SAN MATEO
RESOURCE
CONSERVATION
DISTRICT

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HALF MOON BAY, CA 94019

SANMATEORCD.ORG

# REQUEST FOR BIDS

## BUTANO FARMS SAN FRANCISCO GARTER SNAKE HABITAT ENHANCEMENT PROJECT

*Sponsored by the*
**SAN MATEO RESOURCE CONSERVATION DISTRICT**

Distributed
May 19, 2021

# REQUEST FOR BIDS

BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

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EXHIBIT A: Project Description, Plans, and Specifications
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EXHIBIT F: Prevailing Wage Requirements
EXHIBIT G: Certificate of Compliance
EXHIBIT H: Billing Instructions for Contractors
EXHIBIT I: Designs and Specifications (Aquatic)
EXHIBIT J: Project Biological Opinion
EXHIBIT K: Mitigation, Monitoring, and Reporting Program


**Published by the authority of:**
San Mateo RCD Board of Directors
80 Stone Pine Road, Suite 100
Half Moon Bay, CA 94019
(650) 712-7765

**Bid Completion Checklist**

BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

For bids to be considered complete, prospective contractors must include:

- ☐ Signed and completed copy of all sections of Exhibit B
  - ☐ Bid Schedule
  - ☐ Subcontractors
  - ☐ References
  - ☐ Valid contractor and DIR number
- ☐ Contractor Questionnaire responses (Exhibit C)
- ☐ Signed and completed copy of Prevailing Wage Requirements (Exhibit F)

All other attached documents are included for informational purposes only and are not required to be completed at the time of submission.

# REQUEST FOR BIDS

BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

## 1. Introduction

The San Mateo Resource Conservation District welcomes contractors to bid on the Butano Farms San Francisco Garter Snake Habitat Enhancement Project (project) to enhance habitat for San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) and California red-legged frog (*Rana draytonii*). The Butano Farms project area consists of 65 acres (Project Area) in San Mateo County, CA owned and managed by the Peninsula Open Space Trust (POST). Project activities include modification of approximately 2 acres of existing pond and wetland and 14.5 acres of surrounding upland vegetation to enhance aquatic and upland habitat for San Francisco garter snake (SFGS) and California red-legged frog (CRLF) while also supporting active cattle grazing on the property.

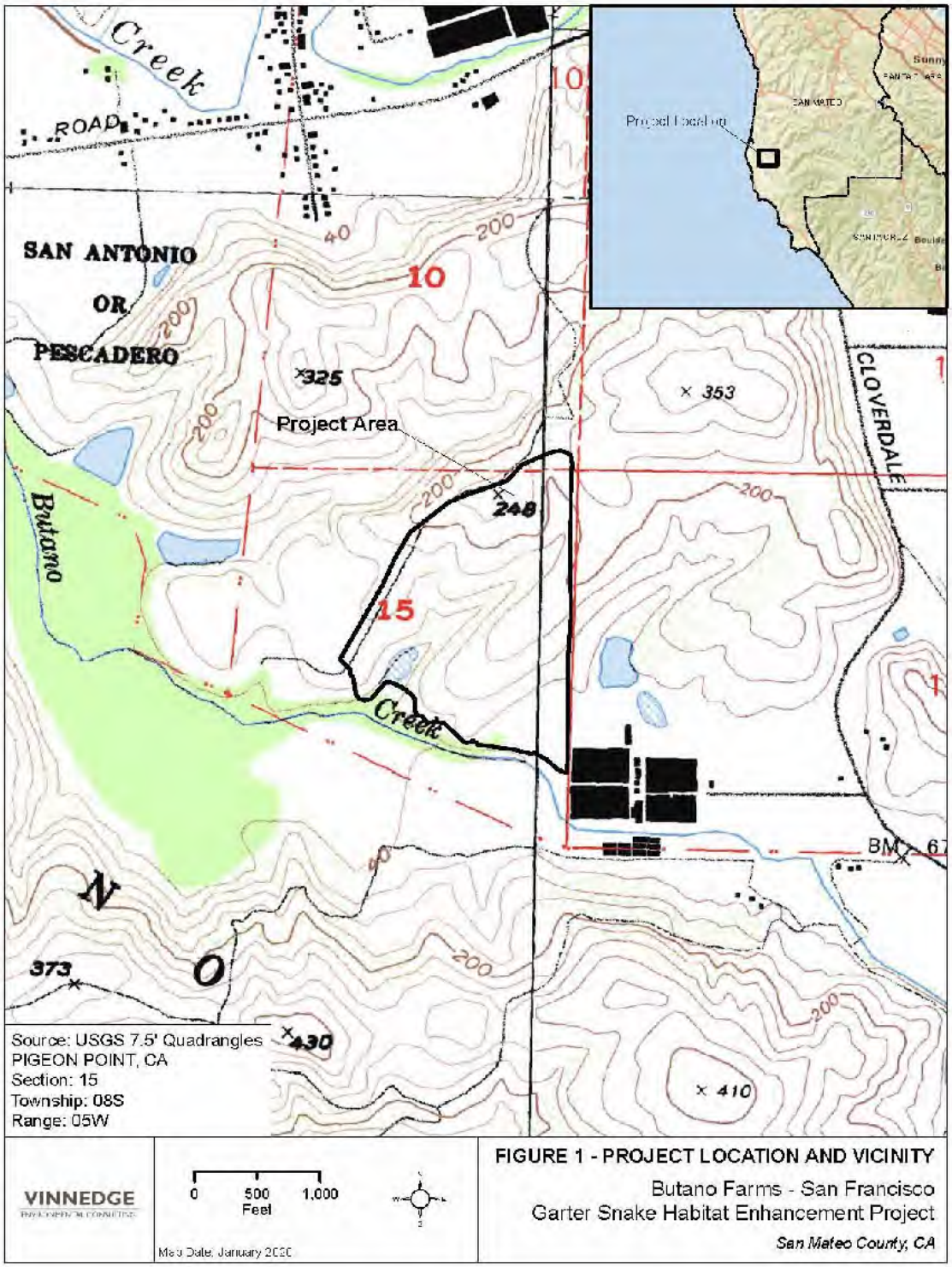
The project provides mitigation for biological impacts associated with Pacific Gas & Electric Company (PG&E) Line 101 Inline Inspection and Upgrade, and Lomita Park Station Rebuild Project in the City of Millbrae, San Mateo County. PG&E provided financial contribution to RCD for management of land with emphasis on management for San Francisco garter snake. Restoration activities are consistent with the recovery actions outlined in the San Francisco Garter Snake Recovery Plan, which concludes that restoration of upland, riparian, and aquatic habitat is necessary for the recovery of the SFGS and will support recovery of the CRLF (USFWS 1985; USFWS 2006a).

The RCD seeks qualified contractors (Contractor) to implement project actions detailed in the Project Description, Plans, and Specifications (Exhibit A).

Contracting Entity: The RCD is the contracting entity and project manager on behalf of the landowner, POST. The RCD is a non-regulatory public benefit district to help people protect, conserve, and restore natural resources through information, education, and technical assistance programs. The RCD is a division of state government under Division 9 of the Public Resources Code.

## 2. Location

The project is located within Butano Farms, part of the Cloverdale Ranch complex, owned by POST within San Mateo County, California just south of the town of Pescadero. The project area spans 65-acres encompassing three ridges, riparian habitat, and aquatic habitat. The project site is adjacent to Butano Creek, and a previous project in 2017 for flood plain reconnection. See Figure 1 Project Location and Vicinity.


Creek
ROAD
SAN ANTONIO
OR
PESCADERO
Project Area
Butano
Creek
CLOVERDALE
Project Location
SAN MATEO
Source: USGS 7.5' Quadrangles
PIGEON POINT, CA
Section: 15
Township: 08S
Range: 05W
VINNEDGE
0
500
1,000
Feet
Map Date: January 2020
FIGURE 1 - PROJECT LOCATION AND VICINITY
Butano Farms - San Francisco
Garter Snake Habitat Enhancement Project
San Mateo County, CA

**3. Plans and Work Sites**

The submission of a bid shall constitute certification by the bidder that they have:

A. Visited the project site to familiarize themselves with local conditions that in any manner affect cost, progress, or performance of the work;
B. Familiarized themselves with all federal, state and local laws, ordinances, rules, and regulations that in any manner affect the cost, progress, or performance of the work;
C. Thoroughly examined and understand the bid documents, exhibits, plans, specifications, and reports.

**4. Scope of Work**

Bids shall include costs for furnishing all labor, equipment, and materials necessary to perform all work as described in Exhibit A.

Labor and equipment: Bids shall include costs for furnishing necessary labor and equipment to carry out all tasks detailed in Exhibit A.

- Subcontracts are allowable for specialized work. Subcontractors are subject to approval by the RCD and should be identified on the Cost Proposal form.
- Labor costs (including subcontractor labor costs) shall be based on current prevailing wage rates (see section entitled "Wages" below).
- Equipment costs shall include all fuel costs. Added fuel surcharges not included in the bid will not be paid.

Materials: All required materials and any associated delivery costs shall be included in the bid.

**5. Project Cost and Funding**

Funding for the project is through grants from PG&E Corporation. The cost estimate for the project is approximately $635,000.00.

**6. Documentation**

Attached to this request for bids are copies of project and contract documents, including the following:

EXHIBIT A: Project Description, Plans, and Specifications
EXHIBIT B: Cost Proposal
EXHIBIT C: Contractor Questionnaire
EXHIBIT D: Sample Contract
EXHIBIT E: San Mateo RCD Insurance Requirements
EXHIBIT F: Prevailing Wage Requirements
EXHIBIT G: Certificate of Compliance
EXHIBIT H: Billing Instructions for Contractors
EXHIBIT I: Designs and Specifications (Aquatic)
EXHIBIT J: Project Biological Opinion
EXHIBIT K: Mitigation, Monitoring, and Reporting Program

Additional project specifications and information may be provided at the bid tour and/or through formal addenda to the bid documents. Bidders are expected to thoroughly examine and understand the contents of each of these documents, which contain pertinent and specific information regarding all aspects of project construction and administration.

## 7. Proposal and Work Schedule

| | |
|---|---|
| Date of announcement | 5/19/2021 |
| RSVP Bid Tour | 6/1/2021 by 9:00 am<br><br>The bid tour is mandatory. All interested contractor MUST RSVP for the bid tour.<br><br>RSVP via email to Amy Kaeser at amy@sanmateoRCD.org. |
| Bid Tour (**mandatory for all bidders**) | 6/1/2021 at 2:00 pm<br><br>The bid tour is mandatory for all bidders. Driving directions to the project site in Pescadero, CA will be provided upon RSVP. The site is accessed via dirt road; high clearance vehicle recommended. |
| Questions/Inquiries Accepted | 6/1/21 - 6/17/2021 at 3:00 pm |
| Deadline for proposal submissions | 6/21/2021 at 12:00 pm NOON (PST). Late submissions will not be considered.<br><br>Submit bids via email to amy@sanmateoRCD.org with "Butano Farms Bid Submission" in the subject line. Note file size limit is 10MB. Multiple emails are acceptable if necessary. |
| Public Bid Opening | 6/21/2021 at 4:00 pm virtually via Zoom.<br><br>https://us02web.zoom.us/j/83927214607<br><br>Meeting ID: 839 2721 4607<br>One tap mobile<br>+16699006833,,83927214607# US (San Jose)<br><br>Email amy@sanmateoRCD.org for additional Zoom meeting information. |
| Anticipated Notification of Award | 7/2/2021 |
| Anticipated Contract Date | 7/12/2021 |
| Work Commence Date with the following conditions:<br>-Permitting is complete and all permit measures are met<br>-All work is dependent on favorable weather conditions<br>-Contractor shall coordinate commencement with RCD<br>-No work shall begin until authorized by RCD | 7/26/2021 |
| Work Completion Date | 10/31/2021 (construction)<br>9/30/2022 (temporary materials removal) |

**8. Prevailing Wage Laws (Exhibit F)**
This project is considered a public work or public improvement and is therefore subject to Prevailing Wage pursuant to Part 7 of Division 2 of the California Labor Code (commencing with Section 1720).

**9. Registration Pursuant to Labor Code Section 1725.5**
All contractors and subcontractors who will perform any portion of the work must be currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. Bids submitted by contractors, or including subcontractors, who are not registered will be rejected.

**10. Permits**
The RCD will be responsible for obtaining permits. Copies of all permits will be provided to the Contractor, and one copy of each permit must be kept at the job site at all times. All work must be conducted per regulatory agency permits and requirements.

**11. Inspections**
All work performed on this project shall be subject to regular inspections. The Contractor shall not cover up any work prior to these inspections. It is the Contractor's responsibility to contact the Project Manager to conduct required inspections. Inspections shall occur during construction and at job completion.

**12. Sensitive Areas**
The project site is an environmentally sensitive area. Contractor shall take all precautions and measures necessary to protect the environmental integrity of the site, including but not limited to the protection of all plants, animals, and aquatic life. Contractor will follow all measures in the Biological Opinion (Exhibit J) and all other environmental compliance and permit measures.

**13. Licenses**
To submit a bid on this contract, a valid Contractor's License issued by the Contractor's State License Board is required.

**14. Safety Plan**
A written safety plan shall be submitted to RCD by the successful bidder prior to the start of construction activities.

**15. Evaluation of Bids**
The RCD may choose the most cost effective proposal that also meets all criteria put forth in this Request for Bids. RCD has the right to reject any and all proposals and add alternates if bids do not satisfy the requirements for a complete bid submission.

**16. Contract and Payment**
A lump sum contract will be awarded to the successful bidder for all work described in Exhibit A and the Scope of Work. Submission of invoice for lump sum payment to the Contractor may be made following completion of work and final inspection, or progress invoices may be submitted for payment in accordance with the provisions described in the attached sample contract (Exhibit D). Payment policy and instructions for vendors are attached hereto as Exhibit H.

**17. Bonds**

The Contractor shall provide a performance bond in favor of the RCD in the amount of one hundred percent (100%) of the contract price and a payment bond in favor of the RCD in the amount of fifty percent (50%) of the contract price.

Contractor will provide signed copies of the following before commencement of the work:

- Material and Labor Payment Bond
- Performance Bond
- Certificate of Compliance (Exhibit G)
- Signed proof of liability coverage

**EXHIBIT A**
**Project Description, Plans, and Specifications**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

## Summary

The Butano Farms San Francisco Garter Snake Habitat Enhancement Project (project) will enhance habitat for San Francisco garter snake (*Thamnophis sirtalis tetrataenia; SFGS*) and California red-legged frog (*Rana draytonii; CRLF*). The Butano Farms project area consists of 65 acres (Project Area) in San Mateo County, CA owned and managed by the Peninsula Open Space Trust (POST). Project activities include vegetation management targeted across upland habitat and modification to an existing pond and surrounding aquatic habitat.

The project provides mitigation for biological impacts associated with Pacific Gas & Electric Company (PG&E) Line 101 Inline Inspection and Upgrade, and Lomita Park Station Rebuild Project in the City of Millbrae, San Mateo County. PG&E provided financial contribution to the RCD for management of land with emphasis on management for San Francisco garter snake (SFGS). Restoration activities are consistent with the recovery actions outlined in the San Francisco Garter Snake Recovery Plan, which concludes that restoration of upland, riparian and aquatic habitat is necessary for the recovery of SFGS, and will support recovery of the California red-legged frog (CRLF) (USFWS 1985; USFWS 2006a).

## Ecological Goal and Objectives

The goal of the project is to improve habitat conditions for SFGS by meeting the following objectives. These objectives are described in more detail below.

1. Create and maintain shallow “bench” habitat around the northern and western sides of the pond margin with open emergent or submergent vegetation that allows sunlight to penetrate and warm the water to increase successful metamorphosis of California red-legged frog and chorus frog tadpoles.
2. Maintain at least 25% cover of open water habitat in the pond through a combination of deepening and extending the existing pond footprint to provide deep water refuge for various prey species of the San Francisco garter snake, including California red-legged frog.
3. Maintain a 25-50% cover of emergent vegetation around pond margins for frog breeding and snake cover.
4. Protect pond water quality and longevity (sediment, nutrients, and pathogens) to the greatest extent practicable.
5. Control and eradicate invasive species.
6. Reduce woody encroachment into grassland in the surrounding upland areas.

## Restoration Activities

Project activities consist of upland habitat enhancement and aquatic habitat restoration activities. Specific tasks associated with each of the project elements are detailed in Table 1 and depicted in Figures 2 through. See Exhibit I for Aquatic Habitat Restoration Designs and Specifications. All project activities will be consistent with the Biological Opinion (Exhibit J), Mitigation, Monitoring, and Reporting Program (Exhibit K), and all other permit measures.

**Table 1. Project Design Elements**

| Project Elements | Description of Activity | Approximate Acreage |
|---|---|---|
| Pre-Project Activities & Site Preparation | Construct a temporary access road and staging area | 0.24 |
| | Install temporary fencing around sensitive resource areas, temporary cattle exclusion fencing where needed, and a turbidity curtain between the working area and the rest of the existing pond | NA |
| Upland Habitat Enhancement Activities | Reduce woody encroachment of trees into grassland by cutting or girdling | 2.6 acres |
| | Reduce shrub cover to target 10-30% by manual, mechanical, and/or chemical techniques | 7.7 acres |
| | Reduce invasive weeds by manual, mechanical, and/or chemical techniques | 1.8 acres |
| | Spread mulch from woody brush and tree control over areas of potential erosion, at 4-18” thick | 2.4 acres |
| Aquatic Habitat Restoration Activities | Excavate two shallow ponds | 0.08 acre and 0.11 acre |
| | Excavate a deep water pond | 0.31 acre |
| | Create a wetland bench on the north side of the deep water pond | 0.18 acre |
| | Place fill to create a basking bench on the west side of the two new shallow ponds | 0.52 acre |
| | Construct sediment retention berms to the north and between the two shallow ponds | 0.13 acres |
| | Convert willow-dominated area to native grassland dominated area by use of manual, mechanical, and grazing methods | 0.5 acre |
| Post-Construction | Seeding and mulching disturbed/exposed soils | To be determined based on post-construction conditions |
| | Restore access route from Pescadero Creek Road to original condition | To be determined based on post-construction conditions |
| | Install temporary fencing around exposed soil on graded slopes in the wetland area to reduce erosion (to be removed after ~ one year) | NA |

**Aquatic Habitat Restoration Activities**
Aquatic habitat will be expanded, enhanced, and protected. The activities are listed in Table 1 described in detailed in Exhibit I. Activities are summarized below.

Two new shallow ponds will be excavated to the northeast of the existing pond. These new ponds will be seasonal and have depths of 10-20 inches to provide shallow water habitat for CRLF and Sierra tree frogs, both food sources of SFGS. A deep water pond will be excavated at the north end of the existing pond, to a depth of 3-7 feet, and a wetland bench will extend to the north to a achieve a water depth of 10-20 inches. Willows will also be thinned along the western margin of the existing pond to enhance access to the pond and facilitate a grassland transition.

Berms will be constructed from material removed from the pond and placed in the willowed area to the northeast of the pond. These constructed berms will function to slow the flow of water moving through the floodplain and allow sediment to fall out prior to the water reaching the pond. The berms will ultimately build up the elevation of the inlet channel, provide natural grade control to avoid headcutting and minimize future erosion in the gullies. Excavated material from the pond will also be used to build a basking bench on the west side of the pond. All excavated material will remain onsite (no off haul from the site).

**Upland Habitat Restoration Activities**
The project will result in approximately 61 acres of enhanced upland habitat for SFGS with approximately 14.5 acres of direct impact. Activities are detailed below.

- **Reduce encroachment of trees into grassland (2.6 acres)**: Douglas fir and Monterey pine trees of varying sizes are encroaching onto the grassland and coastal shrubland habitat. These two species, up to 25 trees total, are to be removed in selected areas (Figure 4, blue) and any seedlings found are to be pulled. Smaller diameter trees and branches removed are to be chipped on site and utilized as mulch for soil enhancements (see below). Larger diameter trees may be girdled to provide standing snag habitat for wildlife. Size requirements for “small” or “large” diameter trees will determined by project manager and selected contractor. It is estimated that 20 trees will be cut and 5 trees will be girdled. All actions should limit ground disturbance to the maximum extent feasible and soil protective measures should be considered.

- **Reduce shrub encroachment into grassland (7.7 acres)**: Manual, mechanical, and chemical techniques may be used to control the cover of shrubs within the shrub control areas (Figure 4, orange). A combination of low-impact cutting (hand or small chainsaw) and cut-stump treatment is preferred to reduce ground disturbance. Species for control consist primarily of coyote brush (*Baccharis pillularis*), but also include coastal shrub species such as poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*).

  Shrub control will only be conducted within shrub control areas to preserve the matrix of habitats and increase concentration on critical areas for grassland enhancement and to reduce woody encroachment. Before shrub control activities, an RCD biologist will work with the contractor to determine shrub habitat ‘islands’ where shrubs will be conserved within the control areas in order to meet the 10-30% cover objectives. These

islands will differ in size and shape to increase the diversity of refugia that may be needed by SFGS and CRLF.

Material resulting from this activity should be chipped along with the tree material and utilized as soil enhancements. Some material may be left in habitat piles onsite.

- **Reduce invasive weeds (1.8 acres)**: Mechanical, manual, and chemical control may be used to control jubata grass (Figure 4, yellow). Jubata grass can act as refugia for San Francisco garter snake. When implementing control, efforts should be made to maintain the vegetative function of jubata grass (i.e. chemical control where feasible). Chemical control is recommended for dense, monoculture stands of weeds, to prevent erosion from manual or mechanical removal. Manual removal can be done for retreatment efforts or small, individual plants when erosion is not an issue, or where herbicides cannot be utilized. No herbicide use is allowed within 60 feet of the pond. See Biological Opinion (Exhibit J, pages 27-28) for permitted herbicides, concentrations, and BMPs.
- **Reduce erosion and enhance soil (2.4 acres)**: For selected areas (Figure 4, green), mulch should be applied in a thick layer (4-18”). The thickness of the mulch will depend on the availability of mulch from woody brush and tree control, slope, and site needs. Areas of high weed or high erosion potential will be mulched at greater thickness. Only mulch generated onsite will be used; no outside material will be brought in for these areas.

## Construction

Construction of project actions is expected to occur approximately August 1 – October 15, 2021.

- Aquatic restoration activities are estimated to take approximately 8-10-weeks. Work within the wetted pond is restricted to the time after CRLF tadpoles are likely to have metamorphosized and before CRLF breeding season and seasonal rains begin (i.e. August 15 – October 31).
- Upland restoration activities are estimated to take approximately 3-8 weeks. Use of herbicide is restricted to August 15 – October 31. Vegetation removal taking place prior to September 1 will require a bird survey (survey to be coordinated with and completed by the RCD if required).
- Work must be completed by October 15. Work is allowed from October 15 to October 31 only if there is a 0% chance of rain in the 7-day forecast.

Species and permit conditions may further restrict timing of certain activities. Contractor will coordinate schedule with the RCD to ensure all permit conditions are met.

Heavy equipment, including scrapers, excavator, backhoes, and haul trucks may be used to construct the aquatic habitat portion of the proposed project. Upland habitat construction activities would require chainsaws, chippers, masticator and smaller mechanical and manual equipment. Low ground pressure equipment would be used to transport exported material across the Project Area and wetland mats would be used to minimize soil compaction in work areas. Equipment and vehicles are to be staged along existing access roads or dedicated staging areas. All equipment must be cleaned prior to arrival on-site to reduce the chances of non-native seeds or species being introduced by construction equipment.

All best management practices, avoidance and minimization measures, and permit requirements must be observed. See Exhibit J for the Biological Opinion for the project (see pages 18-28 for measures specific to this project) and Exhibit K for the Mitigation, Monitoring, and Reporting Program.

