyo willow, coast twinberry, and poison oak (*Toxicodendron diversilobum*, FACU). This feature classification assigned in this study is riverine, intermittent, streambed, and regularly flooded-fresh tidal (R4SBQ).

Summary

The conclusions of this report are based on the conditions at the time of the field survey conducted on June 20, 2022. Based on a review of the findings of the wetland delineation, the Project Area contains approximately 0.15 acre of potentially jurisdictional wetlands and 0.29 acre of non-wetland waters potentially subject to Section 404 of the CWA and Section 10 of the RHA jurisdiction (summarized in Table 1). Areas mapped as wetland were dominated by vegetation with FAC, FACW, and OBL classified plants and contained soil and wetland hydrology indicators. Four wetland types and one non-wetland waters were delineated in the Project Area: freshwater marsh, brackish marsh, and riparian wetland, and non-wetland waters; wetland ditch and intermittent stream.

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**Attachment A:
Delineation of Potential Section 404 Waters of the U.S.**



Attachment A. Delineation of Potential Section 404 Waters of the U.S.

**Attachment B:
Corps Arid West Form**

Project/Site: Whitehouse Pool City/County: Point Reyes Station Sampling Date: 6/20/2022
 Applicant/Owner: Marin County Public Works State: CA Sampling Point: SP01
 Investigator(s): KLT, JW Section, Township, Range: _____
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0-1
 Subregion (LRR): LRR C Lat: 38.061857 Long: -122.816150 Datum: DD
 Soil Map Unit Name: Inverness loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
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Remarks:
 The site is located in a riparian marsh area near a clogged culvert that runs under Sir Frances Drake Blvd and at the end of a wetland ditch. In a time of severe drought (API), hydrology disturbed by clogged culvert creating ponding at the mouth of culvert.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Alnus rhombifolia</i></u>	60	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u><i>Salix lasiolepis</i></u>	10	No	FACW																	
3. <u><i>Acer negundo</i></u>	10	No	FACW																	
4. _____																				
	80	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u> radius)																				
1. <u><i>Acer negundo</i></u>	15	Yes	FACW	Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>62</u></td> <td>x 1 = <u>62</u></td> </tr> <tr> <td>FACW species <u>115</u></td> <td>x 2 = <u>230</u></td> </tr> <tr> <td>FAC species <u>2</u></td> <td>x 3 = <u>6</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>179</u> (A)</td> <td><u>298</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.66</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>62</u>	x 1 = <u>62</u>	FACW species <u>115</u>	x 2 = <u>230</u>	FAC species <u>2</u>	x 3 = <u>6</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>179</u> (A)	<u>298</u> (B)	Prevalence Index = B/A = <u>1.66</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>62</u>	x 1 = <u>62</u>																			
FACW species <u>115</u>	x 2 = <u>230</u>																			
FAC species <u>2</u>	x 3 = <u>6</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>179</u> (A)	<u>298</u> (B)																			
Prevalence Index = B/A = <u>1.66</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
	15	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u> radius)																				
1. <u><i>Juncus effusus</i></u>	20	Yes	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u><i>Oenanthе sарmentosa</i></u>	35	Yes	OBL																	
3. <u><i>Nasturtium officinale</i></u>	25	Yes	OBL																	
4. <u><i>Urtica dioica</i></u>	2	No	FAC																	
5. <u><i>Erythranthe guttata</i></u>	2	No	OBL																	
6. <u><i>Myosotis</i></u>	3	No																		
7. _____																				
8. _____																				
	87	=Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
2. _____																				
		=Total Cover																		
% Bare Ground in Herb Stratum <u>3</u> % Cover of Biotic Crust <u>0</u>																				

Remarks:
 Wetland vegetation observed. Passed dominance test.