## Access and Staging

The project area is accessed via a gated dirt road off Pescadero Creek Road, just east of the center of the town of Pescadero. Contractors will be provided gate access. The project area is approximately a mile and a half south on the dirt road. The northwest and northeast sides of the project area are edged by two dirt roads that are accessible to large equipment. The staging area is indicated in Figure 2, on the west side of the project area just off the dirt access road. Roads may not be accessible when wet. The property has active cattle tenant and cattle will likely be onsite during construction. Staging area should be fenced to exclude cattle. Following construction, any damage to the access road from into the property from Pescadero Creek Road is to be restored.

**Figure 2. Project Area**

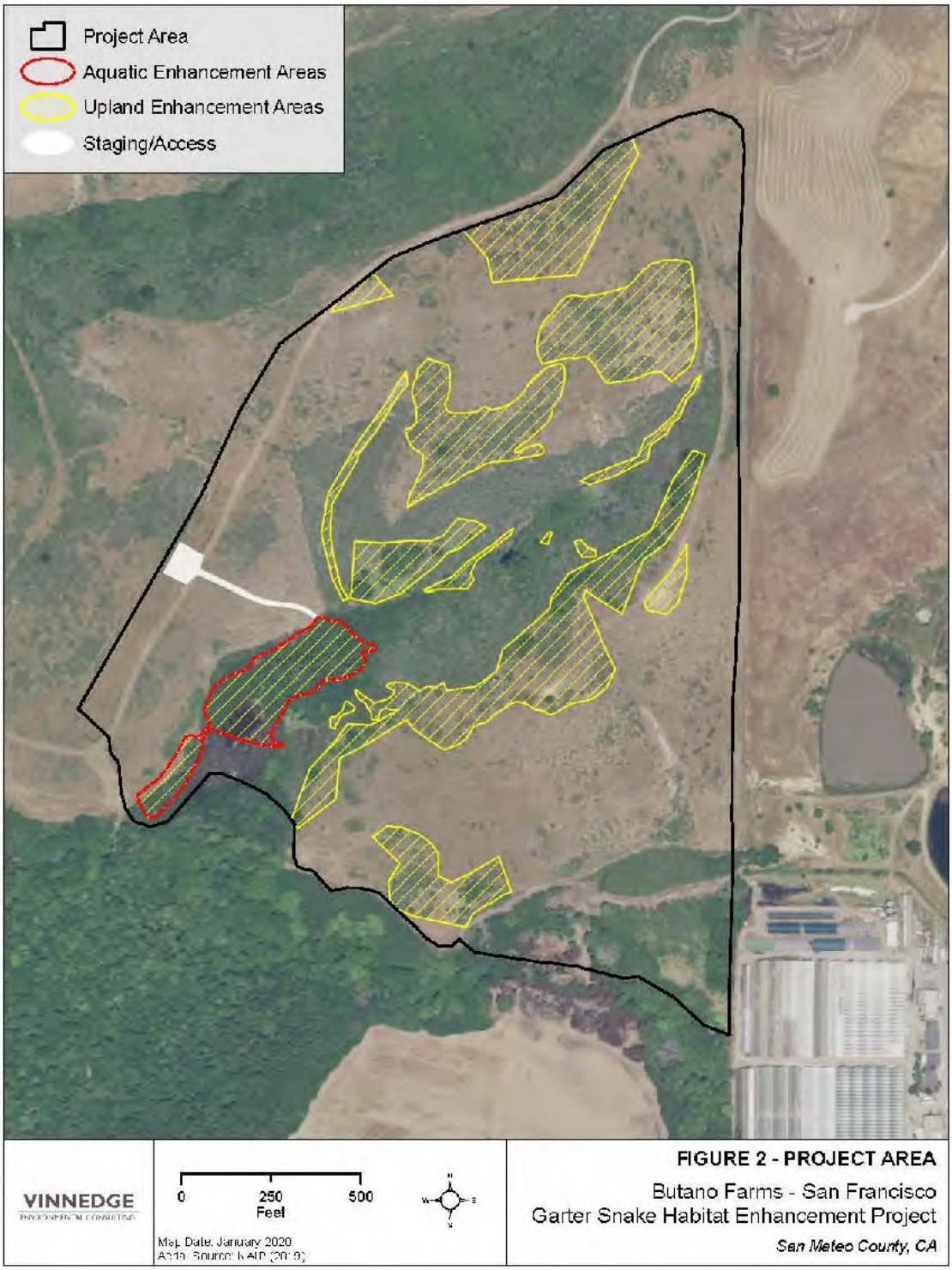


**Figure 3. Existing Habitat**

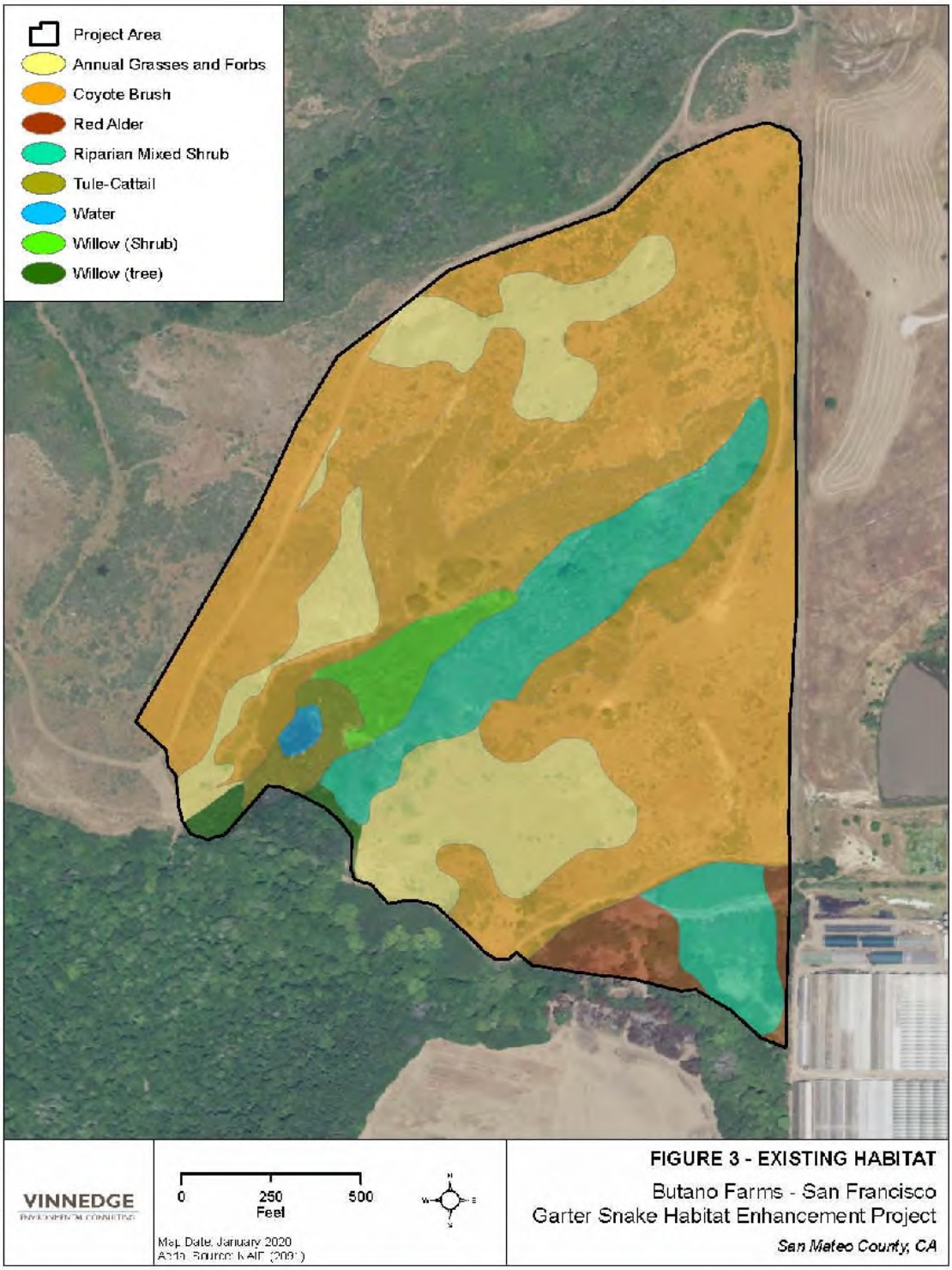
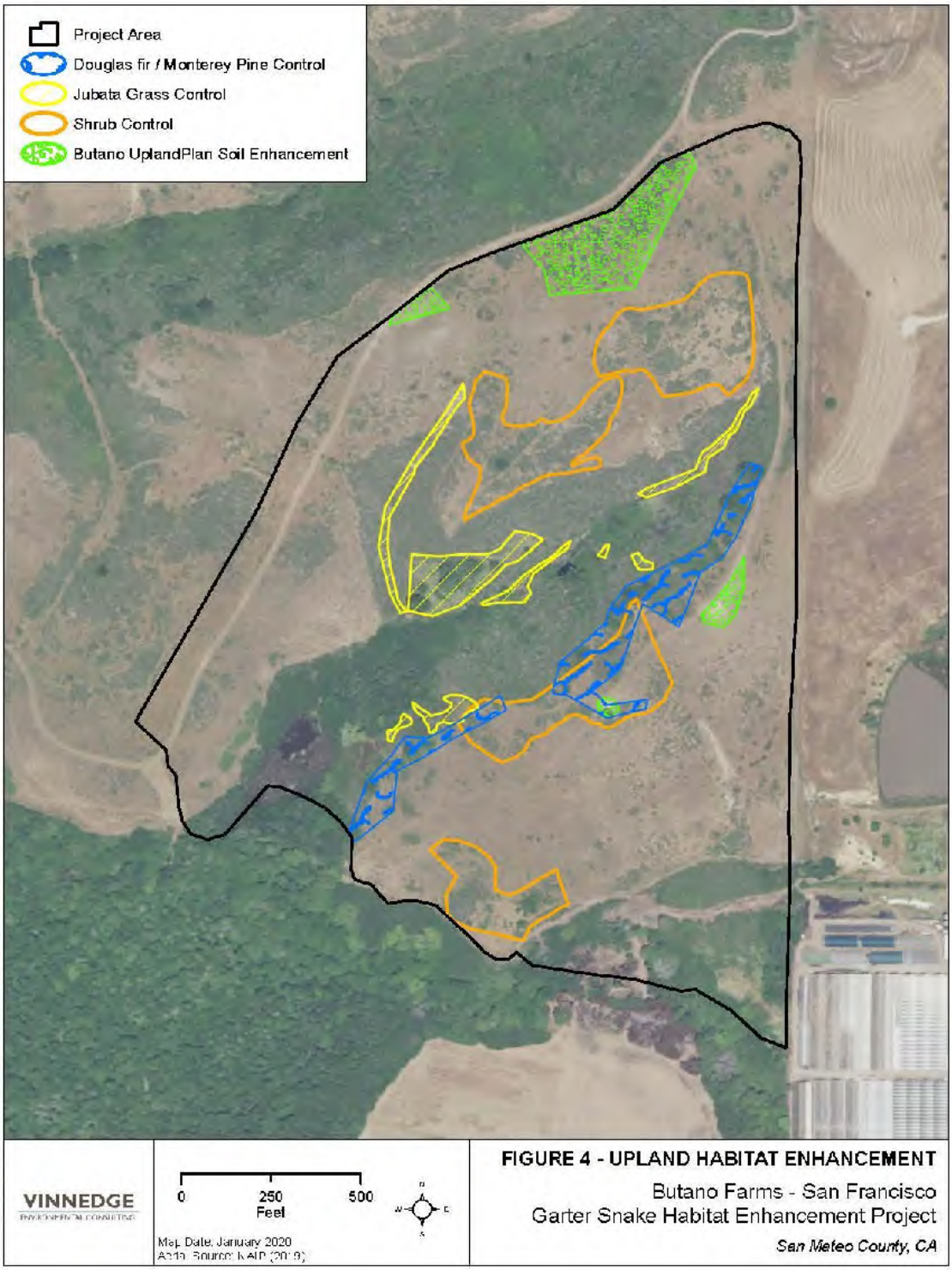


**Figure 4. Upland Habitat Enhancement**



## Site Photos

*Existing Pond (facing south)*

*View of pond from upland (facing south)*

*View of upland from west edge of pond (facing north)*

*Upland habitat including coyote brush, jubata grass (facing south)*

**EXHIBIT B**
**Cost Proposal**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

To: Board of Directors, San Mateo Resource Conservation District

We, the undersigned, having familiarized ourselves with all project plans, permit conditions, and local conditions affecting the cost of work to be done, along with the cost proposal and contract documents, hereby propose to provide and furnish all labor, materials, utilities, transportation, and equipment of all types and kinds and to complete the project as specified and described in Exhibit A.

We, the undersigned, agree to perform all of the above work to its completion and to the satisfaction of the RCD for the rates and prices for said work as indicated below.

We, the undersigned, understand that the contract is a lump sum contract. The Contractor cannot be paid over the sum not to exceed without a change order from the RCD. The RCD will not be responsible for any loss of anticipated profits due to reductions in the size of the contract.

We, the undersigned, are satisfied as to the conditions to be encountered, as to the character, quality, and scope of work to be performed, the quantities of materials to be furnished and as to the requirements of the plans and specifications, and recognize that: the plans used for the drawings of the work may differ from the actual physical site; dimensions in the plans are approximate, and before proceeding with the work, it is the Contractor's responsibility to check the site in relation to the drawings and specifications and report any discrepancies to the RCD.

**Bid Schedule**

| ITEM NO. | ITEM | ESTIMATED QUANTITY | UNIT | UNIT COST | TOTAL |
|---|---|---|---|---|---|
| 1 | MOBILIZATION & DEMOBILIZATION | 1 | LS | | |
| 2 | DEVELOP AND RESTORE TEMPORARY ACCESS ROUTE | 1 | LS | | |
| **AQUATIC ACTIVITIES** | | | | | |
| 3 | TEMPORARY FENCE – TYPE ESA | 300 | LS | | |
| 4 | TEMPORARY LIVESTOCK FENCE | 560 | LF | | |
| 5 | FIBER ROLL | 400 | LF | | |
| 6 | SILT FENCE | 575 | LF | | |
| 7 | CLEARING AND GRUBBING, AQUATIC (EXCLUDES THINNING AREA) | 1 | LS | | |
| 8 | TRIM AND THIN WILLOWS (SOUTHWEST SIDE POND) | 0.3 | AC | | |
| 9 | DEWATERING | 1 | LS | | |
| 10 | UNCLASSIFIED EXCAVATION (STAYS ONSITE) | 3,400 | CY | | |
| 11 | ENGINEERED FILL IN BENCH | 3,000 | CY | | |
| 12 | ENGINEERED FILL IN BERMS | 400 | CY | | |
| 13 | GABION ROCK | 58 | CY | | |
| 14 | SEEDING & MULCHING | 0.79 | AC | | |
| 15 | WILLOW STAKES & BRUSH LAYERING | 2,000 | EA | | |
| 16 | WILLOW TRANSPLANT | 20 | EA | | |
| **UPLAND ACTIVITIES** | | | | | |
| 17 | TREE FELLING | 20 | EA | | |
| 18 | TREE GIRDLING | 5 | EA | | |
| 19 | TREE/SHRUB CHIPPING (ALL MATERIAL STAYS ONSITE) | 1 | LS | | |
| 20 | SHRUB REDUCTION | 7.7 | AC | | |
| 21 | INVASIVE WEED (JUBATA GRASS) TREATMENT | 1.8 | AC | | |
| 22 | SPREAD WOOD CHIPS | 2.4 | AC | | |

Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.

***Total Bid (in numbers):***

_____

***Total Bid (in words):***

_____

**CERTIFICATION**

I hereby certify that:

A. All of the statements herein made by me are made on behalf of _____

[company name], _____ [Director/CEO name]

B. I have thoroughly examined the plans and specifications, contract documents and all other items bound herein;

C. I have carefully prepared this Cost Proposal form and have checked the same in detail before submitting this bid;

D. I have full authority to make such statements and to submit this bid on the Company's behalf; and

E. The statements herein are true and correct.

Signature _____ Date _____

By _____

Title _____

Calif. Contractor's License #: _____ Classification: _____

Name of Qualifier for License: _____

Federal Tax Identification #: _____

Company Address: _____

Phone: _____ Email: _____

Project Representative: _____

Representative's Phone: _____ Email:_____

**1. SUBCONTRACTORS**

List subcontractors you are planning to use on this project, if any. Provide company name and California contractor license number and classification.

Name of Subcontractor: _____

License #: _____ Classification: _____

Name of Subcontractor: _____

License #: _____ Classification: _____

Name of Subcontractor: _____

License #: _____ Classification: _____

Name of Subcontractor: _____

License #: _____ Classification: _____

Name of Subcontractor: _____

License #: _____ Classification: _____

## 2. REFERENCES

List projects and contact information for use as reference or attach reference documentation. The RCD requests at least two examples of projects that were successfully completed that are in similar environments for habitat restoration or enhancement working in sensitive habitats. Experience with similar projects and knowledge of and experience with local environmental constraints (soils, topography, hydrology etc.) will be considered in the evaluation of bids.

**PROJECT NAME** _____

Brief description of project:

Date(s) constructed:

Reference (name & phone):

**PROJECT NAME** _____

Brief description of project:

Date constructed:

Reference (name & phone):

**PROJECT NAME** _____

Brief description of project

Date constructed:

Reference (name & phone):

**EXHIBIT C**

**Contractor Questionnaire**

BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

1. How does the contractor plan to implement equipment access and what types of equipment will be used?

2. What is the contractor's sequencing and timeline for construction?

3. What is the contractor's plan for working in the wetland, including excavation and grading?

4. What is the contractor's experience working on projects in sensitive habitats and/or with endangered species?

5. What is the contractor's approach for dust control? How much water is anticipated to be needed per day? Where will the water be sourced and how?

**EXHIBIT D**
**Sample Contract**

**SAN MATEO RESOURCE CONSERVATION DISTRICT**
**PROFESSIONAL SERVICES AGREEMENT WITH**
**CONTRACTOR**

THIS AGREEMENT ("Agreement"), made and entered into this ____ day of _____, 2020 is by and between the **SAN MATEO RESOURCE CONSERVATION DISTRICT,** a political subdivision of the State of California, hereinafter referred to as "**RCD**," and **CONTRACTOR**, hereinafter referred to as "**CONTRACTOR**."

**WITNESSETH:**

**WHEREAS**, XXXX; and

**WHEREAS,** RCD desires to use the professional services of CONTRACTOR; and

**WHEREAS**, CONTRACTOR has the professional and administrative ability to implement such services; and

**WHEREAS**, RCD and CONTRACTOR desire to set forth in writing the obligations and responsibilities of each party relating to the services;

**NOW, THEREFORE,** in consideration of the promises and mutual benefits which will accrue to the parties hereto in carrying out the terms of this Agreement, the parties agree as follows:

1. **Scope of Services**
   a. CONTRACTOR will, in accordance with the terms of this Agreement, perform the services set forth in Attachment 1, Project Name- Contractor Name- ***Scope of Services***, hereinafter referred to as **"PROJECT**", which is attached hereto and incorporated herein by reference.
   b. This Agreement is limited both in scope and duration, as herein specified.

2. **Term of Agreement**. Subject to compliance with all applicable terms and conditions, the term of this Agreement shall commence on (Date) and terminate on (Date).

3. **Performance Responsibilities.** Contractor shall complete the herein described services by no later than (Date) unless a later date is agreed upon by the parties in writing. Time is and shall be of the essence in the performance of the specified services by CONTRACTOR.

4. **Compensation.**

a. In consideration of the services provided by CONTRACTOR in accordance with all applicable terms, conditions and specifications set forth in this Agreement and in Attachment 1, RCD agrees to pay CONTRACTOR an amount not to exceed AMOUNT AS TEXT**,** ($xx.xx) for the successful and timely completion of the specified services. In no event shall RCD's total fiscal obligation under this Agreement exceed (AMOUNT AS TEXT ($xx.xx). In the event that RCD makes any advance payments, CONTRACTOR agrees to refund any amounts in excess of the amount owed by RCD at the time of contract termination or expiration. CONTRACTOR is not entitled to payment for work not performed as required by this Agreement.

b. In the event that the funding on which the above described contract services relies is materially reduced or made unavailable, despite the parties' understandings and expectations that no such shortage of funding will occur, RCD may terminate this Agreement or a portion of the services referenced in the Attachments and Exhibits based upon the unavailability of funds by providing written notice to CONTRACTOR as soon as is reasonably possible after RCD learns of said unavailability of outside funding.

5. **Billing and Payment Procedure.** CONTRACTOR will submit requests for payment along with documentation acceptable to the RCD no more frequently than monthly and no less frequently than quarterly. RCD will issue payment to CONTRACTOR within 30 days of payment to the RCD by the project funder.

6. **Cooperation.** RCD and CONTRACTOR agree to cooperate to the greatest extent possible to complete the PROJECT. CONTRACTOR will notify RCD in writing of any new developments, information, issues or concerns that are reasonably expected to negatively impact the PROJECT and/or its completion as soon as practicable.

7. **Assignment**. This Agreement is not assignable by CONTRACTOR in whole or in part without the authorized written consent of RCD,

8. **Conflict of Interest**. The CONTRACTOR shall comply with all applicable State laws and rules pertaining to conflicts of interest, including but not limited to, Government Code Section 1090 and Public Contract Code 10410 and 10411.

9. **Applicable Laws.** All work performed on behalf of the RCD, as set forth in this Agreement shall be performed in accordance with all applicable state, local and federal laws, regulations, policies, procedures, and standards, and any failure to do so shall constitute a material breach of the Agreement by CONTRACTOR, which may be waived by RCD at its sole discretion subject to cure or mitigation of the violation.

10. **Wages**. All work implemented by the RCD, a public agency, is considered a public work or public improvement project. As public projects, they are subject to prevailing wage and other requirements included in California Labor Code §1720 -1861. CONTRACTOR, and any subcontractor working under CONTRACTOR, shall pay not less than the specified prevailing rates of wages to all workers employed in the execution

of the Contract. Prevailing wage determinations can be found at Department of Industrial Relations website.

11. **No Benefit To Arise For Local Employees.** Except as provided by State law, no member, officer, or employee of RCD or its designees or agents, and no public official who exercises authority over or has responsibilities with respect to the Project during their tenure or for one (1) year thereafter, shall have any interest, direct or indirect, in any agreement or sub-agreement or the proceeds thereof, for work to be performed in connection with the services performed under this Agreement.

12. **Independent Contractor Status.** The CONTRACTOR, and the officers, the agents and employees of the CONTRACTOR, in the performance of the Agreement, shall act in an independent capacity and not as officers, employees or agents of the RCD. Nothing in this Agreement is intended nor shall be construed to create an employer-employee relationship, and neither CONTRACTOR nor its employees acquire any of the rights, privileges, powers or advantages of RCD employees.

13. **Standard of Professionalism.** CONTRACTOR shall conduct all work under this Agreement consistent with professional standards for the industry and type of work being performed hereunder.

14. **Ownership of Materials.** Except as otherwise expressly stated in Attachment 1, all materials and work products, including data collected for the Work produced as a result of this Agreement are the property of the RCD. Any final products distributed or produced will acknowledge the CONTRACTOR, RCD, and other Funding Agencies as reasonably requested by the RCD. The RCD shall be entitled to use and publish the work product and deliverables under this Agreement.

15. **Indemnification.** To the fullest extent permitted by applicable law, CONTRACTOR agrees to defend, at CONTRACTOR's expense and with counsel acceptable to RCD, indemnify, and save and hold harmless RCD, Funding Agencies, and all of their officers, directors, employees and agents, from and against any and all claims, suits, losses, causes of action, damages, liabilities, and expenses of any kind whatsoever arising out of the performance or nonperformance of the CONTRACTOR's work, including without limitation, all expenses of litigation and/or arbitration, court costs, and attorneys' fees, arising on account of or in connection with injuries to or the death of any person whomsoever, or any and all damages to property, regardless of possession or ownership, which injuries, death or damages arise from, or are in any manner connected with, the work performed by or for the CONTRACTOR under this Agreement, or are caused in whole or part by reason of the acts or omissions or presence of the person or property of the CONTRACTOR or any of its employees, agents, representatives and or suppliers.

16. **Insurance.** CONTRACTOR shall obtain and maintain for the duration of this Agreement, comprehensive general liability insurance and/or other insurance necessary to protect the parties hereto, and shall provide RCD with evidence thereof

prior to commencement of any work under this Agreement. CONTRACTOR shall have RCD named as an additional insured on its insurance policy, which shall have minimum coverage limits as specified on Attachment 1 hereto, incorporated herein by reference. CONTRACTOR's above described insurance shall serve as the primary insurance coverage for any claim arising from or relating to the services to be performed hereunder.

**17. Nondiscrimination and Other Requirements**

a. **General Nondiscrimination:** CONTRACTOR will not discriminate in employment practices or in the delivery of services on the grounds of race, color, national origin, ancestry, age, disability (physical or mental), sex, sexual orientation, gender identity, marital or domestic partner status, religion, political beliefs or affiliation, familial or parental status (including pregnancy), medical condition (cancer-related), military service, or genetic information.

b. **Equal Employment Opportunity:** CONTRACTOR shall ensure equal employment opportunity based on objective standards of recruitment, classification, selection, promotion, compensation, performance evaluation, and management relations for all employees under this Agreement.

c. **Discrimination Against Individuals with Disabilities:** The nondiscrimination requirements of 41 C.F.R. 60-741.5(a) are incorporated into this Agreement as if fully set forth here, and CONTRACTOR and any subcontractor(s) shall abide by the requirements of 41 C.F.R. 60–741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

d. **History of Discrimination:** CONTRACTOR certifies that no finding of discrimination has been issued in the past 365 days against CONTRACTOR by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or any other investigative entity. If any finding(s) of discrimination have been issued against CONTRACTOR within the past 365 days by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or other governmental investigative entity, CONTRACTOR shall provide the RCD with a written explanation of the outcome(s) or remedy for the discrimination prior to execution of this Agreement. Failure to comply with this Section shall constitute a material breach of this Agreement and subjects the Agreement to immediate termination at the sole option of the RCD.

**18. Notices.** Any notice required to be given pursuant to the terms and provisions of this Agreement shall be in writing and shall be sent first-class mail. Notice shall be deemed to be effective two (2) days after mailing to the following addresses:

**To RCD:** Kellyx Nelson, Executive Director

San Mateo Resource Conservation District
80 Stone Pine Road, Suite 100
Half Moon Bay, CA 94019

**To CONTRACTOR:** Name, Title
Contractor
Address

19. **Amendments and Integration.** This Agreement supersedes all previous agreements or understandings, and constitutes the entire understanding between the parties with respect to the above referenced services, terms of compensation, and otherwise. This Agreement shall not be amended, except in a writing that is executed by authorized representatives of both parties.

20. **Counterparts. Electronic or Digital Signature Transmitted By Electronic Mail or Facsimile.** This Agreement may be executed in counterparts and a digital and/or electronic signature provided by either party shall be deemed the equivalent of an original signature and may be transmitted by one party to the other via electronic mail or facsimile, which taken together shall constitute one in the same agreement, each bearing original signatures, and shall be effective as of the date of the last signature appearing thereon. by any electronic, digital, or facsimile signatures.

21. **Termination.** This Agreement may be terminated for any of the following reasons:
    a. If CONTRACTOR fails to perform the services hereunder agreed to the satisfaction of RCD, or otherwise fails to fulfill its obligations under this Agreement, immediately upon written notice from RCD; and
    b. RCD may terminate this Agreement or a portion of the services referenced in the Attachments and Exhibits based upon the unavailability of funds by providing written notice to Contractor as soon as is reasonably possible after RCD learns of said unavailability of funding.

**IN WITNESS WHEREFORE,** the parties agree to the foregoing terms and conditions and hereby enter into this Agreement.

Date: _____ By:_____
**Name, Title**
**Address**

Date: _____ By:_____
**Kellyx Nelson, Executive Director**
**San Mateo Resource Conservation District**

**SAMPLE CONTRACT - ATTACHMENT 1**
**Scope of Services**

**SAMPLE CONTRACT - ATTACHMENT 2**
**INSURANCE**

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims and injuries to persons or damages to property which may arise from or in connection with the work hereunder by CONTRACTOR, its agents, representatives, employees or subcontractors. The cost of such insurance shall be the sole responsibility of CONTRACTOR.

1. Minimum Scope of Coverage and Limits of Insurance:
    a. Comprehensive General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.
    b. Automobile Liability: $500,000 combined single limit per accident for bodily injury and property damage.
    c. Worker's Compensation: Limits as set forth in the Labor Code of the State of California.

2. Contractors Liability Insurance Policy shall contain the following clauses:
    a. RCD is added as an additional insured as respects operation of the named insured formed under contract with RCD.
    b. It is agreed that any insurance maintained by RCD shall apply in excess of, and not contribute with, insurance provided by this policy.
    c. The insurer agrees to waive all rights of subrogation against RCD, its officers and employees for losses arising from work performed by CONTRACTOR for RCD.

3. Each insurance policy required herein shall be endorsed to state that coverage shall not be cancelled, limited, or non-renewed except after thirty (30) days written notice has been given to RCD. Certificates of insurance evidencing the coverage required by the clauses set forth above shall be filed with RCD within 10 working days to the effective date of this Agreement.

**EXHIBIT E**
**San Mateo RCD Insurance Requirements**
**Contract Construction Services**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims and injuries to persons or damages to property which may arise from or in connection with the work hereunder by CONTRACTOR, its agents, representatives, employees or subcontractors. The cost of such insurance shall be the sole responsibility of CONTRACTOR.

1. Minimum Scope of Coverage and Limits of Insurance:
   a. Comprehensive General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.
   b. Automobile Liability: $500,000 combined single limit per accident for bodily injury and property damage.
   c. Worker's Compensation: Limits as set forth in the Labor Code of the State of California.

2. Contractors Liability Insurance Policy shall contain the following clauses:
   a. RCD is added as an additional insured as respects operation of the named insured formed under contract with RCD.
   b. It is agreed that any insurance maintained by RCD shall apply in excess of, and not contribute with, insurance provided by this policy.
   c. The insurer agrees to waive all rights of subrogation against RCD, its officers and employees for losses arising from work performed by CONTRACTOR for RCD.

3. Each insurance policy required herein shall be endorsed to state that coverage shall not be cancelled, limited, or non-renewed except after thirty (30) days written notice has been given to RCD. Certificates of insurance evidencing the coverage required by the clauses set forth above shall be filed with RCD within 10 working days to the effective date of this Agreement.

**EXHIBIT F**
**Prevailing Wage Requirements**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

The state labor law requirements applicable to the contract are composed of, but not limited to, the following:

1. Payment of Prevailing Wage Rates
The award of a public works contract requires that all workers employed on the project be paid not less than the specified general prevailing wage rates by the contractor and its subcontractors. Prevailing wage determinations for this project can be obtained at: **www.dir.ca.gov.** This includes a total package including fringe benefits and training contributions which are paid to the employee or for the benefit of the employee to a bona fide ERISA approved or otherwise unconditionally paid for the benefit of the employee Trust Fund.

The contractor is responsible for obtaining and complying with all applicable general prevailing wage rates for trades workers and any rate changes, which may occur during the term of the contract. Prevailing wage rates and rate changes are to be posted at the job site for workers to view. Or the contractor may post a notice stating where the prevailing wage determinations are available on the jobsite and the contractor shall provide access to such information upon reasonable notice.

2. DIR Registration
All individuals or companies performing prevailing wage work on this project must be registered as a public works contractor and pay an annual fee of $300 to the Department of Industrial Relations (DIR). This includes all work covered by prevailing wage such as trucking, surveying, building inspection and so on.

3. Apprentices
It is the duty of the contractor and subcontractors to employ registered apprentices on public works projects per Labor Code Section 1777.5; Contractors and subcontractors must submit proof of Public Works Contract Award Information (DAS140) or other documentation for Division of Apprenticeship Standards approved apprenticeship programs. Apprentices are to be employed in all crafts and in all trades with approved training programs. Contactors are to employ apprentices on a ratio of 1 apprentice hour for every 5 journeymen hours or as otherwise approved by the DAS approved Apprenticeship Training Committee. Contractors and subcontractors who do not meet this ratio must submit documentation that apprentices were requested and were not provided and/or not available in sufficient number to meet this ratio. The submission of an accurate DAS142(s) meets this requirement. Additional documentation may be required to verify the apprenticeship status of employees.

4. Penalties
Penalties, including forfeitures and debarment, shall be imposed for contractor/subcontractor failure to pay prevailing wages, failure to maintain and submit accurate certified payroll records upon request, failure to employ apprentices, and for failure to pay employees for all hours worked at the correct prevailing wage rate, in accordance with Labor Code Sections 1775, 1776, 1777.7, and 1813. Monetary penalties of $200 per day per worker shall be imposed for failure to pay

correct prevailing wage; $25 per day per worker shall be imposed for overtime violated; $100 per day per worker for failure to provide certified payroll information; $100-$300 per calendar day for noncompliance of Apprenticeship issues.

5. Certified Payroll Records

Per Labor Code Section 1776, contractors and subcontractors are required to keep accurate payroll records which reflect the name, address, social security number, and work classification of each employee; the straight time and overtime hours worked each day and each week; the fringe benefits; and the actual per diem wages paid to each journeyperson, apprentice, worker, or other employee hired in connection with a public works project. A listing of all current prevailing wage determinations can be obtained from the Agency's main office or by accessing the Department of Industrial Relation's website at: www.dir.ca.gov

Employee payroll records shall be certified (signed under penalty of perjury by someone in authority at the company) and shall be made available for inspection at all reasonable hours at the principal office of the contractor/subcontractor, or shall be furnished to any employee, or to his or her authorized representative on request. Disclosure of certified payroll information to anyone other than the Awarding Body, its agent, or the Department of Industrial Relations requires that personal information about the employees (name, address and social security number) listed on the forms be redacted (omitted) to protect employee privacy.

Contractors and subcontractors shall maintain their certified payrolls on a weekly basis and shall submit said payrolls on a monthly basis in conjunction with contractor's requests progress or final payment. In the event that there has been no work performed during a given week, the Certified Payroll Record shall be annotated "No Work" for that week. The Agency or its authorized representative is also authorized to request and review all related payroll records such as time cards, cancelled checks, etc. For all projects awarded after April 1, 2015, certified payrolls must also be submitted to the DIR the electronically through their eCPR system.

While the DIR accepts electronic versions of your certified payroll, the DIR and this agency may also request copies of the original certified payroll and supporting documentation at any time.

6. Nondiscrimination in Employment

Prohibitions against employment discrimination are contained in Labor Code Sections 1735 and 1777.6; the Government Code; the Public Contracts Code; and Title VII of the Civil Rights Act of 1964, as amended. All contractors and subcontractors are required to implement equal employment opportunities as delineated below:

a. Equal Employment Poster

The equal employment poster shall be posted at the job site in a conspicuous place visible to employees and employment applicants for the duration of the project. All other labor and employment related posters are also to be properly displayed on the jobsite.

7. Kickback Prohibited

Per Labor Code Section 1778, contractors and subcontractors are prohibited from accepting, taking wages illegally, or extracting "kickback" from employee wages;

8. Acceptance of Fees Prohibited

Contractors and subcontractors are prohibited from exacting any type of fee for registering individuals for public work (Labor Code Section 1779); or for filling work orders on public works contracts (Labor Code Section 1780);

9. Listing of Subcontractors

Contractors are required to list all subcontractors hired to perform work on a public works project when that work is equivalent to more than one-half of one percent of the total contract amount or $10,000 whichever is greater. (Public Contract Code Section 4100, et seq.);

10. Proper Licensing

Contractors and subcontractors are required to be properly licensed. Penalties will be imposed for employing workers while unlicensed (Labor Code Section 1021 and Business and Professions Code Section 7000, et seq. under California Contractors License Law);

11. Unfair Competition Prohibited

Contractors and subcontractors are prohibited from engaging in unfair competition (Business and Professions Code Sections 17200-17208);

12. Workers' Compensation Insurance

All contractors and subcontractors are required to be insured against liability for workers' compensation, or to undertake self-insurance in accordance with the provisions of Labor Code Section 3700 (Labor Code Section 1861);

13. OSHA

Contractors and subcontractors are required to comply with the Occupational, Safety and Health laws and regulations applicable to the particular public works project.

14. Prompt Payment of Subcontractors and Suppliers

Contractors are required by law to promptly pay their subcontractors and suppliers within seven (7) days of receipt of any progress or final payment from the Public Agency. Likewise, the subcontractor and supplier are required to pay their respective subcontractors and suppliers within seven (7) days of receipt of payment from the general contractor. When the payment to the contractor is a release of final retention on the project, those funds must be paid within seven (7) days of receipt.

15. IRCA

Pursuant to the Immigration Reform and Control Act of 1986, employers are required to verify that all employees working on public works contracts are legally able to work in the United States. Employers shall keep on file appropriate I-9 forms and documentation for all workers employed on the jobsite and make such forms available to inspection and review by the LCO upon request.

16. Jobsite Interviews

Jobsite interviews are required on a regular basis on this project, CCMI may conduct random jobsite interviews as necessary to meet labor compliance obligations. Please contact Field Representative Christina Sanchez once project has a confirmed start date. Her phone number is (650) 759-9891.

17. Certification of Electricians

Those employing electricians must comply with employment testing and certification requirements for electricians. Additional information may be required to verify the certification status of those employed.

18. Employee Wage Statements – It is required to provide itemized wage statements (pay stubs) to Employees under Labor Code Section 226.

19. Posting of Labor Compliance – Notice of Labor Compliance Approval is required to be posted at the job site in accordance with section 16429, listing a telephone number to call for inquiries, questions, or assistance with regard to the Labor Compliance Program. (Sample attached in handout).

20. Confirmation of Payroll Records – Confirmation of payment to employees for each contactor and subcontractor shall be undertaken randomly for at least one worker for at least one weekly period within that month. This will entail a monthly request of the front and back of a canceled check and employee pay stub for each contractor/subcontractor. Per Title 8 of the California Code Regulations section 16432(c).

21. Public Works Contractor Registration – Only those businesses who have registered and paid the applicable fee to the Department of Industrial Relations as a Public Works Contractor will be allowed to work on the project.

I acknowledge that I have been informed and am aware of the foregoing requirements and that

I am authorized to make this certification on behalf of _____.

(Name of Contractor)

_____

**Signature**

_____

**Name**

_____

**Title of Contractor Authorized Representative**

**EXHIBIT G**
**Certificate of Compliance**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

TO: SAN MATEO RESOURCE CONSERVATION DISTRCT

PROJECT: BUTANO FARMS SAN FRANCISCO GARTER SNAKE HABITAT ENHANCEMENT PROJECT

This is to certify that all requirements for insurance of subcontractors as specified have been met.

_____
[***Contractor]***

_____
By

_____
Dated

Please return this completed form with your Bonds and Certificates of Insurance within 7 days of notice of award

**EXHIBIT H**
**Billing Instructions for Contractors**
BUTANO FARMS SAN FRANCISCO GARTER SNAKE
HABITAT ENHANCEMENT PROJECT

**Process and timing**
Invoices will be reviewed by the RCD staff before submittal to grant funders. Invoices will be paid upon receipt of funds from the grantor, a process that may take up to 120 days from the time of submittal to the grantor by the District.

**Format**
In order to be paid promptly, you should use the attached invoice template, or include all elements in the template on your invoice.

***Task:*** If your contract or work order shows that you will be performing more than one task specified in the budget, please break down the charges on your invoice by task.

***Description:*** Provide a thorough but concise description of all work included on the invoice.

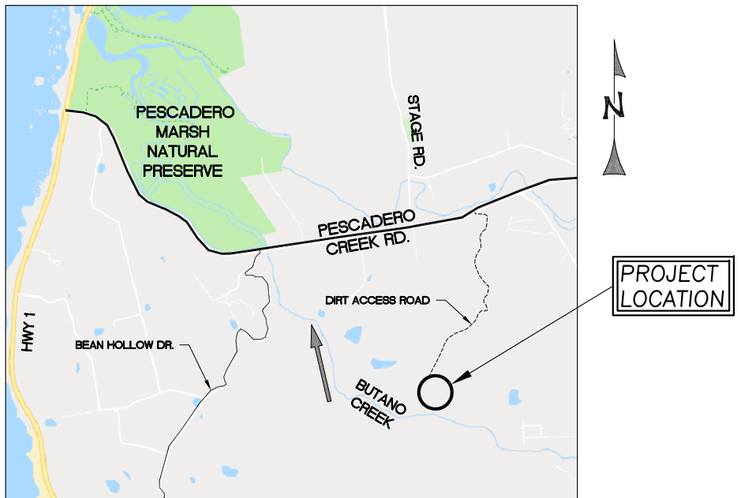
**Please submit your invoice electronically to:**

Amy Kaeser, Project Manager
amy@sanmateoRCD.org
San Mateo Resource Conservation District
80 Stone Pine Road, Suite 100
Half Moon Bay, CA 94019

**EXHIBIT I**
**Designs and Specifications (Aquatic)**

# BUTANO POND MITIGATION PROJECT

## 100% DESIGN SUBMITTAL




VICINITY MAP

N.T.S. (GOOGLE)


REGIONAL MAP

N.T.S. (GOOGLE)

## GENERAL NOTES

1. TOPOGRAPHIC MAPPING WAS PERFORMED BY:
   WATERWAYS CONSULTING, INC.
   509A SWIFT STREET
   SANTA CRUZ, CA 95060
   SURVEY DATES: OCTOBER 30, 2018
   OCTOBER 31, 2018
   NOVEMBER 1, 2018
   NOVEMBER 27, 2018
2. ELEVATION DATUM: GPS TIES TO NAVD88 USING THE LEICA GEOSYSTEMS SMARTNET GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) NETWORK.
3. BASIS OF BEARINGS: GPS TIES TO NAD83 CALIFORNIA STATE PLANE, ZONE 3 USING THE LEICA GEOSYSTEMS SMARTNET GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) NETWORK.
4. CONTOUR INTERVAL IS ONE FOOT. ELEVATIONS AND DISTANCES SHOWN ARE IN DECIMAL FEET.
5. THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES ARE NOT SHOWN HEREON.
6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE 2018 EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS, ISSUED BY THE DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS").
7. THESE DESIGNS ARE INCOMPLETE WITHOUT THE FINAL STAMPED TECHNICAL SPECIFICATIONS PREPARED BY WATERWAYS CONSULTING, INC. REFER TO TECHNICAL SPECIFICATIONS FOR DETAILS NOT SHOWN HEREON.

## ABBREVIATIONS

| | |
|---|---|
| AVG. | AVERAGE |
| CC | CONCRETE |
| CY | CUBIC YARDS |
| DIA. | DIAMETER |
| E | EXISTING |
| EG | EXISTING GROUND |
| ELEV. | ELEVATION |
| FG | FINISHED GRADE |
| FT | FEET |
| INV | INVERT |
| MIN | MINIMUM |
| N | NEW |
| NIC | NOT IN CONTRACT |
| N.T.S. | NOT TO SCALE |
| O.C. | ON CENTER |
| RC | RELATIVE COMPACTION |
| RSP | ROCK SLOPE PROTECTION |
| SFGS | SAN FRANCISCO GARTER SNAKE |
| SPK | SPIKE |
| SQ.FT. | SQUARE FOOT |
| T | TREE |
| T.B.D. | TO BE DETERMINED |
| TYP | TYPICAL |
| UNK | UNKNOWN |
| WSE | WATER SURFACE ELEVATION |
| YR | YEAR |

TREE SPECIES

| | |
|---|---|
| O | OAK |
| R | REDWOOD |
| T | TREE (SPECIES UNKNOWN) |
| W | WILLOW |

## PROJECT DESCRIPTION

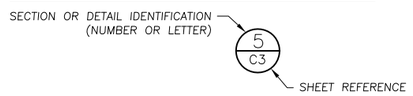
THESE DRAWINGS PROVIDE 100% DESIGN LEVEL DETAILS FOR THE CREATION OF TWO FRESHWATER PONDS AND THE ENHANCEMENT OF AN EXISTING FRESHWATER POND IN PESCADERO, CALIFORNIA.

WORK SHALL CONSIST OF DEVELOPING TEMPORARY ACCESS, CLEARING OF VEGETATION WITHIN THE GRADING FOOTPRINT, EXCAVATION OF NEW PONDS, PLACEMENT OF EXCESS SOILS TO CREATE AN UPLAND BENCH, AND THINNING OF RIPARIAN VEGETATION ALONG THE PERIMETER OF THE EXISTING WETLAND AREA TO CREATE IMPROVED HABITAT FOR SAN FRANCISCO GARTER SNAKE.