SOIL

Sampling Point: SP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					Sandy	decomposed granite
4-6	10Y 3/1	100					Mucky Sand	organic material throughout
6-11	10YR 3/1	100					Sandy	silty decomposed granite
11-17	10YR 3/1	100					Sandy	decomposed granite

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
---	--

Remarks:
 Soil problematic due to large volume of sediment accumulated from upstream deposits. Layer of buried organic material that has become mucky observed with the first 6". Decomposed granite layer not a clear horizon. No redox visible as soil was highly saturated. Wetland soil indicator S1: Sandy Mucky Mineral observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>9</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Hydrology indicators A2 & A3 observed. Water table ~ 1.5" from soil surface, soils saturated throughout.

**Attachment C:
Site Photographs**



Photo 1. Photograph of the Freshwater Marsh feature just north of the filled in, double box culvert within the Project Area, photo taken on 6/20/2022.



Photo 2. Photograph of the Freshwater Marsh feature at top of filled double-box culvert, photo taken during site visit on 5/11/2022.



Photo 3. Photograph of Perennial Stream feature, photo taken on 5/11/2022.



Photo 4. Photograph of Perennial Stream feature Brackish Marsh in the background, taken on 5/11/2022.



Photo 5. Photograph of Riparian Wetland against the south side of the double-box culvert and retaining wall. Photo taken on 6/20/2022.



Photo 6. Photograph of Riparian Wetland with flowing water, photo taken on 6/20/2022.



Photo 7. Photograph of Brackish Marsh near the mouth of the Intermittent stream and Lagunitas Creek, photo taken on 6/20/2022.



Photo 8. Photograph of Brackish Marsh where it meets Lagunitas Creek, photo taken on 6/20/2022.



Photo 9. Photograph of Wetland Ditch with flowing water, photo taken on 6/20/2022.



Photo 10. Photograph of Wetland Ditch with dense hydrophytic plants. Photo taken on 6/20/2022.



Photo 11. Photograph of Wetland Ditch at the intersection of Sir Francis Drake Boulevard and Bear Valley Road. Photo taken on 6/20/2022.

**Attachment D:
Observed Plants**

Attachment D. Plant Species Observed within the Project Area on June 20, 2022.

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Acer negundo</i>	Boxelder	native	tree	-	-	FACW
<i>Aesculus californica</i>	Buckeye	native	tree	-	-	-
<i>Alnus rhombifolia</i>	White alder	native	tree	-	-	FACW
<i>Amsinckia menziesii</i>	Small flowered fiddleneck	native	Annual herb	-	-	-
<i>Artemisia douglasiana</i>	California mugwort	native	perennial herb	-	-	FAC
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
<i>Baccharis pilularis</i>	Coyote brush	native	shrub	-	-	-
<i>Brassica rapa</i>	Common mustard	non-native (invasive)	annual herb	-	Limited	FACU
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
<i>Calystegia sp.</i>	-	-	-	-	-	-
<i>Cirsium arvense</i>	Canada thistle	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Cirsium vulgare</i>	Bull thistle	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Conium maculatum</i>	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW
<i>Cyperus sp.</i>	-	-	-	-	-	-
<i>Digitalis purpurea</i>	Foxglove	non-native (invasive)	perennial herb	-	Limited	FACU
<i>Dipsacus fullonum</i>	Wild teasel	non-native (invasive)	perennial herb	-	Moderate	FAC
<i>Epilobium ciliatum</i>	Slender willow herb	native	perennial herb	-	-	FACW
<i>Equisetum arvense</i>	Common horsetail	native	fern	-	-	FAC
<i>Erythranthe guttata</i>	Seep monkeyflower	native	perennial herb (rhizomatous)	-	-	OBL