## SHEET INDEX


C1 COVER
C2 SITE OVERVIEW
C3 NOTES
C4 SITE GRADING PLAN
C5 SECTIONS
C6 SECTIONS AND DETAILS
C7 ACCESS, STAGING, AND EROSION CONTROL PLAN


## SECTION AND DETAIL CONVENTION




** CALL BEFORE YOU DIG **

CONTACT UNDERGROUND SERVICE ALERT (USA)
PRIOR TO ANY CONSTRUCTION WORK 1-800-227-2600


WATERWAYS CONSULTING INC.
509A SWIFT ST.
SANTA CRUZ, CA 95060
PH:(831)421-9291 // FAX:(888)819-6847
WWW.WATWAYS.COM


4/22/21 DATE

PROFESSIONAL ENGINEER * MATTHEW W. WELD * No. 62235 Exp. 9-30-21 * REGISTERED STATE OF CALIFORNIA CIVIL

MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE CONCERVATION DISTRICT

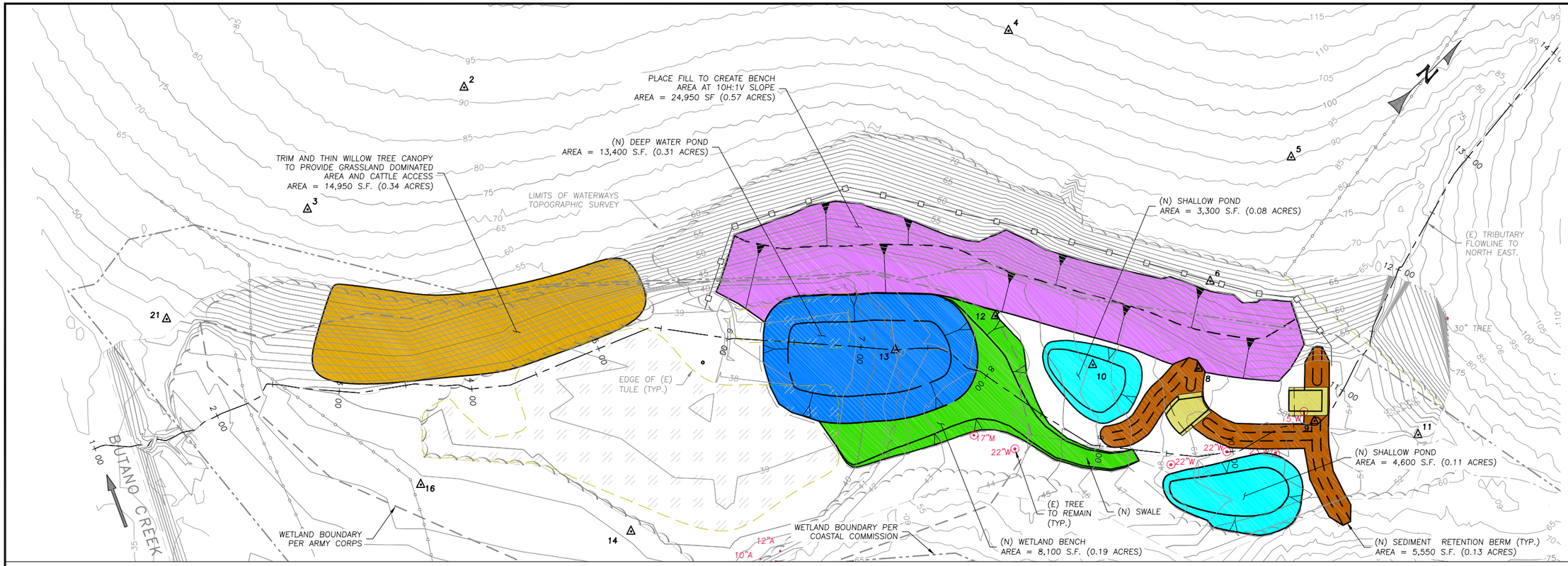
COVER

BUTANO POND MITIGATION PROJECT
100% DESIGN

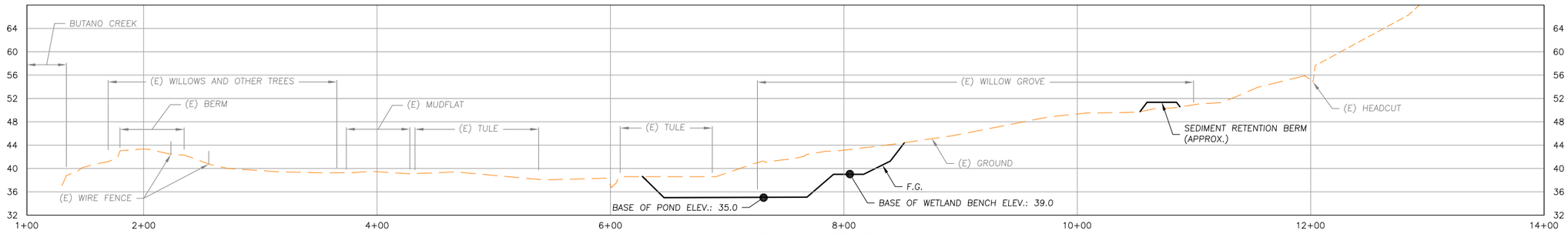
| | |
|---|---|
| DESIGNED BY: | M.W. |
| DRAWN BY: | C.H/D.R. |
| CHECKED BY: | M.W.W. |
| DATE: | 4/22/21 |
| JOB NO.: | 18-058 |

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C1 | 1 OF 7




## SITE OVERVIEW
SCALE: 1" = 40'




## PROFILE - OVERVIEW
SCALE: H:1" = 40'; V:1" = 10'

## LEGEND

- EXISTING CONTOURS
- EXISTING LIDAR BASED CONTOURS
- LIMITS OF WATERWAYS TOPOGRAPHIC SURVEY
- EXISTING FLOW LINE
- SURVEY CONTROL POINT
- EXISTING FENCE
- APPROXIMATE EDGE OF WILLOWS
- APPROXIMATE EDGE OF TULE
- EXISTING TREE TO REMAIN, INSTALL TEMPORARY FENCING-TYPE ESA AT PERIMETER
- LOCATION OF STAFF PLATE AND WATER LEVEL RECORDER

## CONTROL POINTS

| POINT # | DESCRIPTION | ELEV | NORTHING | EASTING |
|---|---|---|---|---|
| 2 | CP SET SPK | 91.72 | 1915216.33 | 6014117.82 |
| 3 | CP SET SPK | 71.12 | 1915069.51 | 6014099.54 |
| 4 | CP SET SPK | 99.03 | 1915533.32 | 6014375.07 |
| 5 | CP SET SPK | 92.11 | 1915615.71 | 6014590.77 |
| 10 | CP SET SPK | 46.29 | 1915401.68 | 6014595.48 |
| 11 | CP SET SPK | 53.48 | 1915536.42 | 6014803.92 |
| 12 | CP SET SPK | 43.79 | 1915376.07 | 6014518.42 |
| 13 | CP SET SPK | 41.01 | 1915305.26 | 6014483.51 |
| 14 | CP SET SPK | 40.47 | 1915070.45 | 6014439.73 |
| 16 | CP SET SPK | 41.26 | 1914984.20 | 6014304.23 |
| 21 | CP SET SPK | 44.91 | 1914937.42 | 6014082.99 |

WATERWAYS CONSULTING INC.
509A SWIFT ST.
SANTA CRUZ, CA 95060
PH:(831)421-9291 // FAX:(888)819-6847
WWW.WATWAYS.COM

DATE 4/22/21

PROFESSIONAL ENGINEER REGISTERED STATE OF CALIFORNIA MATT W. WELD No. 62235 Exp. 9-30-22 CIVIL

MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE
CONCERVATION DISTRICT

SITE OVERVIEW

BUTANO POND
MITIGATION PROJECT
100% DESIGN

| | |
|---|---|
| DESIGNED BY: | M.W. |
| DRAWN BY: | C.H/D.R. |
| CHECKED BY: | M.W.W. |
| DATE: | 4/22/21 |
| JOB NO.: | 18-058 |

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C2

2 OF 7

## GENERAL NOTES

1. THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES, IF SHOWN, WERE COMPILED FROM RECORD INFORMATION AND FROM FIELD TIES TO EXISTING BOUNDARY MONUMENTATION. THE LOCATION OF THESE LINES IS SUBJECT TO CHANGE, PENDING THE RESULTS OF A COMPLETE BOUNDARY SURVEY.

2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE 2018 EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS, ISSUED BY THE DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS").

3. THESE DESIGNS ARE NOT COMPLETE WITHOUT THE FINAL STAMPED TECHNICAL SPECIFICATIONS PREPARED BY WATERWAYS CONSULTING, INC. REFER TO SPECIFICATIONS FOR DETAILS NOT SHOWN HEREON.

4. NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. THE ENGINEER OR A DESIGNATED REPRESENTATIVE SHALL OBSERVE THE CONSTRUCTION PROCESS, AS NECESSARY TO ENSURE PROPER INSTALLATION PROCEDURES.

5. EXISTING UNDERGROUND UTILITY LOCATIONS:

   A. CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

   B. PRIOR TO BEGINNING WORK, CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

   C. EXISTING UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

   D. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

   E. PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

   F. TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.

   G. UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

   H. UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

6. IF DISCREPANCIES ARE DISCOVERED BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.

8. ALL TESTS, INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN OFFICIAL INSPECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE REQUIRED TESTS AND INSPECTIONS ARE PERFORMED.

9. PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL A DETAILED CONSTRUCTION SCHEDULE. DO NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

12. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

13. MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.

14. MAINTAIN THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. STORE ALL MATERIALS WITHIN APPROVED STAGING AREAS.

15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL PERMIT CONDITIONS, LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS, WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.

16. PROVIDE, AT CONTRACTOR'S SOLE EXPENSE, ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

17. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.

18. FIELD INSPECTIONS AND OR THE PROVISION OF CONSTRUCTION STAKES DO NOT RELIEVE THE CONTRACTOR OF THEIR SOLE RESPONSIBILITY FOR ESTABLISHING ACCURATE CONSTRUCTED LINES AND GRADES, AS SPECIFIED.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER OR LAND SURVEYOR AT THE SOLE EXPENSE OF THE CONTRACTOR.

20. THE OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL PROPERTY LINES AND EASEMENTS AND CONFIRMING THAT PROPOSED PROJECT ELEMENTS ARE LOCATED ON DISTRICT OWNED LANDS OR ARE COORDINATED WITH OWNERS AND APPROPRIATE PERMISSIONS ARE GRANTED FOR THE WORK.

21. CONSTRUCTION WATER TO BE IMPORTED BY THE CONTRACTOR.

22. TREE DIMENSIONS: TRUNK DIAMETERS SHOWN REPRESENT DIAMETER AT BREAST HEIGHT (DBH), MEASURED IN INCHES. DBH IS MEASURED 4.5 FT ABOVE GROUND FOR SINGLE TRUNKS AND TRUNKS THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND. THE DBH FOR TREES THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND MAY BE CONSOLIDATED INTO A SINGLE DBH BY TAKING THE SQUARE ROOT OF THE SUM OF ALL SQUARED STEM DBH'S, UNLESS OTHERWISE NOTED. WHERE TREES FORK NEAR BREAST HEIGHT, TRUNK DIAMETER IS MEASURED AT THE NARROWEST PART OF THE MAIN STEM BELOW THE FORK. FOR TREES ON A SLOPE, BREAST HEIGHT IS REFERENCED FROM THE UPPER SIDE OF THE SLOPE. FOR LEANING TREES, BREAST HEIGHT IS MEASURED ON THE SIDE THAT THE TREE LEANS TOWARD. TREES WITH DBH LESS THAN 8" ARE TYPICALLY NOT SHOWN.

    12"P = 12" DBH PINE

23. TREE SPECIES ARE IDENTIFIED WHEN KNOWN. HOWEVER, FINAL DETERMINATION SHOULD BE MADE BY A QUALIFIED BOTANIST. REFER TO THE LEGEND FOR TREE SPECIES SYMBOLS.

24. TREE TRUNK DIMENSIONS MAY BE SHOWN OUT-OF-SCALE FOR PLOTTING CLARITY. CAUTION SHOULD BE USED IN DESIGNING NEAR TREE TRUNKS. THERE ARE LIMITATIONS ON FIELD ACCURACY, DRAFTING ACCURACY, MEDIUM STRETCH AS WELL AS THE "SPREAD" OR "LEANING" OF TREES. REQUEST ADDITIONAL TOPOGRAPHIC DETAIL WHERE CLOSE TOLERANCES ARE ANTICIPATED. INDIVIDUAL TREES ARE NOT TYPICALLY LOCATED WITHIN DRIPLINE CANOPY AREAS SHOWN.

25. WILLOWS TO BE REMOVED SHALL BE TRIMMED, TRANSPLANTED, AND UTILIZED IN THE REVEGETATION PLAN.

26. CONTRACTOR IS REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

27. THE CONTRACTOR SHALL CONFORM TO THE RULES AND REGULATIONS OF THE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH PERTAINING TO EXCAVATION AND TRENCHES THE CALIFORNIA CODE OF REGULATIONS TITLE 8, SUBCHAPTER 4 CONSTRUCTION SAFETY ORDERS, ARTICLE 6 EXCAVATION.

28. CULTURAL RESOURCES: IN THE EVENT THAT HUMAN REMAINS AND/OR CULTURAL MATERIALS ARE FOUND, ALL PROJECT-RELATED CONSTRUCTION SHALL CEASE WITHIN A 100-FOOT RADIUS. THE CONTRACTOR SHALL, PURSUANT TO SECTION 7050.5 OF THE HEALTH AND SAFETY CODE, AND SECTION 5097.94 OF THE PUBLIC RESOURCES CODE OF THE STATE OF CALIFORNIA, NOTIFY THE SAN MATEO COUNTY CORONER IMMEDIATELY.

## EROSION CONTROL NOTES

1. THE EROSION CONTROL PLAN SHOWN IS INTENDED FOR THE SUMMER CONSTRUCTION SEASON (APRIL 30TH TO OCTOBER 1ST). IF THE DRAINAGE FEATURES SHOWN ON THESE DRAWINGS ARE NOT COMPLETED AND DISTURBED AREAS STABILIZED BY OCTOBER 1ST, CONSULT THE ENGINEER FOR ADDITIONAL RAINY SEASON EROSION CONTROL MEASURES.

2. IMPLEMENT EROSION CONTROL MEASURES AND BEST MANAGEMENT PRACTICES AS THE FIRST ORDER OF BUSINESS UPON SITE MOBILIZATION.

3. PRIOR TO COMMENCING WORK, PROTECT AREAS TO REMAIN UNDISTURBED WITH ESA FENCING, AS SHOWN ON THE DRAWINGS. ADDITIONAL FENCING MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER.

4. UTILIZE ONLY THE APPROVED HAUL ROADS AND ACCESS POINTS (AS SHOWN ON THE DRAWINGS) FOR TRANSPORT OF MATERIALS AND EQUIPMENT.

5. BETWEEN OCTOBER 1 AND APRIL 30, PROTECT EXPOSED SOIL FROM EROSION AT ALL TIMES. DURING CONSTRUCTION, SUCH PROTECTION MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, STABILIZE ALL EXPOSED SOIL ON DISTURBED SLOPES AGAINST EROSION.

6. MAINTAIN A STANDBY CREW FOR EMERGENCY WORK AT ALL TIMES DURING THE RAINY SEASON (OCTOBER 1 THROUGH APRIL 30). STOCKPILE NECESSARY MATERIALS AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES.

7. CONSTRUCT TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THIS PLAN AND/OR AS DIRECTED BY THE ENGINEER TO CONTROL DRAINAGE WHICH HAS BEEN AFFECTED BY GRADING AND/OR TRENCHING OPERATIONS.

8. INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND EROSION.

9. CONSTRUCT AND MAINTAIN EROSION CONTROL MEASURES TO PREVENT THE DISCHARGE OF EARTHEN MATERIALS TO THE CREEK FROM DISTURBED AREAS UNDER CONSTRUCTION AND FROM COMPLETED CONSTRUCTION AREAS.

10. INSTALL ALL PROTECTIVE DEVICES AT THE END OF EACH WORK DAY WHEN THE FIVE-DAY RAIN PROBABILITY EQUALS OR EXCEEDS 50 PERCENT AS DETERMINED FROM THE NATIONAL WEATHER SERVICE FORECAST OFFICE: WWW.SRH.NOAA.GOV.

11. AFTER EACH RAINSTORM, REMOVE ALL SILT AND DEBRIS FROM (CHECK BERMS AND SEDIMENTATION BASIN) OR (SEDIMENTATION DEVICES) AND PUMP THE BASIN DRY.

12. THE EROSION CONTROL DEVICES ON THIS PLAN ARE A SCHEMATIC REPRESENTATION OF WHAT MAY BE REQUIRED. EROSION CONTROL DEVICES MAY BE RELOCATED, DELETED, OR ADDITIONAL ITEMS MAY BE REQUIRED DEPENDING ON THE ACTUAL SOIL CONDITIONS ENCOUNTERED, AT THE DISCRETION OF THE ENGINEER.

13. MAINTAIN ALL EROSION CONTROL DEVICES AND MODIFY THEM AS SITE PROGRESS DICTATES.

14. MONITOR THE EROSION CONTROL DEVICES DURING STORMS AND MODIFY THEM IN ORDER TO PREVENT PROGRESS OF ANY ONGOING EROSION.

15. CLEAN DAILY ANY EROSION OR DEBRIS SPILLING ONTO A PUBLIC STREET.

16. CONTACT THE ENGINEER IN THE EVENT THAT THE EROSION CONTROL PLAN AS DESIGNED REQUIRES ANY SUBSTANTIAL REVISIONS.

## EARTHWORK NOTES

1. ALL GRADING SHALL COMPLY WITH THE RECOMMENDATIONS OF THE ENGINEER AND WITH THE APPLICABLE REQUIREMENTS OF THE SAN MATEO COUNTY GRADING ORDINANCE.

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND MAKE HIS OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.

3. GRADING SUMMARY:

   | | |
   |---|---|
   | TOTAL CUT VOLUME = | 3,500 CY |
   | TOTAL FILL VOLUME = | 3,500 CY (COMPACTED IN PLACE WITH 20% LOSSES) |
   | NET (CUT/FILL) = | 0 CY |

   THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND AND THE PROPOSED FINISH GRADE, PREPARED FOR PERMITTING PURPOSES ONLY. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF WORK TO BE CONSTRUCTED. THE QUANTITIES HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

   THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS OR UNSUITABLE EARTH MATERIALS.

4. PRIOR TO COMMENCING WORK, PROTECT ALL SENSITIVE AREAS TO REMAIN UNDISTURBED WITH TEMPORARY FENCING, AS SHOWN ON THE DRAWINGS, AS SPECIFIED, OR AS DIRECTED BY THE ENGINEER.

5. DO NOT DISTURB AREAS OUTSIDE OF THE DESIGNATED LIMITS OF DISTURBANCE, UNLESS AUTHORIZED IN WRITING BY THE ENGINEER. THE COST OF ALL ADDITIONAL WORK ASSOCIATED WITH RESTORATION AND REVEGETATION OF DISTURBED AREAS OUTSIDE THE DESIGNATED LIMITS OF DISTURBANCE, AS SHOWN ON THE DRAWINGS, SHALL BE BORNE SOLELY BY THE CONTRACTOR.

6. REMOVE ALL EXCESS SOILS TO AN APPROVED DUMP SITE OR DISPOSE OF ON SITE AT A LOCATION TO BE APPROVED BY THE ENGINEER, IN A MANNER THAT WILL NOT CAUSE EROSION.

7. CLEARING AND GRUBBING, SUBGRADE PREPARATION AND EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 19 OF THE STANDARD SPECIFICATIONS, THESE DRAWINGS, AND THE TECHNICAL SPECIFICATIONS.

8. PRIOR TO STARTING WORK ON THE PROJECT, SUBMIT FOR ACCEPTANCE BY THE ENGINEER A HAZARDOUS MATERIALS CONTROLS AND SPILL PREVENTION PLAN. INCLUDE PROVISIONS FOR PREVENTING HAZARDOUS MATERIALS FROM CONTAMINATING SOIL OR ENTERING WATER COURSES, AND ESTABLISH A SPILL PREVENTION AND COUNTERMEASURE PLAN.

9. UNLESS AUTHORIZED BY THE GEOTECHNICAL ENGINEER, THE FOLLOWING MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK:

   A. ORGANIC MATERIALS SUCH AS PEAT, MULCH, ORGANIC SILT OR SOD.
   B. SOILS CONTAINING EXPANSIVE CLAYS.
   C. MATERIAL CONTAINING EXCESSIVE MOISTURE.
   D. POORLY GRADED COURSE MATERIAL.
   E. PARTICLE SIZES IN EXCESS OF 6 INCHES.
   F. MATERIAL WHICH WILL NOT ACHIEVE SPECIFIED DENSITY OR BEARING.
   G. MATERIAL WITH EXCESSIVE MOISTURE CONTENT.

10. FINE GRADING ELEVATIONS, CONFORMS, AND SLOPES NOT CLEARLY SHOWN ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD TO DIRECT DRAINAGE TO PROTECTED DRAINAGE CONTROL STRUCTURES OR NATURAL WATERWAYS IN A MANNER THAT SUPPORTS THE INTENT OF THE DESIGN. ALL FINAL GRADING SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

11. UNLESS OTHERWISE DIRECTED BY ENGINEER, ALL FILL TO BE COMPACTED TO A MINIMUM OF 85% MAXIMUM DENSITY AS DETERMINED BY ASTM-D1557 AND SO CERTIFIED BY TESTS AND REPORTS FROM THE CIVIL ENGINEER IN CHARGE OF THE GRADING CERTIFICATION.

12. SPREAD FILL MATERIAL IN LIFTS OF APPROXIMATELY 8 INCHES, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND RECOMPACTED. THE MATERIALS FOR ENGINEERED FILL SHALL BE APPROVED BY A REGISTERED CIVIL ENGINEER. ANY IMPORTED MATERIALS MUST BE APPROVED BEFORE BEING BROUGHT TO THE SITE. THE MATERIALS USED SHALL BE FREE OF ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS.

13. ALL CONTACT SURFACES BETWEEN ORIGINAL GROUND AND RECOMPACTED FILL SHALL BE EITHER HORIZONTAL OR VERTICAL. ALL ORGANIC MATERIAL SHALL BE REMOVED AND THE REMAINING SURFACE SCARIFIED TO A DEPTH OF AT LEAST 12 INCHES, UNLESS DEEPER EXCAVATION IS REQUIRED BY THE ENGINEER.

14. REGULATORY AGENCIES MAY REQUIRE A FINAL GRADING COMPLIANCE LETTER. WE CAN ONLY OFFER THIS LETTER IF WE ARE CALLED TO THE SITE TO OBSERVE AND TEST, AS NECESSARY, ANY GRADING AND EXCAVATION OPERATIONS FROM THE START OF CONSTRUCTION. WE CANNOT PREPARE A LETTER IF WE ARE NOT AFFORDED THE OPPORTUNITY OF OBSERVATION FROM THE BEGINNING OF THE GRADING OPERATION. THE CONTRACTOR MUST BE MADE AWARE OF THIS AND EARTHWORK TESTING AND OBSERVATION MUST BE SCHEDULED ACCORDINGLY. PLEASE CONTACT OUR OFFICE: (831) 421-9291.

WATERWAYS CONSULTING INC.
509A SWIFT ST.
SANTA CRUZ, CA 95060
PH:(831)421-9291 // FAX:(888)819-6847
WWW.WATWAYS.COM

4/22/21
DATE

PROFESSIONAL ENGINEER * MATTHEW W. WELD * No. 62235 Exp. 9-30-22 * REGISTERED * STATE OF CALIFORNIA * CIVIL

MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE
CONCERVATION DISTRICT

NOTES

BUTANO POND
MITIGATION PROJECT

100% DESIGN

| | |
|---|---|
| DESIGNED BY: | M.W. |
| DRAWN BY: | C.H/D.R. |
| CHECKED BY: | M.W.W. |
| DATE: | 4/22/21 |
| JOB NO.: | 18-058 |

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C3

(E) HEADCUT

BOUNDARY BETWEEN LIDAR CONTOURS AND TOPOGRAPHIC MAPPING BY WATERWAYS

PLACE EXCAVATED MATERIAL TO CONSTRUCT BENCH AND UPLAND RESTORATION AREA.

(N) DEEP WATER POND
BASE OF POND: 35.0'

EDGE OF (E) TULE (TYP.)

(N) WETLAND BENCH
BASE ELEV.: 39.0'

(N) SHALLOW POND
DEPTH 18" (TYP.)
BASE OF POND: 43.5

(N) SHALLOW POND
DEPTH 18" (TYP.)
BASE OF POND: 46.5

(N) SWALE

(E) WILLOW TO REMAIN

LEAVE GAPS IN BERMS TO ALLOW FOR WATER PASSAGE

(N) SEDIMENT RETENTION BERM. KEY END INTO VALLEY WALLS (TYP.). PLACE EXCAVATED MATERIAL TO CONSTRUCT BERMS. SEE SECTION F AND SECTION G ON SHEET C6.

MINIMIZE SITE DISTURBANCE OUTSIDE OF GRADED AREAS. RETAIN WILLOWS AS FEASIBLE AND TRANSPLANT WILLOWS THAT ARE REMOVED FOR GRADING.

ADD DENSE SLASH WITHIN CHANNEL BED AND BANKS BEGINNING IN POND AT ELEVATION 41.0 AND EXTENDING UPSTREAM TO THE BASE OF THE ROCK SPILLWAY, AS DIRECTED BY THE ENGINEER. SLASH SHALL CONSIST OF 4 TO 10-INCH DIAMETER WILLOW BRANCHES AND TRUNKS COVERING APPROXIMATELY 30% OF GROUND SURFACE. PLACE AND TRACK WALK OR BUCKET-COMPACT AS DIRECTED.

## LEGEND

- EXISTING CONTOURS
- FINISHED GRADE CONTOURS
- EXISTING LIDAR BASED CONTOURS
- EXISTING FLOW LINE
- SURVEY CONTROL POINT
- EXISTING FENCE
- APPROXIMATE EDGE OF WILLOWS
- APPROXIMATE EDGE OF TULE
- EXISTING TREE TO REMAIN, INSTALL TEMPORARY FENCING-TYPE ESA AT PERIMETER
- LOCATION OF EXISTING STAFF PLATE AND WATER LEVEL RECORDER

## SITE GRADING PLAN

SCALE: 1" = 20'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SITE GRADING PLAN

BUTANO POND MITIGATION PROJECT
100% DESIGN

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|---|---|
| DESIGNED BY: | M.W. |
| DRAWN BY: | C.H./D.R. |
| CHECKED BY: | M.W.W. |
| DATE: | 4/22/21 |
| JOB NO.: | 18-058 |

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

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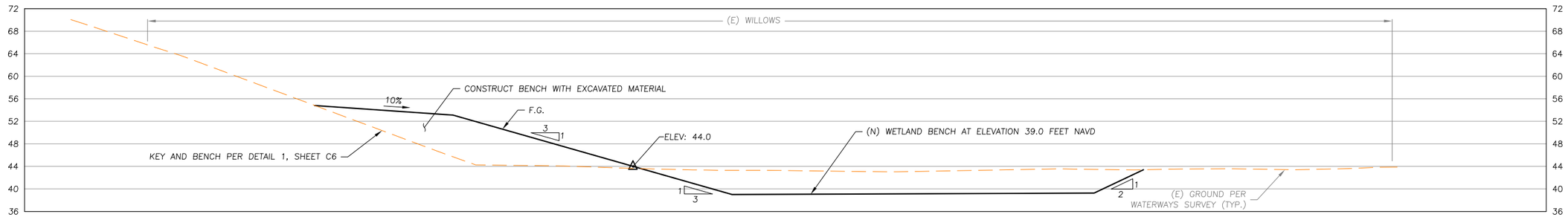
C4 | 4 OF 7




**SECTION**
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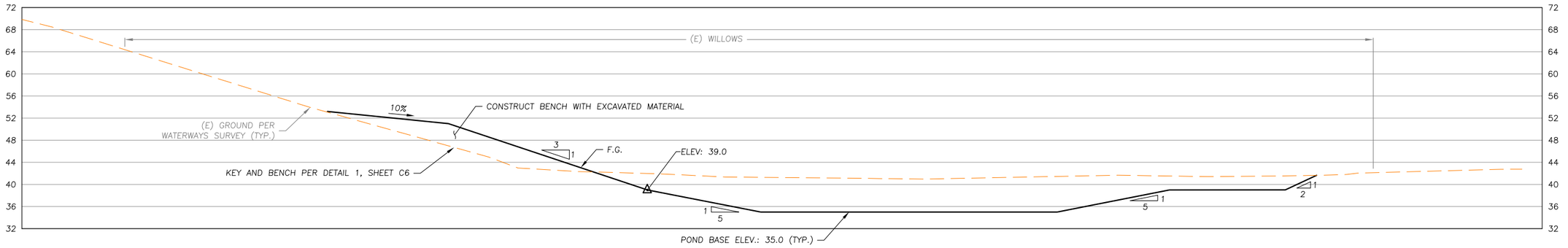


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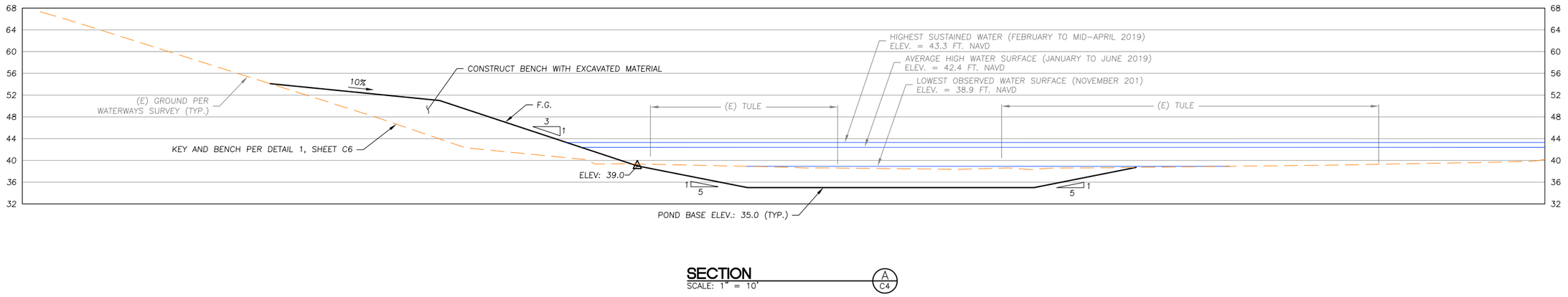


**SECTION**
SCALE: 1" = 10'

A
C4

WATERWAYS CONSULTING INC.
509A SWIFT ST.
SANTA CRUZ, CA 95060
PH:(831)421-9291 // FAX:(888)819-6847
WWW.WATWAYS.COM

4/22/21
DATE

PROFESSIONAL ENGINEER REGISTERED STATE OF CALIFORNIA
MATT W. WELD
No. 62235
Exp. 9-30-22
CIVIL

MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE
CONCERVATION DISTRICT

SECTIONS

BUTANO POND
MITIGATION PROJECT
100% DESIGN

| | |
|---|---|
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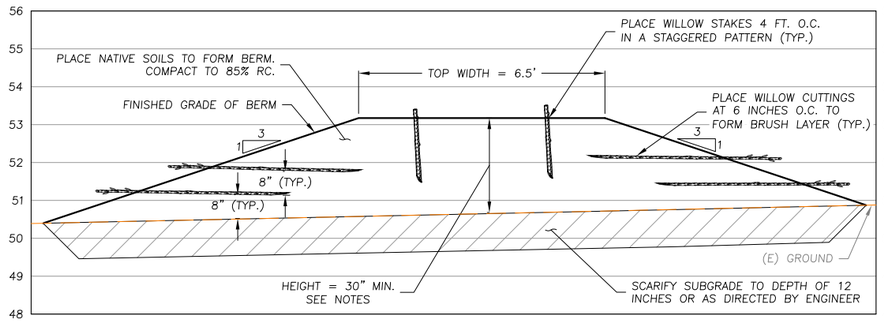
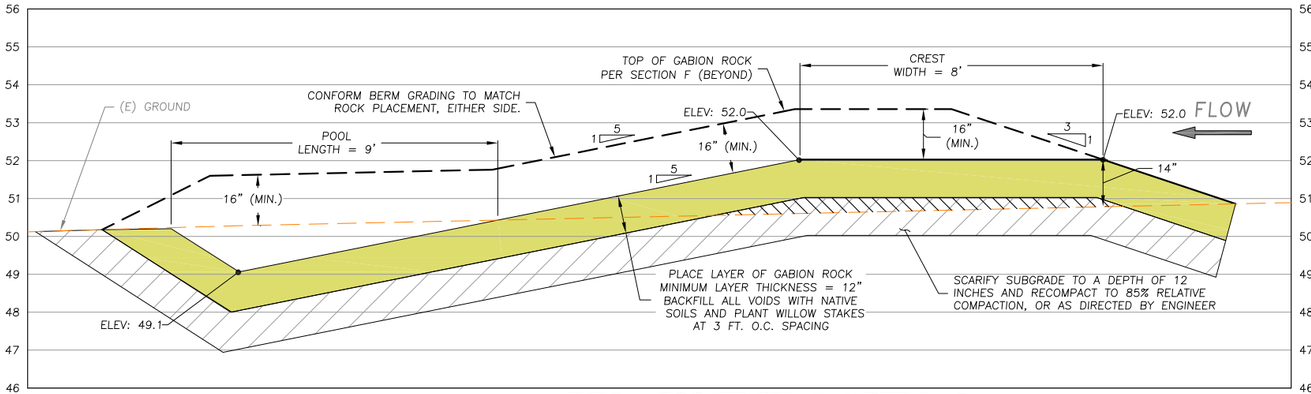
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C5

5 OF 7




## SEDIMENT RETENTION BERM (G / C4)
SCALE: 1" = 2'




## TYPICAL ROCKED SPILLWAY DETAIL (H / C4)
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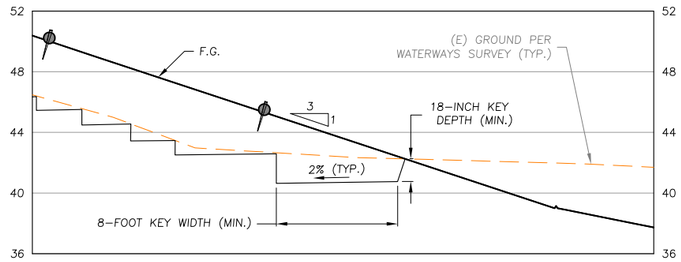
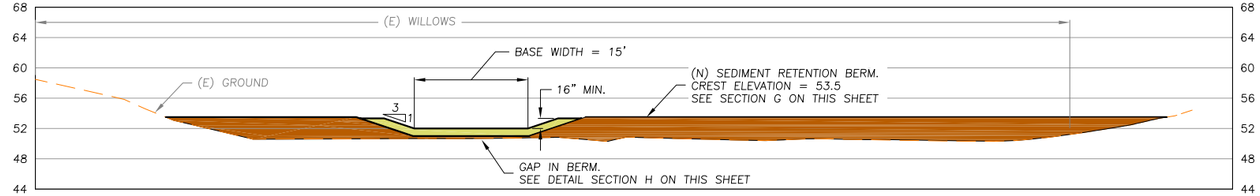



## KEY AND BENCH DETAIL (1 / C5,C6)
SCALE: 1" = 5'

### SEDIMENT RETENTION BERM NOTE:
CREST ELEVATION TYPICALLY SET TO A MINIMUM OF 30 INCHES ABOVE EXISTING ADJACENT VALLEY FLOW LINE.

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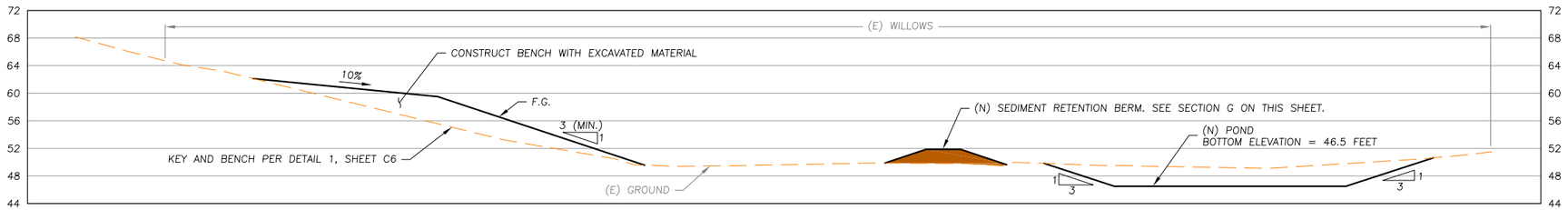


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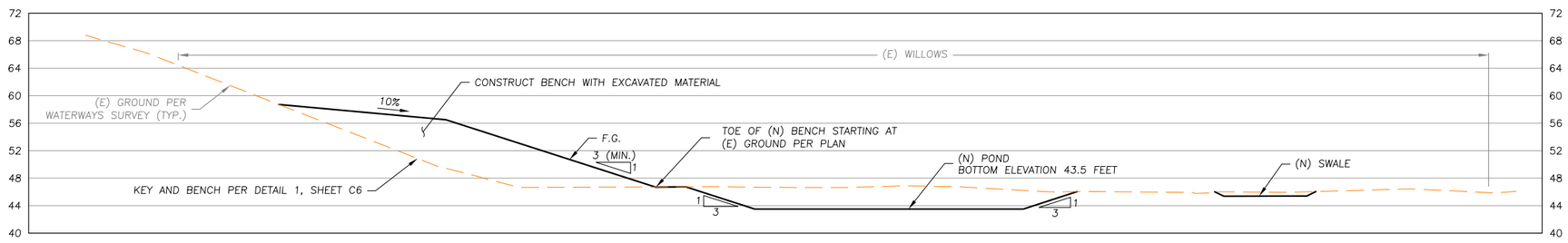


## SECTION (D / C4)
SCALE: 1" = 10'

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MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE CONSERVATION DISTRICT

SECTIONS AND DETAILS

BUTANO POND MITIGATION PROJECT
100% DESIGN

| | |
|---|---|
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BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

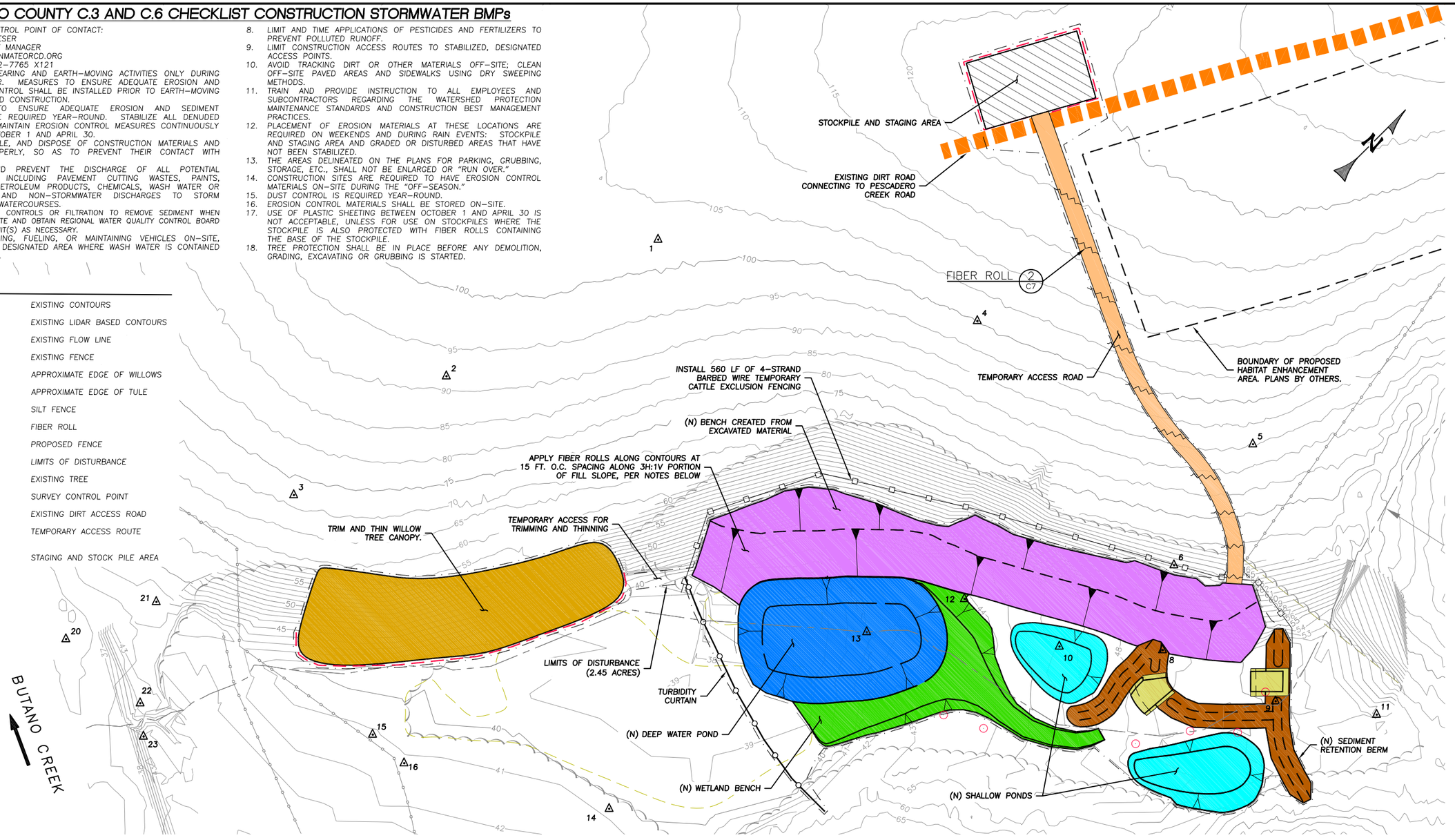
C6 | 6 OF 7

# SAN MATEO COUNTY C.3 AND C.6 CHECKLIST CONSTRUCTION STORMWATER BMPs

1. EROSION CONTROL POINT OF CONTACT:
   AMY KAESER
   PROJECT MANAGER
   AMY@SANMATEORCD.ORG
   650-712-7765 X121
2. PERFORM CLEARING AND EARTH-MOVING ACTIVITIES ONLY DURING DRY WEATHER. MEASURES TO ENSURE ADEQUATE EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED PRIOR TO EARTH-MOVING ACTIVITIES AND CONSTRUCTION.
3. MEASURES TO ENSURE ADEQUATE EROSION AND SEDIMENT CONTROL ARE REQUIRED YEAR-ROUND. STABILIZE ALL DENUDED AREAS AND MAINTAIN EROSION CONTROL MEASURES CONTINUOUSLY BETWEEN OCTOBER 1 AND APRIL 30.
4. STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER
5. CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING PAVEMENT CUTTING WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENTS, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATERCOURSES.
6. USE SEDIMENT CONTROLS OR FILTRATION TO REMOVE SEDIMENT WHEN DEWATERING SITE AND OBTAIN REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) PERMIT(S) AS NECESSARY.
7. AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN A DESIGNATED AREA WHERE WASH WATER IS CONTAINED AND TREATED.
8. LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.
9. LIMIT CONSTRUCTION ACCESS ROUTES TO STABILIZED, DESIGNATED ACCESS POINTS.
10. AVOID TRACKING DIRT OR OTHER MATERIALS OFF-SITE; CLEAN OFF-SITE PAVED AREAS AND SIDEWALKS USING DRY SWEEPING METHODS.
11. TRAIN AND PROVIDE INSTRUCTION TO ALL EMPLOYEES AND SUBCONTRACTORS REGARDING THE WATERSHED PROTECTION MAINTENANCE STANDARDS AND CONSTRUCTION BEST MANAGEMENT PRACTICES.
12. PLACEMENT OF EROSION MATERIALS AT THESE LOCATIONS ARE REQUIRED ON WEEKENDS AND DURING RAIN EVENTS: STOCKPILE AND STAGING AREA AND GRADED OR DISTURBED AREAS THAT HAVE NOT BEEN STABILIZED.
13. THE AREAS DELINEATED ON THE PLANS FOR PARKING, GRUBBING, STORAGE, ETC., SHALL NOT BE ENLARGED OR "RUN OVER."
14. CONSTRUCTION SITES ARE REQUIRED TO HAVE EROSION CONTROL MATERIALS ON-SITE DURING THE "OFF-SEASON."
15. DUST CONTROL IS REQUIRED YEAR-ROUND.
16. EROSION CONTROL MATERIALS SHALL BE STORED ON-SITE.
17. USE OF PLASTIC SHEETING BETWEEN OCTOBER 1 AND APRIL 30 IS NOT ACCEPTABLE, UNLESS FOR USE ON STOCKPILES WHERE THE STOCKPILE IS ALSO PROTECTED WITH FIBER ROLLS CONTAINING THE BASE OF THE STOCKPILE.
18. TREE PROTECTION SHALL BE IN PLACE BEFORE ANY DEMOLITION, GRADING, EXCAVATING OR GRUBBING IS STARTED.

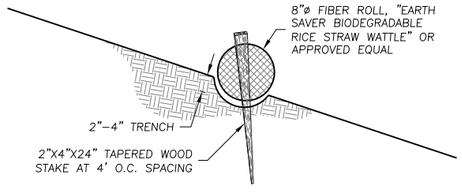
## LEGEND

- EXISTING CONTOURS
- EXISTING LIDAR BASED CONTOURS
- EXISTING FLOW LINE
- EXISTING FENCE
- APPROXIMATE EDGE OF WILLOWS
- APPROXIMATE EDGE OF TULE
- SILT FENCE
- FIBER ROLL
- PROPOSED FENCE
- LIMITS OF DISTURBANCE
- 12"A EXISTING TREE
- SURVEY CONTROL POINT
- EXISTING DIRT ACCESS ROAD
- TEMPORARY ACCESS ROUTE
- STAGING AND STOCK PILE AREA




## ACCESS, STAGING, AND EROSION CONTROL PLAN

SCALE: 1" = 40'




## FIBER ROLL

SCALE: 1"=1' — 2 / C7

## ACCESS AND STAGING AREA NOTES

1. USE ONLY THE APPROVED ACCESS POINTS, AS SHOWN ON THE DRAWINGS. STOCKPILE MATERIALS WITHIN AN EXISTING FLAT AND PREVIOUSLY DISTURBED AREA.
2. THE ACCESS PLAN SHOWN ON THE DRAWINGS IS SCHEMATIC. SUBMIT A SITE ACCESS PLAN FOR APPROVAL BY THE ENGINEER, PRIOR TO MOBILIZATION.
3. CONTAIN THE DOWNSLOPE PERIMETER OF STAGING OR STOCKPILE AREAS WITH SILT FENCE.
4. STORE, MAINTAIN AND REFUEL ALL EQUIPMENT AND MATERIALS IN A DESIGNATED PORTION OF THE STAGING AREA.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MATT W. WELD

PREPARED AT THE REQUEST OF:
SAN MATEO RESOURCE CONCERVATION DISTRICT

ACCESS, STAGING, AND EROSION CONTROL PLAN

BUTANO POND MITIGATION PROJECT
100% DESIGN

| | |
|---|---|
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| DRAWN BY: | C.H./D.R. |
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BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 — 1"

C7 | 7 OF 7

# Technical Specifications

# For

# Butano Pond Mitigation Project

## Prepared for
## San Mateo Resource Conservation District

## 100%

## May 17, 2021


FOR USE IN CONNECTION WITH

**STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT EDITION**

**Cold Creek Floodplain Restoration Project**
**Technical Specifications**
**100% Submittal**

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# SECTION 015000
# TEMPORARY FACILITIES AND CONTROLS
# (a.k.a. Mobilization & Demobilization)

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work covered by this section consists of the construction facilities and temporary controls, including mobilization and demobilization and temporary access development and restoration, as specified, as shown on the Drawings, or as otherwise directed by the Engineer. Work includes traffic control and sanitary facilities.

B. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the site; for the establishment of all offices, and other facilities necessary for work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work, on the various items on the project site.

C. Demobilization shall consist of work and operations necessary to disband all mobilized items and cleanup the site. The removal of all temporary crossings, ramps, access ways, roads, signs, and fencing; dewatering facilities; and temporary facilities or works, and the restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization.

### 1.2 RELATED SECTIONS

1. Section 015626, Temporary Fence – Type ESA
2. Section 015713.02, Silt Fence

## 2. PRODUCTS

### 2.1 TEMPORARY CHAIN LINK FENCING

A. Cattle must be excluded from the work area at all times, using approved temporary fencing or by installation of permanent barbed wire fencing as specified.

B. Unless otherwise indicated, type of temporary chain link fencing shall be Contractor's option. Following types are acceptable:

1. New materials or previously used salvaged chain link fencing in good condition.
2. Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting in precast concrete blocks.
3. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

### 2.2 GATES

A. Provide personnel and vehicle gates of the quantity and size required for functional access to site.

B. Fabricate of same material as used for fencing.

C. Vehicle gates: minimum width of 20 feet to allow access for emergency vehicles. Capable of manual operation by one person.

## 3. EXECUTION

### 3.1 CONTRACTOR'S PLANT AND EQUIPMENT

A. Security. Contractor shall, at all times, be responsible for security of their plant and equipment. Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.

B. Construction Power and Communication Facilities. Contractor shall be responsible for providing sufficient electrical power and communication facilities to construct the work.

C. Storage Facilities.

1. Provide storage facilities for the protection of materials and supplies from weather and shall keep the facilities clean and in proper order at all times.
2. Provide a storage area for lubricants, oils, and hazardous materials with sufficient means to contain spills. Facilities, handling, and any required cleanup will comply with all current local, state, and federal standards. Petroleum products stored on the site shall be secured from vandalism.

D. Sanitary Facilities. Provide and maintain adequate toilet facilities at or near the work site.

E. Solid Waste Handling. Provide sufficient solid waste handling facilities to maintain site in a clean, orderly condition.

F. Water. Contractor may use pond water for construction of the work, only after approval of the RCD. The contractor shall not dewater or otherwise lower the water surface of the existing pond until receiving authorization from the RCD. Timing of this authorization is dependent on biological restrictions included in the project permits. The RCD anticipates, but cannot guarantee, that the authorization will be provided on or about August 15th.

G. General. Perform mobilization and demobilization activities in accordance with the Drawings, and as specified.

### 3.2 PROJECT SIGNS

A. Provide a bulletin board at the project site, or in a location approved by the Engineer. The bulletin board shall be easily accessible at all times and shall contain wage rates, equal opportunity notice, and other items required to be posted.

B. Erect project, safety, and hard hat signs at each work site within two (2) days after commencement of work at that site.

### 3.3 EXCAVATION

A. The Contractor, and any subcontractor, is required to notify U.S.A. forty-eight hours in advance of performing excavation work, by calling the toll-free number (800) 642-2444.