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Eschscholzia californica</i>	California poppy	native	annual, perennial herb	-	-	-
<i>Festuca perennis</i>	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
<i>Galium aparine</i>	Cleavers	native	annual herb	-	-	FACU
<i>Geranium dissectum</i>	Wild geranium	non-native (invasive)	annual herb	-	Limited	-
<i>Hedera canariensis</i>	Canary ivy	non-native (invasive)	vine	-	High	-
<i>Holcus lanatus</i>	Common velvetgrass	non-native (invasive)	perennial grass	-	Moderate	FAC
<i>Juncus effusus</i>	Common bog rush	native	perennial grasslike herb	-	-	FACW
<i>Lonicera involucrata</i>	Coast twinberry	native	shrub	-	-	FAC
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native	perennial herb	-	-	FAC
<i>Lysimachia arvensis</i>	Scarlet pimpernel	non-native	annual herb	-	-	FAC
<i>Marah fabacea</i>	California man-root	native	perennial herb, vine	-	-	-
<i>Medicago polymorpha</i>	Bur clover	non-native (invasive)	annual herb	-	Limited	FACU
<i>Myosotis sp.</i>	-	-	-	-	-	-
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL
<i>Notholithocarpus densiflorus</i>	Tanoak	native	tree, shrub	-	-	-
<i>Oenanthe sarmentosa</i>	Water parsley	native	perennial herb	-	-	OBL
<i>Plantago coronopus</i>	Cut leaf plantain	non-native	annual herb	-	-	FAC
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Polystichum munitum</i>	Western sword fern	native	fern	-	-	FACU

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Potentilla anserina</i>	Silver weed cinquefoil	native	perennial herb	-	-	OBL
<i>Prunella vulgaris</i>	Self-heal	native	perennial herb	-	-	FACU
<i>Ribes</i> sp.	-	-	-	-	-	-
<i>Rosa californica</i>	California wild rose	native	shrub	-	-	FAC
<i>Rubus parviflorus</i>	Thimbleberry	native	vine, shrub	-	-	FAC
<i>Rubus ursinus</i>	California blackberry	native	vine, shrub	-	-	FAC
<i>Rumex</i> sp.	-	-	-	-	-	-
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW
<i>Scirpus microcarpus</i>	Panicked bulrush	native	perennial herb	-	-	OBL
<i>Scrophularia californica</i>	California bee plant	native	perennial herb	-	-	FAC
<i>Sonchus oleraceus</i>	Common sow thistle	non-native	annual herb	-	-	UPL
<i>Stachys ajugoides</i>	Hedge nettle	native	perennial herb	-	-	OBL
<i>Stipa miliacea</i> var. <i>miliacea</i>	Smilo grass	non-native (invasive)	perennial grass	-	Limited	-
<i>Toxicodendron diversilobum</i>	Poison oak	native	vine, shrub	-	-	
<i>Trifolium</i> sp.	-	-	-	-	-	-
<i>Typha</i> sp.	-	-	-	-	-	-
<i>Umbellularia californica</i>	California bay	native	tree	-	-	FAC
<i>Urtica dioica</i>	Stinging nettle	native	perennial herb	-	-	FAC
<i>Veronica americana</i>	American brooklime	native	perennial herb	-	-	OBL
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU
<i>Vinca major</i>	Vinca	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Zantedeschia aethiopica</i>	Calla lily	non-native (invasive)	perennial herb	-	Limited	OBL

¹ California Native Plant Society. 2020. Inventory of Rare and Endangered Plants (online edition, v9-01 1.5). Sacramento, California. Online at: <http://rareplants.cnps.org/>; most recently accessed: June 2022.

FE: Federal Endangered
FT: Federal Threatened
SE: State Endangered

ST: State Threatened
SR: State Rare
Rank 1A: Plants presumed extinct in California
Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
Rank 2: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3: Plants about which we need more information – a review list
Rank 4: Plants of limited distribution – a watch list

² California Invasive Plant Council. 2022. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: <http://www.cal-ipc.org/paf/>; most recently accessed: June 2022.

High: Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate: Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited: Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed: Assessed by Cal-IPC and determined to not be an existing current threat

³ U.S. Army Corps of Engineers. 2020. National Wetland Plant List, version 3.5. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Online at: <http://wetland-plants.usace.army.mil/>; most recently accessed: June 2022.

OBL: Almost always found in wetlands
FACW: Usually found in wetlands
FAC: Equally found in wetlands and uplands
FACU: Usually not found in wetlands
UPL: Almost never found in wetlands
NL: Not listed, assumed almost never found in wetlands
NI: No information; not factored during wetland delineation