### 3.4 PROTECTIVE BARRIERS

A. Protective barriers shall be erected around sensitive areas as designated on the Drawings or as otherwise directed by the Engineer. Barriers shall be constructed using

bright orange plastic safety fencing (type ESA), per Section 015626, Temporary Fence – Type ESA.

B. Temporary fencing shall be maintained during construction. Except as directed by the Engineer, barriers shall be removed after completion of work.

C. Tree Protection shall be erected around trees, where shown on the Drawings. Install Temporary Fence - Type ESA at the dripline. Where grading limits are within the dripline, willows may be trimmed under continuous supervision of the Engineer.

## 3.5 CHAIN LINK FENCING

A. Chain link posts:

1. Space as 10 foot on center, maximum.
2. Drive posts, set in holes and backfill, or anchor in precast concrete blocks.
3. For soft and unstable ground conditions, cast concrete plug around post.
4. Posts over pavement: Use steel post plates or precast concrete blocks.
5. Gate posts: Use bracing or concrete footings to provide rigidity for accommodating size of gate.

B. Fabric: Securely attach to posts.

C. Gates: Install with required hardware.

D. Maintain fencing in good condition. If damaged, immediately repair.

E. Removal:

1. When Temporary Fence is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, “Disposal of Material Outside the Highway Right of Way,” of the State Specifications, except when reused as provided in this section.
2. Holes caused by the removal of Temporary Fence shall be backfilled in conformance with the provisions in Section 15-1.02, “Preservation of Property,” of the State Specifications.

## 3.6 STAGING AREAS

A. General. Staging areas at the project site are provided for the Contractor’s use. By making this area available to the Contractor, the Engineer, and any other person or agency connected with the properties shall in no way be responsible or liable for any activity of the Contractor, subcontractors, or any individual or organization connected with the project.

B. Alternative Staging Areas. Alternative sites must be acceptable to Owner, and the Contractor must make all arrangements for their use at the Contractor’s expense, and in accordance with all local, State and Federal regulations.

## 3.7 DUST CONTROL

A. General. The Contractor shall be responsible for the control of dust within the limits of the project at all times. The Contractor shall take whatever steps are necessary to eliminate the nuisance of blowing dust. Responsibility for any damage to property, crops, or orchards from dust caused by the Contractor’s operations shall be borne by the Contractor.

B. Dust Control. Periodically, water or otherwise treat access roads and haul roads, as required to suppress dust. Trucks transporting fill material to and from the Project site must be tarped from the point of origin. After clearing, grading, earth moving or excavation is completed, the entire area of disturbed soil must be treated to prevent wind pickup of soil. This may be accomplished by: sufficiently wetting the area to form a crust on the surface, with repeated soakings as necessary to maintain the crust and prevent dust pickup by the wind; or other methods approved in advance by the Air Pollution Control District and the Engineer.

C. Cleanup. The Contractor shall keep all streets, roadways, and easements, as well as all ground adjacent to the project site, clean and free of dust, mud and debris resulting from the Contractor's operations. Daily cleanup throughout the project shall be required as the Contractor progresses with the work. Spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public street or private driveway or access road shall be removed immediately by the Contractor.

## 3.8 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN

A. General. Before starting work on the project, the Contractor shall submit for acceptance by the Engineer a Hazardous Materials Controls and Spill Prevention Plan. The Plan shall include provisions for preventing hazardous materials from contaminating soil or entering water courses and shall establish a Spill Prevention and Countermeasure Plan.

B. Facilities. Provide staging and storage areas for equipment, as required to contain contaminants away from water courses. Provide a contained, locked storage facility for fuels, lubricants, construction chemicals and other hazardous materials and supplies stored at site.

C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of vehicles and other equipment and staging area shall occur at least 75 feet from any riparian habitat or water body.

D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Engineer.

## 3.9 CONSTRUCTION SITE HOUSEKEEPING

A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Regularly clean mud and debris, resulting from work at the site, from roadways; per SWRCB General Permit governing pollution from construction activities, sweeping and washing construction site sediment tracked onto roadways into roadside ditches is a violation. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

## 3.10 DEVELOP AND RESTORE TEMPORARY ACCESS ROUTE

A. A temporary access route shall be established along several hundred feet of sloped hillside extending from an existing dirt road at the ridgetop near the proposed staging

area down to the northern limit of the project. This will be the only vehicular access to the work area.

B. Layout. The alignment of the temporary access route shall be flagged by the RCD, prior to start of work. Final alignment may vary from the schematic alignment provided on the Drawings.

C. Contractor shall make every effort to minimize disturbance along the Temporary Access Route by limiting vehicle trips to only those necessary to accomplish the work. At completion of project grading and revegetation work, the Temporary Access Route alignment from the project area to the existing dirt road shall be restored to original grade, stabilized against erosion, and seeded in accordance with Section 32 92 00, Seeding.

D. Original sheet-flow drainage paths shall be restored, leaving no low points or ridges that might concentrate flow. Place Fiber Rolls across access alignment, parallel to the contour and extending a minimum of 5 feet past the edge of disturbance, at approximately 25ft. on center spacing, in accordance with Section 01 57 13.01, Fiber Roll.

## 3.11 PROTECTION OF EXISTING IMPROVEMENTS

A. Existing facilities, utilities, and property shall be protected from damage resulting from the Contractor's operations. Roadways and other improved surfaces shall be protected from damage by vehicles with tracks or lugs. Any damage resulting from the Contractor's operations shall be repaired by the Contractor to the condition which existed prior to the damage, and to the satisfaction of the Engineer, at no additional cost to the Owner.

## 3.12 RESTORATION OF STRUCTURES AND SURFACES

A. Structures, Fencing, Equipment, and Pipework. The Contractor shall remove such existing structures, fencing, equipment, and pipework as may be necessary for the performance of the work, and shall rebuild, or replace, the items thus removed in as good a condition as found. Contractor shall repair any existing structures that were damaged as a result of the Work.

B. Roads and Streets. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged, or otherwise affected, due to the Contractor's operations. Particular attention is directed to the importance of maintaining road surface and drainage patterns and conditions on the portion of rocked dirt road from Pescadero Road to the top of the ridge.

C. Cultivated Areas and Other Surface Improvements. All cultivated and natural areas, either agricultural or lawns, and other surface improvements which are damaged by actions of the Contractor, shall be restored, including revegetation and reestablishment of rolling dips and roadside drainage ditches, as nearly as possible, to their original conditions.

## 3.13 STORAGE OF MATERIALS AND EQUIPMENT

A. Materials and equipment shall be stored so as to ensure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located so as to facilitate inspection. The Contractor shall be responsible for all damages that occur in

connection with the care and protection of all materials and equipment, supplied by the Contractor, until completion and final acceptance of the Work by the Owner.

### 3.14 TRAFFIC CONTROL

A. General. The Contractor shall be responsible for public safety and traffic control at all times.

B. The Contractor shall furnish, install, and maintain temporary construction warning signs, flaggers, barricades, and other devices necessary to safeguard the general public and the work, and to provide for the safe and proper routing of all vehicular and pedestrian traffic within and through the limits of the project during the performance of the work.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Work under this section will be measured for payment on a lump sum basis.

### 4.2 PAYMENT

A. The lump sum contract price for Mobilization will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization; demobilization; and temporary facilities and controls.

B. The lump sum contract price for Develop and Restore Temporary Access will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals required to Develop and Restore Temporary Access.

C. Attention is directed to Sections 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance" of the Standard Specifications.

D. Payments for mobilization will be made as follows:

1. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 5 percent or more of the original contract amount, 50 percent of the contract item price for mobilization or 5 percent of the original contract amount, whichever is the lesser, will be included in the estimate for payment.
2. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 10 percent or more of the original contract amount, the total amount earned for mobilization shall be 75 percent of the contract item price for mobilization or 7.5 percent of the original contract amount, whichever is the lesser, and that amount will be included in the estimate for payment.
3. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 95 percent or more of the original contract amount, the total amount earned for mobilization shall be 100 percent of the contract item price for mobilization, and that amount will be included in the estimate for payment.
4. The adjustment provisions in Section 4-1.03, "Changes," and the retention of funds provisions in Section 9-1.06, "Partial Payments," shall not apply to the contract lump sum item of mobilization.
5. When other contract items are adjusted as provided in Section 4-1.03, "Changes," if the costs applicable to an item of work include mobilization costs,

those mobilization costs will be deemed to have been recovered by the Contractor by the payments made for mobilization, and will be excluded from consideration in determining compensation under Section 4-1.03.

6. When the contract does not include a contract pay item for mobilization as above specified, full compensation for any necessary mobilization required shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.
7. No separate payment will be made for compliance with the conditions of the permits identified in the Contract Documents. The lump sum price for mobilization-demobilization will include full compensation for these costs.

E. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Mobilization | Lump Sum |
| Develop and Restore Temporary Access | Lump Sum |

**END OF SECTION**

# INDEX
# SECTION 015626
# TEMPORARY FENCE – TYPE ESA

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# SECTION 015626
# TEMPORARY FENCE – TYPE ESA

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work under this section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove Temporary Fence – Type ESA , as shown on the Drawings, as specified, or as otherwise directed by the Engineer.

### 1.2 RELATED SECTIONS

1. Section 015000, Mobilization
2. Section 311100, Clearing and Grubbing
3. Section 312316, Stripping and Excavation

### 1.3 REFERENCES

A. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition

### 1.4 SUBMITTALS

A. Submit to the Engineer, for review, the following:

1. Manufacturer's data for proposed fencing fabric.
2. Manufacturer's data or descriptive literature for proposed fence posts.

## 2. PRODUCTS

### 2.1 MATERIALS

A. High Visibility Fabric. High visibility fabric shall be machine produced, orange colored mesh manufactured from polypropylene or polyethylene. High visibility fabric may be made of recycled materials. Materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. High visibility fabric shall be fully stabilized ultraviolet resistant and a minimum of four feet in width with a maximum mesh opening of 2" x 2". High visibility fabric shall be furnished in one continuous width and shall not be spliced to conform to the specified width dimension.

B. Posts. Posts for temporary fence (Type ESA) shall be of one of the following:

1. Wood posts shall be fir or pine, shall have a minimum cross section of 2" x 2", and a minimum length of 5.25 feet. The end of the post to be embedded in the soil shall be pointed. Wood posts shall not be treated with wood preservative.
2. Steel posts shall have a "U," "T," "L," or other cross sectional shape that resists failure from lateral loads. Steel posts shall have a minimum weight of 0.75 pounds per linear foot and a minimum length of 5.25 feet. One end of the steel post shall be pointed and the other end shall have a high visibility colored top.

C. Fasteners. Fasteners for attaching high visibility fabric to the posts shall be as follows:

1. The high visibility fabric shall be attached to wooden posts with commercial quality nails or staples, or as recommended by the manufacturer or supplier.
2. Tie wire or locking plastic fasteners shall be used for attaching the high visibility fabric to steel posts. Maximum spacing of tie wire or fasteners shall be 24 inches along the length of the steel post.

D. Used materials may be installed provided the used materials conform to these Specifications.

## 3. EXECUTION

### 3.1 INSTALLATION

A. All fence construction activities shall be conducted from the work side of the ESA as shown on the Drawings or as flagged in the field by the Engineer.

B. Posts shall be embedded in the soil a minimum of 16 inches. Post spacing shall be eight feet maximum from center to center and shall at all times support the fence in a vertical position.

C. Temporary fence (Type ESA) shall be constructed prior to clearing and grubbing work, shall enclose the foliage canopy (drip line) of protected plants, and shall not encroach upon visible roots of the plants.

D. Temporary fence (Type ESA) shall be located so that it is clearly visible, as determined by the Engineer.

### 3.2 MAINTENANCE

A. Temporary fence (Type ESA) that is damaged during the progress of the work shall be repaired or replaced by the Contractor the same day the damage occurs.

### 3.3 REMOVAL

A. When Type ESA fence is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the State Specifications, except when reused as provided in this section.

B. Holes caused by the removal of temporary fence (Type ESA) shall be backfilled in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the State Specifications.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Temporary Fence – Type ESA will be measured by the linear foot of Temporary Fence – Type ESA installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer.

### 4.2 PAYMENT

A. Temporary Fence – Type ESA will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and to remove Temporary Fence – Type ESA after site stabilization.

B. Payment shall be made under:

| Pay Item | Pay Unit |
|---|---|
| Temporary Fence – Type ESA | Linear Foot |

**END OF SECTION**

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# SECTION 015713.01
# FIBER ROLL

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# SECTION 015713.01
# FIBER ROLL

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, remove and dispose of Fiber Roll, as shown on the Drawings, as specified herein, or as otherwise directed by the Engineer.

B. Fiber Roll shall be furnished, installed, and maintained at the locations shown on the Drawings, as specified, or as otherwise directed by the Engineer.

C. Related Sections

1. Section 015000, Mobilization
2. Section 312316, Stripping and Excavation
3. Section 313519.16, Slope Protection Fabric

### 1.2 SUBMITTALS

A. Submit to the Engineer, for review, the following manufacturer's data and Certification's:

1. A certificate stating the name of the Fiber Roll manufacturer, product name, style compositions of filaments or yarns and other pertinent information to fully describe the geotextile, along with the manufacturer's certification of compliance with the material specifications contained herein.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Fiber Roll. Fiber Roll shall be:

1. A pre-manufactured roll made from 100% weed free rice straw and wrapped in a 100% biodegradable tubular 7 oz. Plain Burlap liner. The burlap is Medium Weight Natural Burlap with a 9 X 8 Warp & Fill, and a minimum weight of 7 oz. per square yard. Plastic netting will not be accepted as an alternate.
2. 9-inch rolls shall have a mimimum weight of approximately 1.6 pounds per foot.
3. 12-inch rolls shall have a mimimum weight of approximately 3.8 pounds per foot.

B. Stakes. Wood stakes shall be a minimum of 1" x 1" x 24" for Type 1 installation. Notched stakes shall be a minimum of 1" x 2" x 24" in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.

C. Rope. Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 1/4 inch.

## 3. EXECUTION

### 3.1 INSTALLATION

A. Fiber Roll shall be installed as follows:

B. Type 1: Furrows shall be constructed to a depth between three inches and four inches, and to a sufficient width to hold the Fiber Roll. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll. Stakes shall be driven through the center of the roll (perpendicular to the finished grade) at 36 inches apart along the length of the Fiber Roll and stopped at 12 inches from each end of the rolls. Stakes shall be driven to between two and three inches above the top of the roll.

C. Type 2: Rope and notched stakes shall be used to restrain the Fiber Rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the Fiber Roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the Fiber Roll tightly to the slope. Furrows will not be required.

D. Fiber Roll shall be placed 10 feet apart along the slope for slope inclination (horizontal:vertical) of 2:1 and steeper, 15 feet apart along the slope for slope inclination between 2:1 and 4:1, 20 feet apart along the slope for slope inclination between 4:1 and 10:1.

E. The bedding area for the Fiber Roll shall be cleared of obstructions including rocks, clods, and debris greater than one inch in diameter before installation.

F. Fiber Roll shall be installed approximately parallel to the slope contour and the terminus of rows shall be angled up-slope at 45 degrees for a distance of three feet. Where fiber rolls meet, provide an overlap of two feet, with adjacent rolls tightly abutting each other.

G. Fiber Roll shall be installed prior to seeding where used without slope protection fabric.

H. Fiber roll shall be installed over fabric (after seeding) where slope protection fabric is specified.

**3.2 MAINTENANCE**

A. The Contractor shall inspect all Fiber Roll immediately after each rainfall, and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor.

B. The Contractor shall also make a daily review of the location of Fiber Roll in areas where construction activities have altered the natural contour and drainage runoff to ensure that the Fiber Rolls are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional Fiber Rolls shall be installed as directed by the Engineer.

C. Damaged or otherwise ineffective Fiber Roll shall be repaired or replaced promptly. Fiber Roll shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping Fiber Roll shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Fiber Roll shall be repaired or replaced within 24 hours of identifying the deficiency.

**3.3 REMOVAL**

A. Fiber Rolls shown on the Drawings shall remain in place after project completion, unless otherwise specified, and be allowed to naturally degrade.

**4. MEASUREMENT AND PAYMENT**

## 4.1 MEASUREMENT

A. Fiber Roll will be measured by the linear foot of Fiber Roll installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer

B. Fiber Roll that the Contractor installs for the implementation of the SWPPP, in addition to that shown on the Drawings, shall not be separately measured for payment.

## 4.2 PAYMENT

A. Fiber Roll will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and, where specified, to remove Fiber Roll after site stabilization.

B. Fiber Rolls required or used on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

C. Payment shall be made under:

| Pay Item | Pay Unit |
|---|---|
| Fiber Roll | Linear Foot |
| | |

**END OF SECTION**

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# SECTION 015713.02
# SILT FENCE


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# SECTION 015713.02
# SILT FENCE

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove silt fence, as shown on the Drawings, as specified in the Storm Water Pollution Prevention Plan, and as specified, or as directed by the Engineer.

B. This Specification is applicable to the use of a geotextile as a vertical, permeable interceptor designed to remove suspended soil from overland water flow. The function of a temporary silt fence is to filter and allow settlement of soil particles from sediment-laden water. The purpose is to prevent the eroded soil from being transported off the construction site by water runoff.

C. Temporary silt fence shall be furnished, installed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan and in conformance with details shown on the Drawings and these Specifications.

### 1.2 RELATED SECTIONS

1. Section 312319, Dewatering
2. Section 015000, Mobilization
3. Section 312316, Stripping and Excavation

### 1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
2. D 4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
3. D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
4. D 4751 - Test Method for Determining Apparent Opening Size of a Geotextile.
5. D 4873 - Guide for Identification, Storage, and Handling of Geotextiles.

### 1.4 SUBMITTALS

A. Submit to the Engineer for review, the following:

B. Manufacturer's Data and Certification:

1. The Contractor shall provide the Engineer a certificate stating the name of the silt fence manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the silt fence fabric.
2. The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the Specification. Documentation describing the quality control program shall be made available upon request.
3. Manufacturing Quality Control (MQC) test results shall be provided upon request.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Silt fence fabric labeling, shipment and storage shall follow ASTM D 4873.

B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.

C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.

D. Each silt fence roll shall be wrapped with a material that will protect the silt fence from damage due to shipment, water, sunlight, and contaminants.

E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of silt fence material must be discarded before installation.

F. During storage, silt fence rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F)m and any other environmental condition that might damage the silt fence .

## 2. PRODUCTS

## 2.1 MATERIALS

A. At the Contractor's option, temporary silt fence shall be prefabricated or constructed with silt fence fabric, posts, and fasteners.

B. Silt Fence Fabric. Silt fence fabric shall be geotextile manufactured from woven polypropylene or polymer material. Silt fence fabric may be virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled polymer materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. Silt fence fabric shall conform to the following requirements:

| Specification | Requirements |
|---|---|
| Width, inches, min. | 36 |
| Grab breaking load, 1-inch grip in each direction,(min, lb)<br>ASTM Designation: D 4632* | 120, min. |
| Apparent Elongation, percent minimum in each direction<br>ASTM Designation: D 4632* | 15, min. |
| Permittivity, 1/sec., min.<br>ASTM Designation: D 4491 | 0.05, min. |
| UV resistance, retained grab breaking load, 500 hours, (min., percent)<br>ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method) | 70, min. |
| * or appropriate test method for specific polymer | |

C. Posts. Posts for temporary silt fence shall be one of the following:

1. Untreated fir or pine, a minimum of 2" x 2" in size, and four feet in length. One end of the post shall be pointed.
2. Steel and have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads. The steel posts shall have a minimum weight of 0.8-pound per foot and a minimum length of 4 feet. One end of the steel posts shall be pointed and the other

end shall be capped with an orange or red plastic safety cap which fits snugly to the steel post. The Contractor shall submit to the Engineer for approval a sample of the capped steel post prior to installation.

D. Fasteners. Fasteners for attaching silt fence fabric to posts shall be as follows:

1. When prefabricated silt fence is used, posts shall be inserted into sewn pockets.
2. Silt fence fabric shall be attached to wooden posts with nails or staples as shown on the Drawings or as recommended by the manufacturer or supplier. Tie wire or locking plastic fasteners shall be used to fasten the silt fence fabric to steel posts. Maximum spacing of fasteners shall be eight inches along the length of the steel post.

## 3. EXECUTION

### 3.1 FIELD ASSEMBLY:

A. The silt fence fabric shall be installed on the side of the posts facing the slope.

B. The silt fence fabric at the bottom of the fence shall be buried in a "J" configuration to a minimum depth of 150 mm (six inches) in a trench so that no flow can pass under the silt fence. Mechanically pushing 12 inches of the silt fence fabric vertically through the soil may be allowed if the Contractor can demonstrate to the Engineer that the silt fence fabric will not be damaged and will not slip out of the soil resulting in sediment passing under the silt fence fabric.

C. The trench shall be backfilled and the soil compacted over the upslope side of the silt fence fabric.

D. When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched.

E. The Contractor must demonstrate to the satisfaction of the Engineer that the silt fence fabric can withstand a sediment load of 1/3 the height of the fence.

F. The posts shall be placed at the spacing as shown on the Drawings. Post should be driven or placed a minimum of 450 mm (18 inches) into the ground. Depth shall be increased to 600 mm (24 inches) if fence is placed on a slope of 3:1 or greater. Where 450 mm (18 inches) depth is impossible to attain, the posts should be adequately secured to prevent overturning of the fence due to sediment loading.

G. Support fence, if required, shall be fastened securely to the upslope side of the fence post. The support fence shall extend from the ground surface to the top of the silt fence fabric.

H. When self-supported fence is used, the silt fence fabric shall be securely fastened to fence posts.

I. Temporary silt fence shall be installed parallel with the slope contour in reaches not to exceed 500 feet. A reach is considered a continuous run of temporary silt fence from end to end or from an end to an opening, including joined panels. Each reach shall be constructed so that the elevation at the base of the fence does not deviate from the contour more than 1/3 of the fence height. The fence shall be placed such that water cannot runoff around the end of the fence; this may be accomplished by constructing end-returns that angle up the slope.

J. The silt fence should be limited to handle an area equivalent to 90 square meters (100 sy) per three meters (ten feet) of fence. Caution should be used where the site slope is greater than 1:1 and water flow rates exceed three liters (0.8 gallons) per second per three meters (ten feet) of fence.

## 3.2 INSPECTION

A. The Contractor shall inspect all temporary silt fences immediately after each rainfall, and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor.

B. The Contractor shall also make a daily review of the location of silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional silt fence shall be installed as directed by the Engineer. Damaged or otherwise ineffective silt fences shall be repaired or replaced promptly.

C. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

D. Sediment deposits shall either be removed when the deposit reaches one third the height of the fence, or a second silt fence shall be installed as directed by the Engineer.

## 3.3 REMOVAL

A. The silt fence shall remain in place for the complete duration of the project as necessary to conform to the Project Permit(s) and SWPPP, or until the Engineer directs it be removed. Upon removal, the Contractor shall remove and dispose of any excess sediment accumulations, use hand tools to grade disturbed areas to drain in the pre-disturbance direction, and revegetate all bare areas in accordance with contract requirements. Trimming the silt fence fabric and leaving it in place will not be allowed.

B. Removed silt fence may be used at other locations provided the silt fence fabric and other material requirements continue to be met to the satisfaction of the Engineer.

C. Ground disturbance caused by the installation and removal of the temporary silt fence shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, “Preservation of Property,” of the Standard Specifications.

# 4. MEASUREMENT AND PAYMENT

## 4.1 MEASUREMENT

A. Temporary Silt Fence will be measured by the linear foot of silt fence installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer.

## 4.2 PAYMENT

A. Silt Fence will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and to remove silt fence at the completion of construction.

B. Payment shall be made under:

| Pay Item | Pay Unit |
|---|---|
| Silt Fence | Linear Foot |

**END OF SECTION**

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**SECTION 015723.1**

**STORM WATER POLLUTION PREVENTION PLAN**

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**SECTION 015723.1**

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**

**DEVELOPMENT AND IMPLEMENTATION**

## 1. GENERAL

### 1.1 DESCRIPTION

A. The Contractor or their designated representative shall perform the role of Qualified SWPPP Developer (QSD) and Qualified SWPPP Practitioner (QSP), as outlined in the Construction General Permit.

B. The work covered by this section consists of development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), as specified in this Section, and in compliance with the requirements of the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Water Quality Order No. 2009-0009-DWQ, General Permit No. CAS000002, adopted September 2, 2009, (hereafter Construction General Permit (CGP).

C. **The SWPPP Shall cover construction elements as specified herein, as shown on only the "UPLAND PORTION of Drawings prepared by Waterways Consulting entitled "Butano Pond Mitigation Project", and also those actions defined in Drawings and specification prepared by Vinnedge Environmental Consulting, entitled "Figure 4 - Upland Habitat Enhancement". Work within state waters will covered under the 401 Certification from the Regional Water Quality Control Board and will not be subject to the SWPPP requirements.**

D. The project has been initially identified as Risk Level 2. Attention is directed to Attachments C and D of the CGP, which identify monitoring and reporting requirements for Risk Levels 1 and 2. Risk Level 2 projects are required to meet the reporting and monitoring requirements of Risk Level 1 projects (Attachment C) in addition to those requirements for Risk Level 2 Projects (Attachment D).

E. The Contractor shall be solely responsible for penalties assessed on the Contractor or the Owner as a result of the Contractor's failure to comply with the provisions of the Construction General Permit or with the applicable provisions of the Federal, State, and local regulations and requirements. Penalties as used in this section shall include fines, penalties, and damages, whether proposed, assessed, or levied against the Owner or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act, by governmental agencies or as a result of citizen suits. Penalties shall also include payments made or costs incurred in settlement for alleged violations of applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

F. Nothing in the terms of the Contract nor in these Technical Specifications shall relieve the Contractor of the responsibility for compliance with Sections 5650 and 12015 of the Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.

G. All areas of exposed earth created by the Contractor, beyond what is shown on the Drawings, and referred to in the Technical Specifications or the SWPPP, shall also be subject to the provisions of this Section,

except that the Contractor shall be fully responsible for all additional costs and liabilities associated with SWPPP Implementation in these areas.

H. The Contractor shall keep a copy of the SWPPP at the job site. The SWPPP shall be made available when requested by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests from the public shall be directed to the Engineer.

I. The SWPPP shall be periodically amended by the QSD to reflect current site conditions. The Owner will not be liable to the Contractor for delays to the Work due to the Contractor's failure to prepare a SWPPP in compliance with the CGP, amend the SWPPP as necessary to meet changing site conditions, or implement the amended SWPPP.

J. The erosion control measures specified on the Drawings are a minimum, and do not address interim field conditions that may exist during construction. The Contractor is responsible to perform all additional work, beyond what is shown on the Drawings, or the SWPPP, as necessary to meet changing or unforeseen sight conditions and to comply with the CGP, and other project permits, at no additional cost to the Owner.

## 1.2 RELATED SECTIONS

1. Construction Facilities and Temporary Controls, Section 015000
2. Dewatering, Section 312319
3. Silt Fence, Section 015713.02
4. Coir Roll, Section 015713.01
5. Temporary Fence – Type ESA, Section 015626
6. Planting, Section 329300
7. Seeding, Section 329200

## 1.3 REFERENCES

A. State Water Resources Control Board (SWRCB) Order No. R2-2009-0009-DWQ, NPDES General Permit No. CAS000002, Storm Water Discharges Associated with Construction and Land Disturbance Activities, September 2, 2009, hereafter Construction General Permit (CGP).

B. The California Stormwater Quality Association (CASQA) "Stormwater Best Management Practice Handbook Portal: Construction" including Appendix B, "Storm Water Pollution Prevention Plan Outline" and Appendix D, "Field Monitoring and Analysis Guidance" and addenda thereto issued up to, and including, the date of advertisement of the Project, hereafter referred to respectively as the "Manuals." Copies of the Manuals and the National Pollutant Discharge Elimination System (NPDES) permits may be obtained by accessing the CASQA's Internet Web Site portal at:

http://www.cabmphandbooks.com/

C. Approved Project Storm Water Pollution Prevention Plan (SWPPP).

## 1.4 SUBMITTALS

A. The Engineer's review and approval of the Contractor's submittals, including the SWPPP, shall not waive any contract requirements and shall not relieve the Contractor from complying with the CGP, the SWPPP, or Federal, State and local laws, regulations, and requirements.

B. Submit to the Owner's Representative, for review, a completed SWPPP, prepared in accordance with the requirements of the CGP and signed by a Qualified SWPPP Developer.

C. The Qualified SWPPP Developer (QSD) will allow ten working days for SWPPP review by the Owner. Site disturbing activities may not begin until the SWPPP has been approved by the Owner for use, uploaded to SMARTS and a Waste Discharge Identification (WDID) Number received.

D. Submit to the Engineer, for review, Manufacturer's product information for materials proposed for use on site for implementation of the SWPPP.

E. The Owner will submit permit registration documents (PRDs) necessary for coverage under the Construction General Permit (CGP), including but not limited to: the Notice of Intent (NOI), Notice of Termination (NOT), the SWPPP and other documents required by the CGP.

F. Prior to start of work, the Contractor shall submit for approval by the Owner, the names and qualifications of qualified staff designated by the Contractor to implement the SWPPP, defined by the CGP as follows:

1. Qualified SWPPP Developer (QSD): The Contractor's QSD shall have obtained the required registrations/certifications listed in Section VII of the CGP and successfully completed the SWRCB sponsored or approved QSP training course and QSP exam.
2. Qualified SWPPP Practitioner (QSP): The Contractor's QSP shall have obtained the required registrations/certifications listed in Section VII of the CGP and successfully completed the SWRCB sponsored or approved QSP training course and QSP exam.
3. If the QSD or QSP is no longer employed by the Contractor or is no longer associated with the Work, the Contractor shall notify the Owner's Representative within 24 hours, designate a replacement within 48 hours, and update the SMARTS system within 72 hours. The replacement QSD or QSP shall have the required registrations/certifications listed herein.

G. Submit completed authorization form with name of proposed Data Submitters, to obtain approval by the Owner's Representative, acting as the legally responsible party (LRP), to upload data electronically into Storm Water Multi-Application & Reporting System (SMARTS). The quarterly inspection reports, Annual Reports, and all sampling results shall be uploaded onto SMARTS by the QSP or their designated Data Submitter, following Owner's Representative's review and approval.

H. QSP shall prepare an Annual Report summarizing corrective actions, lab reports, sampling and analyses, and any corrective actions not implemented as per Section XVI of the Construction General Permit covering each yearly period in accordance with the permit conditions. QSP shall upload the Annual Report to SMARTS by August 15th, or within one week of final site stabilization, and shall immediately notify the QSD and LRP of upload. LRP or their designated representative shall review and provide comments within one week of upload to SMARTS. QSP shall address comments and revise report as necessary, prior to August 27$^{th}$, to allow LRP's final review and acceptance prior to Sept. 1$^{st}$ deadline.

I. The SWPPP shall contain a detailed schedule of anticipated construction activities. The QSP shall update the schedule monthly or as directed by the Engineer, and shall submit updates to the QSD for incorporation into the amended SWPPP.

J. The SWPPP shall be amended by the QSD in accordance with the Construction General Permit, such as whenever there is a proposed field modification which may affect the site drainage patterns or potential discharge of pollutants to surface waters, groundwater, or a separate municipal storm sewer system. The changes shall be recorded by amending the SWPPP in accordance with the regulatory provisions for SWPPP amendment. The SWPPP shall also be amended to incorporate new measures whenever existing measures are deemed ineffective by the QSP, the QSD or regulatory agency inspectors. SWPPP amendments shall be performed and submitted to SMARTS by the QSD.

K. Changes to the pollution control measures specified in the SWPPP will be allowed, provided they comply with the CGP. The Contractor's designated QSP shall submit written documentation of these changes to the QSD for amendments to the SWPPP, within 48 hours of their implementation.

L. The QSP shall perform all sampling and analyses required by the CGP and the SWPPP. QSP shall sample runoff regardless of whether the total rainfall exceeds the CGP qualifying storm event, but only needs to report the readings taken during a qualifying storm. Sampling and testing of water quality (discharges) shall be performed in accordance with sampling and analysis requirements of the CGP. In the event of exceedances, QSP shall immediately notify the QSD, and initiate corrective action. Documentation of such an event shall be submitted to QSD in writing within 24 hours.

M. For potential violations of the NPDES permits, Contractor shall notify the Owner's Representative and initiate corrective action, documenting activity as required by law.

N. Contractor shall notify the Owner of any regulatory agency inspections within 24 hours of the inspection(s). The Contractor shall submit written notification to the Owner of any findings by the agencies, including verbal warnings.

O. Upon request, the Contractor shall provide copies of all inspection reports for the project to the Owner's Representative within 24 hours of such request.

### 1.5 QUALITY ASSURANCE

A. Comply with all applicable permits, laws, and the approved SWPPP.

### 1.6 PRODUCTS

A. Unless otherwise indicated, all erosion control products shall be certified weed-free.

B. Unless otherwise specified, all slope stabilization fabrics and fiber rolls shall be free of plastic netting. All netting shall be biodegradable.

## 2. EXECUTION

### 2.1 GENERAL

A. Contractor shall not begin site disturbing activities until the SWPPP has been approved by the Owner, uploaded to SMARTS and a Waste Discharge Identification (WDID) Number received.

B. Implementation of SWPPP measures shall be the first order of business upon site mobilization.

C. The Contractor shall exercise every reasonable precaution to protect the watercourses within the Project area from pollution, including fuels, garbage, oils, chemicals, and other harmful materials, and shall conduct and schedule the operations so as to avoid introduction of these materials into the watercourses,

in accordance with the CGP. Contractor shall coordinate water pollution control work with all other Work done on the Contract.

D. The Contractor's designated QSP shall:

1. Be responsible for implementation, repair, upgrades, or maintenance of pollution control measures.
2. Be responsible for sampling, monitoring, reporting, and record keeping, as outlined in the SWPPP.
3. Be responsible for preparation of Rain Event Action Plans (REAPs)
4. Be responsible for turbidity and PH testing.
5. Be the primary contact for pollution control work.
6. Have authority to mobilize crews to make immediate repairs to pollution control measures.

E. If the QSD or QSP identifies a deficiency in any aspect of the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately (within 72 hours of identification). The deficiency may be corrected at a later date and time if requested by the Contractor and approved by the Owner in writing, but not later than the onset of precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation, the Project shall be in noncompliance. Attention is directed to the Contract Documents for possible noncompliance penalties.

F. The Contractor shall be responsible for notifying QSD, and conducting emergency response and cleanup in the event contaminated water reaches onsite catch basins, offsite catch basins, ditches, or creeks. All response measures shall be documented, and shall be inspected for effectiveness and maintained in good working order. Ineffective measures shall be repaired or replaced immediately at Contractor's cost and schedule expense.

G. The weather forecast for the appropriate project's zip code shall be monitored and used by the Contractor on a daily basis. If there is any chance of rain forecast within 48 hours, the forecast shall be printed out and kept with the SWPPP. If the chance of precipitation is predicted to be greater than 50 percent, the necessary water pollution control practices shall be deployed prior to the onset of the precipitation, and monitoring shall increase, as required by law and outlined in the Construction General Permit. For Risk Level II and III locations within the project, a Rainfall Event Action Plan (REAP) shall be prepared as required by the SWPPP. The REAP shall be provided to the QSD within 72 hours of completion.

H. The National Weather Service weather forecast is found at:

**http://www.wrh.noaa.gov/mtr/**

I. The Contractor shall maintain a rain gage at the site at all times during construction. Rain gage readings shall be recorded daily and provided to the Owner's Representative within 72 hours whenever the daily rainfall total is greater than 0.25 inches per day or whenever the rainfall is a part of a qualifying storm event as defined by the CGP.

J. The Owner will not be responsible for delays caused by the Contractor's failure to comply with the SWPPP, this Section, or the CGP. The Owner's Representative may order the suspension of construction operations which create or have the potential to create water pollution, at the sole expense of the Contractor.

K. The Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 13-3.03, "Construction," of the State Specifications.

## 2.2 BEST MANAGEMENT PRACTICES (BMP'S)

A. Contractor shall be responsible throughout the duration of the Project for installing, constructing, inspecting, maintaining, removing and disposing of the water pollution control practices included in the Drawings, Specifications, the SWPPP and any amendments thereto. Requirements for installation, inspection, maintenance, removal, and disposal of water pollution control practices are specified in Drawings, specifications, the SWPPP, the Manuals, and herein.

B. Implementation of pollution control measures (BMPs) shall conform to the Drawings, the SWPPP, the CGP conditions, and these Specifications.

C. Implementation of water pollution control practices may vary by season. The SWPPP, this Section, and the Manuals shall be followed for control practice selection of year-round, rainy season and non-rainy season water pollution control practices.

D. Contractor may be directed to apply permanent erosion control in small or multiple units as disturbed soil areas are deemed substantially complete by the Owner's Representative.

E. Temporary and permanent BMP's shown on the Drawings represent a mandatory minimum level of treatment. Contractor shall be responsible for these BMP's in addition to all others required by the SWPPP, the CGP or as directed by the Engineer.

## 2.3 MAINTENANCE, INSPECTION AND REPAIR

A. The QSP or QSP-substitute shall conduct inspections, sampling and analyses, as required by the CGP and the SWPPP, at all active areas and all areas with installed BMPs.

B. If the Contractor or the Owner's Representative identifies a deficiency in any aspect of the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately (within 72 hours of identification). The deficiency may be corrected at a later date and time if requested by the Contractor and approved by the Owner's Representative in writing, but not later than the onset of precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation, the Project shall be in noncompliance.

C. Contractor shall provide Water Pollution Control training as required by the CGP. Documentation of training shall be provided to the Owner's Representative within one week of the training.

D. The QSP shall inspect the pollution control measures to identify their effectiveness and implement repairs as required by the SWRCB.

E. Contractor shall furnish sufficient personnel, materials and adequate equipment to perform the water pollution control maintenance work immediately and to work continuously until its completion. Water pollution control maintenance work shall consist of maintaining and replacing temporary water pollution control measures throughout the duration of the Contract until permanent measures are accepted by the Owner Representative. Maintenance work and SWPPP shall be considered as integral functional practices to implement water pollution control. Failure to fully comply with the requirements of the Construction

General Permit shall subject the Contractor to all fines, damages and job delays incurred due to failure to implement and properly update the SWPPP.

F. If the measures being taken by the Contractor are inadequate to control water pollution effectively, the Owner Representative may direct the Contractor to revise its operations and its SWPPP program. Such directions will be in writing and will specify the items of Work for which the Contractor's water pollution control measures are inadequate. No further Work shall be performed on said items until the water pollution control measures are adequate and, if also required, a revised SWPPP program has been accepted.

## 3. MEASUREMENT AND PAYMENT

### 3.1 MEASUREMENT

A. SWPPP Development and Implementation is a lump sum pay item.

### 3.2 PAYMENT

A. SWPPP Development and Implementation will be paid for at the contract lump sum price for SWPPP Implementation, which will be considered payment in full for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work necessary to prepare a complete SWPPP, conforming to the requirements of the CGP and signed by a QSD and to implement and maintain SWPPP measures and controls, including, sampling, analysis, SWPPP amendments and reporting, and maintenance and removal of the measures through the end of the rainy season following completion of construction activities and submittal of the Notice of Termination (NOT).

B. During each estimated period the Contractor fails to conform to the provisions in this section, or fails to implement the control measures (BMPs) shown on the Drawings or specified elsewhere in these Specifications as items of work, the Owner will withhold 25 percent of the payment for that phase of the SWPPP implementation.

C. Withholds for failure to perform SWPPP work will be in addition to all other withholds provided for in the contract. The Owner will return performance-failure withholds in the progress payment following the correction of noncompliance.

D. Separate payment will not be made for implementation of BMPs in areas outside the project area and not specifically provided for in the SWPPP or in these Specifications.

| Pay Item | Pay Unit |
|---|---|
| SWPPP Development and Implementation | Lump Sum |

**END OF SECTION**

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# CONSTRUCTION SURVEYING


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# SECTION 017123.16
# CONSTRUCTION SURVEYING

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work required under this Section shall include, but is not limited to, all labor, tools, materials, equipment and incidentals required to perform construction surveying necessary to establish the lines and grades of the proposed work, as shown on the Drawings, as specified, or as directed by the Engineer.

### 1.2 WORK INCLUDED

A. The Contractor shall be responsible for procuring professional land surveying services as necessary to construct this project.

B. The Contractor shall preserve and protect all project survey control and reference points shown on the Drawings and located outside the limits of disturbance. Monuments disturbed by the Contractor shall be reestablished by the Contractor at his sole expense.

C. The Contractor shall be solely responsible for the protection and maintenance of all existing and Contractor-established survey marks and monuments, and all constructed lines and grades.

### 1.3 SUBMITTALS

A. Section Not Used

### 1.4 REFERENCES

A. State of California, Department of Transportation (CALTRANS) State Standard Specifications (current edition).

### 1.5 QUALITY ASSURANCE

A. All Work shall be performed to the satisfaction of the Engineer.

B. The Engineer may, at his sole discretion, perform his own surveys for: verification of project control points, verification of lines and grades, and inspection of survey monument preservation. Contractor shall provide unrestricted access for the Engineer to spot-check the work. This does not relieve the Contractor of their responsibility to perform additional independent surveying, as need to complete the work.

C. In the event that the construction staking reveals a design inconsistency or error, Contractor shall notify the Engineer immediately and shall not proceed with the work until directed by the Engineer.

## 2. PRODUCTS (Not Used)

## 3. EXECUTION

A. The Engineer will establish a minimum of three survey control monuments, as shown on the Drawings. The Contractor's surveyor will be provided with the northing, easting and

elevation of the control points existing in the field as shown on the Drawings. In addition the Engineer of Record will also provide the Contractor's surveyor with the final linework file developed in AutoCAD Civil 3D. The Contractor's surveyor will be required to access AutoCAD in order to use the electronic files. Civil 3D information does not transfer to base AutoCAD or older versions of AutoCAD and therefore will not be available to Land Surveyors who do not have this program.

B. From this information, the Contractor shall establish the baseline control points and reference points for horizontal and vertical control and make all additional detailed surveys and measurements and establish markings or monuments necessary for the construction of the work as dimensioned on the Drawings.

C. At a minimum, construction staking shall include the following:

1. Proposed clearing and grubbing limits,
2. Offsets to perimeter of ponds, berms and other proposed features
3. Benchmarks as necessary to establish and maintain vertical control,
4. Any other items required for a full, complete and accurately built project meeting specified grading tolerances.

D. All stakes and survey markers will be conspicuously marked with flagging tape or paint by the Contractor. The Contractor shall be responsible for protecting and maintaining all stakes from destruction.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Construction Surveying shall not be independently measured for payment.

### 4.2 PAYMENT

A. No separate payment will be made for the work covered under this section. Full compensation for all costs in connection with Construction Surveying shall be included in the contract price for related work.

B. The cost of resetting and verifying control points disturbed by the Contractor will be borne by the Contractor. The cost of any such verification or replacement of benchmarks and/or control survey points will be deducted from any monies due to the Contractor. The Contractor will not be allowed any adjustment in working days for such verification or replacement of survey control points.

**END OF SECTION**

# INDEX
# SECTION 024100
# DEMOLITION

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# SECTION 024100
# DEMOLITION AND REUSE OF MATERIALS

## 1. GENERAL

### 1.1 DESCRIPTION

A. Perform all demolition and disposal work as shown on the Drawings, as specified herein, or as otherwise directed by the Engineer.

B. Related Sections

1. Section 015000, Mobilization
2. Section 311100, Clearing and Grubbing

## 2. PRODUCTS - Not Used

## 3. EXECUTION

### 3.1 GENERAL

A. Before beginning any work, carefully inspect the work and examine the Drawings and Specifications to determine the extent of the work to be performed. In the company of the Engineer, visit the site and verify the extent of the demolition and other work to be performed.

B. Contact all appropriate utilities and agencies to coordinate and verify all abandonments and relocations.

C. Provide a minimum of 48 hours of notice to any residences affected by a planned utility disruption.

D. Use of explosives will not be permitted.

E. Prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

F. Comply with all local regulations regarding dust generation, hauling and disposal.

G. Materials projecting above-ground shall be cut off at a minimum of one foot below finished grade. Backfill and compact all holes caused by removal of materials. Areas of site not detailed on the Drawings shall be filled and graded to drain, generally matching existing conditions.

H. Rock removed from the site may be re-used if it meets the materials specifications of the work item for which it is proposed.

### 3.2 PROTECTION OF EXISTING WORK

A. Take all necessary precautions to ensure against damage to existing work to remain in place, or to be salvaged. Any damage to such work shall be repaired or replaced as directed by the Engineer.

B. Construct and maintain shoring, bracing, and supports, as required. Ensure that structural elements are not overloaded and increase structural supports, or add new

supports, as may be required as a result of any cutting, removal, or demolition work performed.

## 3.3 UTILITY DISCONNECTS

A. Coordinate utility disconnections with responsible utilities as designated on the Drawings.

## 3.4 DEMOLITION

A. General. Extent of removal of existing facilities shall be as shown on the Drawings. Materials not identified as being salvaged by Owner shall be removed and disposed.

B. Hazardous Materials. Comply with all local rules, regulations, ordinances, and statues for handling and disposal of hazardous materials encountered.

C. Utilities. Remove all abandoned above and below ground utilities, of six inch diameter or greater, as shown on the drawings or as directed by the Engineer.

D. Demolition. Demolish all specified structures in accordance with all local regulations. Completely remove footings, foundation, and above-ground construction as shown on the Drawings. Demolition includes all out buildings, walkways, retaining walls, patios and associated structures, porches, any hard landscaping, utilities (and associated structures), posts, piping, conduits, access driveways, culverts, and other similar permanent improvements specified on the Drawings.

## 3.5 SELECTIVE DEMOLITION

A. Pavement, Concrete and Masonry. Where portions of pavement, concrete or masonry facilities and foundations are to be selectively demolished, areas to be removed shall first be sawcut in neat and square lines for the full depth of the section. Pavement removal shall extend beyond limits of planned activities to extent required to maintain integrity of adjacent surfaces. If the straight edge or other immediate adjacent area of the saw cut concrete and/or asphalt pavement section is damaged prior to replacement of the structural section and surfacing, it shall be the Contractor's responsibility to re-cut any damaged, broken, or uneven portion prior to paving at his own expense. Under no circumstance shall the Contractor be allowed to pave against a joint with a broken, jagged, or uneven line.

B. Fences, Walls and Gates. Preserve access control where fencing, walls and gates are removed during construction, including cattle fencing. Repair damage caused by work under this contract to the satisfaction of the Engineer.

## 3.6 DEBRIS REMOVAL

A. Remove all trash, rubble and debris generated by demolition activities from the site on a regular basis

## 3.7 DISPOSITION OF MATERIALS

A. Salvaged Materials. Salvage of materials for reuse by the Owner shall include removal of the material, equipment, etc., from its present location and transporting, bundling, protecting, cleaning, and storing it in a designated location on the work site, as approved by the Engineer. Items which are specified to be reused, and are damaged

during removal or storage, shall be repaired to the Engineer's satisfaction or replaced with new matching materials, at no cost to the Owner.

B. Wasted Materials. Title to all debris to be wasted and demolished materials is vested to the Contractor upon receipt of the Notice-to-Proceed. Contractor shall assume responsibility for any loss or damage to such property after the Notice-to-Proceed. Condition of such material is not guaranteed and the Contractor shall assume all liability for reuse of any such material.

C. Disposal. All materials removed under this section which are not salvaged by the facility owner for reuse or otherwise recycled, shall be disposed of off-site at appropriate disposal areas approved in advance by the Owner. The material shall be removed from the job site before completion of the contract. Material shall not be sold on the site. All loading, hauling, dumping, and disposal fees are the responsibility of the Contractor.

D. Hauling. Debris shall be removed and transported by approved haul routes in a manner as to prevent spillage on streets or adjacent areas.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Demolition work will not be separately measured for payment.

### 4.2 PAYMENT

A. Demolition will be considered incidental to the Contract Lump Sum price paid for Clearing and Grubbing, in accordance with Section 311100.

**END OF SECTION**

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# SECTION 311100
# CLEARING AND GRUBBING

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# SECTION 311100
# CLEARING AND GRUBBING

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work covered by this section consists of furnishing all labor, equipment, and materials necessary to perform the clearing and grubbing, the removal or disposal of all cleared and grubbed materials, and the filling of all grubbing holes, as specified, as shown on the Drawings, or as directed by the Engineer.

B. Related Sections

1. Section 015000, Mobilization
2. Section 312316, Stripping and Excavation
3. Section 312323, Engineered Fill
4. Section 024100, Demolition and Reuse of Materials

### 1.2 REFERENCES

A. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition.

## 2. PRODUCTS - Not Used

## 3. EXECUTION

### 3.1 CLEARING

A. General. All work shall comply with Section 17, Clearing and Grubbing of the Standard Specifications.

B. All trees, stumps, down timber, snags, brush, vegetation, old piling, stone, concrete rubble, abandoned structures, and similar debris shall be cleared within the limits of the construction extents, unless otherwise shown on the Drawings or directed by the Engineer.

C. In areas where grubbing is not required, the clearing operations shall consist of the complete removal of all obstructions above the ground surface.

D. Contractor shall flag clearing limits for Engineer's approval prior to Contractor initiating clearing and grubbing activities.

E. Downed plant materials shall be removed from tree protection zones and protected natural resource areas by hand or with equipment located outside fencing. Contractor shall extract debris by lifting the material out, not skidding it across the soil surface.

F. Trees. Where trees are approved by the for removal, trees shall be felled in such a manner as to avoid damage to trees left standing, to the existing structures and installations, as well as with due regard for the safety of employees and others. Stumps shall be removed to minimum depth of 3 feet, or to a point where remaining roots are less than 1.5 inches in diameter, whichever depth is greater. Trees located beyond the

limits for clearing and grubbing that are not marked for removal, shall be protected from damage, as indicated on the Drawings and as specified.

G. Vegetation. Vegetation to be removed shall consist of all heavy growth of brush and woody vegetation, unless shown otherwise on the Drawings or directed by the Engineer.

H. Debris Removal. Abandoned foundations, rip rap, drainage materials, debris, and other unsuitable material and any other debris designated for removal on the Drawings shall be removed and disposed of in accordance with this section. Buried unsuitable debris encountered during excavations shall be removed and disposed of in accordance with Section 312316, Stripping and Excavation.

## 3.2 GRUBBING

A. General. Grubbing shall consist of the removal of all stumps, roots, buried logs, old piling, old paving, concrete, abandoned utilities, timbers, fencing, and other objectionable matter encountered.

B. Limits. Except as otherwise noted or specified on the Drawings, the entire area within the limits of the footprint of proposed fill placement shall be thoroughly grubbed. Areas disturbed only for access do not need to be grubbed.

C. Filling of Holes. All holes caused by grubbing operations, except in borrow areas, shall be excavated with 3 to 1 (horizontal to vertical) side slopes in conformance with Section 312316, Stripping and Excavation. The excavation shall then be backfilled with compacted embankment material in conformance with Section 312323, Engineered Fill.

## 3.3 DISPOSAL OF DEBRIS

A. Cleared and Grubbed Materials. Except as hereinafter specified or otherwise indicated on the Drawings, all logs, brush, strippings, concrete, asphalt, timbers, slash, and other non-organic debris which are the products of the clearing and grubbing operations shall be disposed of. Remove any or all of the products of clearing and grubbing operations from the site and dispose of the material at other locations or through other sources arranged for, by, and at the expense of the Contractor, in accordance with applicable laws and ordinances.

B. Clean woody plant material products of the clearing and grubbing operations not designated for salvage shall be lopped to 6 feet or less in length and dispersed as slash within disturbed areas, as specified by the Engineer.

## 3.4 TRIM AND THIN WILLOWS

A. Trim and Thin Willows consists of removal of up to 1/2 of the individual willow trees and shrubs within the designated area, using hand equipment only.

B. Trees specified for removal will be flagged by the Engineer. Cut tree stumps to within four inches of the surrounding grade.

C. Thin the remaining willow trees by trimming the lower branches flush to the trunk. For bidding purposes, assume all branches below 6 feet off the ground will be required to be removed. Final determination will be made in the field by the Engineer.

D. All materials resulting from these operations shall be removed from the "Trim and Thin Willow" area and chipped or scattered as slash on the adjacent proposed bench area. Slash shall be bucked to less than 4 feet in length.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Clearing and Grubbing will be measured as a lump sum pay item.

B. Trim and Thin Willows will be measured by the acre of willows Trimmed and Thinned, based on the Dimensions shown on the Drawings, unless otherwise directed by the Engineer.

### 4.2 PAYMENT

A. Clearing and Grubbing will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the clearing and grubbing operation as specified, including disposal or salvage of materials, and restoration of ground surfaces.

B. Trim and Thin Willows will be paid for at the contract unit price per acre, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the Trimming and Thinning of Willows as specified, or as directed by the Engineer, including disposal of materials.

C. Removal and disposal of buried debris, not encountered during grubbing operations, will be paid for in accordance with Section 312316, Excavation.

D. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Clearing and Grubbing | Lump Sum |
| Trim and Thin Willows | Acre |

**END OF SECTION**

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# SECTION 312316
# STRIPPING AND EXCAVATION

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# SECTION 312316
# STRIPPING AND EXCAVATION

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work covered by this section consists of furnishing all labor, equipment, materials, and performing all operations necessary to complete Stripping and Excavation, as specified, as shown on the Drawings, or as directed by the Engineer. Work includes, but is not limited to the following:

1. Stripping for removal of vegetation and surface organics.
2. Excavation for removal of unsuitable material.
3. Establishment of temporary access ramps, mats, shoring, or fill pads as necessary to complete the work.
4. Mass excavation of ponds and other features
5. Construction Staking related to the work
6. Other miscellaneous excavation incidental to the construction of the improvements**.**

B. Over-excavation for placement of RSP is not included within this section but is considered incidental to the work for which it is required.

C. Contractor shall visit the site and make their own conclusions and interpretation about anticipated surface and groundwater conditions at the time of work. Contractor may encounter organic materials and yielding sub-grade (pumping) within the work areas. Waterways and the RCD make no representation of water level conditions.

D. Related Sections

1. **Section 311100, Clearing and Grubbing**
2. **Section 312323, Engineered Fill**
3. **Section 312319, Dewatering**

### 1.2 REFERENCES

A. State of California, Department of Transportation (CALTRANS) State Standard Specifications (current edition).

B. Surveys. All construction staking shall be performed by the Contractor, in accordance with Section 017123.16, Construction Surveying. The Owner shall provide control points at the locations shown on the Drawings. Control points disturbed by the Contractor shall be replaced by the Contractor, at his sole expense.

### 1.3 QUALITY ASSURANCE

A. Comply with all applicable permits and regulations.

B. Contractor shall provide necessary construction staking and references points, as required to meet the specified tolerances for the work.

## 2. PRODUCTS

A. **MATERIALS - SECTION NOT USED.**

## 3. EXECUTION

### 3.1 GENERAL

A. The Contractor shall protect existing utilities in performing any excavation work.

B. The Contractor shall comply with all permit conditions in performing any excavation work.

C. Contractor shall perform an independent earthwork estimate for the purpose of preparing bid prices for earthwork. Quantities indicated on the Drawings are approximate estimates provided only for permitting purposes and are not suitable for bidding purposes.

D. The bid price shall include costs for any necessary export and proper disposal of excess or unsuitable earth materials off-site, at locations to be arranged and paid for by the Contractor.

### 3.2 STRIPPING

A. Stripping. Strip surfaces of excavations and fill foundations of heavy growth of crops, grass, weeds and other vegetation as specified in Section 311100, Clearing and Grubbing. Greater depths of stripping may be necessary in selected areas to remove vegetation, as determined by the Engineer.

B. Unless otherwise specified, the stripped materials shall be disposed of off-site, at locations to be arranged and paid for by the Contractor

### 3.3 EXCAVATION

A. General. Excavations shall extend into firm, undisturbed native soils. Excavation shall consist of removal of material for embankment foundation preparation, mass excavation and finish grading of the ponds, channel and slope improvements, and other miscellaneous excavations to the lines and grades shown on the Drawings, or as directed by the Engineer.

B. Control of Water. Water control work shall be performed in accordance with project permit conditions, and Section 312319, Dewatering, of these Specifications. When water is encountered, either ground water or surface runoff, the Contractor shall furnish, install, maintain, and operate all necessary machinery and equipment required to keep the excavation reasonably free from water, as approved by the Engineer, until the placement of concrete or backfill material has been completed, inspected, and approved, and all danger of flotation and other damage is removed. Water pumped from the excavation shall be disposed of in such manner as will not cause injury to public or private property, or constitute a nuisance or

menace to the public, and the disposal method shall be subject to the approval of the Engineer. Water shall be controlled until work is complete.

C. Excess Excavation. Care shall be exercised by the Contractor not to excavate below the grades shown on the Drawings, except as specified herein, and as directed by the Engineer. All excavations in excess of the grades shown on the Drawings which are not directed by the Engineer shall be backfilled with compacted embankment at the Contractor's expense, per Section 312323, Engineered Fill.

D. Temporary Excavations. With exposure and drying, on-site soils may experience progressive sloughing if excavated near vertical and left un-shored during construction. Engineer suggests that the soils on-site should be considered Type C when applying OSHA regulations.

E. Tolerances. The excavation tolerance shall typically be +0.2 feet to -0.3 feet from the grades shown on the Drawings.

## 3.4 UNCLASSIFIED EXCAVATION.

A. Unclassified Excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature, which is not otherwise classified and paid for under Excavation of Unsuitables or Rock Excavation described below. Unclassified Excavation includes excavation required to reach finished grade. Over-excavation for the placement of materials (e.g. RSP) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

## 3.5 EXCAVATION OF UNSUITABLES.

A. Excavation of Unsuitables. Areas of unsuitable in-place soils, as determined by the Engineer, may also be encountered. Material shall not be classified as unsuitable solely based on moisture content. Material within the limits of Excavation, as described above under Unclassified Excavation, or within the limits of over-excavation for the placement of materials (e.g. RSP) shall not be classified as unsuitable. The Contractor shall anticipate having to over-excavate areas of unsuitables as directed by the Engineer, dispose of these materials, and replace them with Engineered Fill. The actual locations of these excavations will be determined in the field by the Engineer. The side slopes of the excavations shall be no steeper than 1 to 1 (horizontal to vertical). The over-excavations shall be backfilled with embankment materials in accordance with Section 312323, Engineered Fill.

B. Disposition of Unsuitable Materials. The excavated materials that are considered unsuitable based solely on moisture content shall be processed as necessary to meet specification requirements for suitability and used as Engineered Fill. Materials which are unsuitable based on organic content will be stockpiled and used as dressing over fill areas.

## 3.6 ROCK EXCAVATION

A. Rock Excavation. Rock excavation consists of the removal of hard igneous, metamorphic, and/or sedimentary rock in solid beds or masses in original or stratified position which can be removed only by continuous drilling, blasting or the use of pneumatic tools, and all boulders of 5 cubic yards in volume or larger. Material which can be loosened with a pick, frozen materials, soft laminated shale and hardpan, which for convenience or economy is loosened by drilling, blasting, wedging or the use of pneumatic tools, removal of concrete pavement and retaining walls, shall not be classified as rock excavation. When rock is encountered within the limits of the excavation, immediately notify the Owner and Engineer and do not proceed further until instructions are received and measurements made for the purpose of establishing the volume of rock excavation. Contractor shall note that blasting is not approved for this project. The need for specialized rock excavating equipment should be anticipated if rock is encountered.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Stripping. Stripping will not be separately measured for payment.

B. Unclassified Excavation. Unclassified Excavation will be measured by the cubic yard of Unclassified Excavation, based on the Dimensions shown on the Drawings. This is a neat-line quantity and does not consider the loose volume of the excavated material. Unclassified Excavation is a Final Pay Item in accordance with Section 9-1.02C “Final Pay Item Quantities” of the Standard Specifications. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.

C. Excavation - Unsuitable Materials. Excavation to remove materials that are designated by the Engineer as unsuitable for reuse will be measured by the cubic yard of material excavated from the stripped foundation dimensions shown on the Drawings and replaced with Engineered Fill. Measurement will be based on the calculated neat-line quantity from surveyed cross sections before and after the excavation.

D. Rock Excavation. Rock Excavation will be measured by the cubic yard of rock excavation, as determined by cross sections surveyed before and after the work.

E. Other Miscellaneous Excavations. All other excavations will not be measured for payment.

F. Surveys: Construction staking will not be separately measured for payment.

### 4.2 PAYMENT

A. Stripping. No separate payment will be made for stripping. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.

B. Unclassified Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete Unclassified Excavation,

as specified, including mass excavation and finish grading of channel banks and floodplains, to the lines and grades shown on the Drawings.

C. Excavation - Unsuitable Materials, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.

D. Rock Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the Rock Excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.

E. No separate payment will be made for other miscellaneous grading incidental to the work. All costs in connection with this work will be considered incidental to the cost of construction of associated improvement.

F. Surveys: No separate payment will be made for surveys or construction staking. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.

G. Mixing and transport of suitable materials for reuse shall be paid for under Engineered Fill, Section 02226.

H. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Unclassified Excavation | Cubic Yard (F) |

**END OF SECTION**

# INDEX
# SECTION 312319
# DEWATERING

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# SECTION 312319
# DEWATERING

## 1. GENERAL

### 1.1 DESCRIPTION

A. Furnish all labor, materials, equipment, and incidentals necessary to design, construct, operate, maintain, and remove all cofferdams, **turbidity curtain**, flumes shoring, diversions, filtration systems and/or other measures, including pumping, to dewater the construction site and to divert streamflow and other surface waters through or around the project area 24 hours a day during the entire field construction period, as shown on the Drawings, as specified, or as directed by the Engineer.

B. Dewatering details on the Drawings (if provided) are schematic. The design and implementation of the Dewatering Plan is solely the responsibility of the Contractor. Contractor shall make their own independent evaluation of potential water sources (surface and groundwater) in preparing their Dewatering Plan.

C. Dewatering shall comply with all project permit conditions, and applicable laws and local ordinances. The contractor shall not dewater or otherwise lower the water surface elevation of the existing pond(s) until receiving written authorization from the RCD, based on biological restrictions. The RCD anticipates, but cannot guarantee, that the authorization will be provided on or about September 1st.

D. The two main surface channels flowing into the work area from upland sources were dry as of May 1, 2021. Though dewatering will likely be required, the installation of a surface water diversion shall only be required if there is flowing water present or a forecast rain event capable of producing surface flow.

E. Contractor should anticipate that dewatering of work areas may be required to prevent seepage of turbid water from active construction areas.

### 1.2 RELATED SECTIONS

A. Not used

### 1.3 SUBMITTALS

A. The Contractor shall submit the following for review and approval of the Engineer before the Contractor proceeds with water control measures.

1. Product data for:

a) pumps

b) silt control filter fabric

c) washed rock

d) impervious liners (turbidity curtain)

e) cofferdam material

f) other materials used in dewatering

B. Submit a Diversion and Dewatering Plan, listing phasing of work, anticipated schedule, approach, materials (e.g., diversion pipe, pumps, etc.). Include details of proposed approach to dewatering and/or in-water excavation of “deep water pond” area.

### 1.4 QUALITY ASSURANCE

A. Comply with all applicable permits and regulations.

B. Comply with water quality standards and scheduling requirements set forth in the permit conditions of approval.

C. Comply with approved Hazardous Materials Control and Spill Prevention Plan, in accordance with Section 015000, Mobilization.

D. Notify Engineer 48 hours in advance of installation or removal of temporary turbidity curtain, cofferdam(s) or diversion.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Imported Rock. Use only clean washed gravel. Sand will not be allowed.

B. Dewatering Facilities. Provide and operate dewatering facilities of suitable size and capacity. The use of equipment shall be consistent with the manufacturer’s recommendations.

C. Turbidity Curtain: Impermeable liner with floating top and weighted base. Type 1 Dot – 8’ x 50’ by Paramount Materials, or equivalent approved by the Engineer. Minimum depth is 8 feet. Top of curtain must maintain 4 inches freeboard above ponded water surface.

| | |
|---|---|
| *Fabric:* | *18oz. nominal PVC coated polyester* |
| *Base Fabric (100% Polyester)* | *1000D x 1000D / 9 x 9* |
| *Weight (FS-191-5041)* | *18oz/yard²* |
| *Tensile Strength, Grab (ASTM 4632)* | *325 lbs x 310 lbs* |
| *Tear Strength, Tongue (ASTM 2261)* | *55 lbs x 45 lbs* |
| *Elongation (ASTM 4632)* | *21% x 21%* |
| *Adhesion Strength (ASTM 751)* | *17 x 17 lbs/inch* |
| *Abrasion Resistance (ASTM 4833) 3* | *25 cycles* |
| *Hydrostatic Resistance (ASTM 751)* | *At least 660 lbs/inch²* |
| *UV Resistance (Weather-O-Meter)* | *Not excessive fading after 1000 HRS* |
| *Cold Crack Resistance (ASTM 2136)* | *-40° F* |
| *High Temperature Resistance (ASTM 2136)* | *180° F (Does not Block)* |

## 3. EXECUTION

### 3.1 GENERAL

A. Contractor is solely responsible for the design, construction, and maintenance and monitoring of the diversion and dewatering facilities. Comply with the Drawings, Specifications, and applicable permit conditions.

## 3.2 AQUATIC SPECIES REMOVAL

A. Aquatic species relocation to be provided by others (NIC). Provide the RCD 72 hours' notice prior to pond dewatering operations or work within open water to allow for removal of aquatic species from the project area. Coordinate work with RCD. Refer to project permit conditions and contract front end provisions for related requirements.

## 3.3 SEDIMENT CONTROL

A. General. Comply with Section 401 Water Quality Certification.

B. Discharge of diverted flow. Unless otherwise specified, a diversion must discharge into the same natural drainage way in which its headworks are located. Where feasible, discharge to existing pools or onto bedrock or otherwise erosion resistant surfaces. Construct energy dissipators at diversion outlets, where necessary to prevent scour at point of discharge.

C. Discharge of Seepage/Groundwater. Discharge all water from the dewatered construction site either by gravity or pumping in a manner to prevent excessive turbidity from entering the receiving waters and prevent scour and erosion outside of the construction site. Pumped water should be pre-filtered with a gravel pack around intake sumps for subsurface flows and a silt fence or hay bales around pumps for surface flow.

D. Discharge pumped water into adjacent gravel bars, floodplains, isolated local depressions, or temporary sediment basins. Where discharging water into the creek will create excessive turbidity, route water through a sediment interceptor or other facilities to remove sediment from water.

E. Isolation of Construction Area. Place turbidity curtain across open water to isolate work area from undisturbed portion of the existing open water pond during excavation within standing water. Turbidity curtain shall extend across entire span of open water and onto dry land at each end, as shown on the Drawings. Base of curtain shall be maintained in contact with the base of the pond and top shall be maintained with a minimum of 4" freeboard above water surface. Schedule work and phase excavation so that excavation of the proposed "Deepwater Pond" will occur in a manner that minimizes the time spent working within standing water.

## 3.4 HAZARDOUS MATERIAL CONTROL

A. General. Comply with the approved Hazardous Materials Control and Spill Prevention Plan (HMC&SPP) in accordance with Construction Facilities and Temporary Controls, Section 01500.

B. Equipment and Lubricants. Steam-clean all equipment prior to its use. Inspect all equipment for cleanliness and fluid leaks prior to use and monitor during its use.

Maintain equipment as required. Equipment refueling shall only take place in a designated, contained area.

C. Isolation of Construction Area. Prior to performing work within flowing water, outside of cofferdams, install oil containment booms downstream of the work area. Maintain booms until completion of the work within the channel is complete.

D. Spills. Maintain a supply of oil spill booms, sorbent pads, and other supplies to contain and clean spills. Comply with approved HMC&SPP should spills occur.

## 3.5 COFFERDAMS

A. General. The Contractor is solely responsible for the design, construction, maintenance, and monitoring of cofferdams, dikes and other isolation facilities. Cofferdams with an exposed height greater than 10 feet shall be designed by a Professional Engineer registered in the State of California, based on available soil data.

B. Provide cofferdams high enough to account for water surface fluctuations.

C. Secondary Dikes/Seepage Control. Secondary dikes within the isolated construction area can be used to control seepage and groundwater around excavations, provided all dike materials are removed from the work area upon completion, prior to re-watering the work area.

## 3.6 FLOW BYPASS

A. Capacity. If surface flow is anticipated, bypass flowing surface water around the construction site using a cofferdam and bypass pipe. The bypass system shall be capable of passing anticipated flows, with a minimum of 12 inches of freeboard (measured vertically from water surface to lowest point on dam). Bypass pipes shall have a minimum diameter of 6-inches and be fitted with a debris rack to minimize the likelihood of clogging.

B. Storm Events. During the designated period for instream work, the Contractor shall be solely responsible for the integrity of the dewatering system. If rain is predicted, the Contractor shall perform flood fighting activities as directed by the Engineer and regulatory agencies.

C. The diversion system may require adjustment to accommodate the sequence of work. No additional compensation shall be provided for any adjustments, revisions, or reinstallations of diversion elements.

D. The diversion shall result in conditions that allow the required compaction to be achieved and shall prevent sediment-laden water that exceeds the effluent discharge limits from entering the drainage ways.

E. Unless otherwise specified, a diversion must discharge into the same natural drainage way in which its headworks are located.

## 3.7 DEWATERING

A. General. Remove water from construction area using pumping, well points, drains, or other approved methods, only as necessary for completion of the work in a manner that

is compliant with permit conditions. Within the exception of keyways excavated for fill placement, excavations do **not** need to be dewatered for inspection by the Engineer.

B. Construction water shall be segregated from seepage water and routed through sediment interceptors or other facilities to remove contaminants and sediment.

C. Well Points. Well points shall be designed to preclude the loss of fine soil by gravel packing or other suitable means.

D. Pumping Facilities. All pump intakes shall be screened to prevent the entrainment of wildlife, in accordance with project permit conditions. Pumps and discharge piping shall be suitable for the type of service provided and shall be a sufficient size and capacity to satisfactorily dewater work areas. Engines shall be muffled to avoid excess noise and pump intakes shall be fitted with screens as required.

E. Power Supply. Consider the availability and reliability of power sources for dewatering operation in dewatering system design and make provisions for temporary or backup power supply as deemed necessary. Where the primary diversion is operated by pumping, provide a backup system with automatic controls capable of starting the backup upon failure of the primary system.

F. Groundwater. Dewatering shall maintain water surfaces below the base of temporary excavations or trenches, to allow for visual inspection of the work, if requested by the Engineer. Lower groundwater tables within excavations for structures to a minimum of two (2) feet below foundations or as otherwise required to establish a firm, stable foundation. Control groundwater within excavation until completion of backfill operations.

## 3.8 WATER SOURCES AND WATER LEVELS DURING THE CONSTRUCTION PERIOD

A. The Contractor shall be responsible for making an independent evaluation of site conditions. The Contractor's dewatering plan shall address all potential sources of surface and groundwater, including but not limited to streamflow (natural or managed), backwatering of the channel from downstream blockages, domestic water lines, storm drain outfalls, irrigation tailwater, industrial discharges, seepage, and direct rainfall.

## 3.9 CLEANUP

A. Thoroughly clean up area to remove debris and contaminated materials. Remove fine sediments and restore disturbed area prior to removal of the dewatering facilities. Clean and round river run gravels or cobbles, if used in cofferdam construction, may be spread in the creek channel in lieu of removal, provided grading will not interfere with facility operation.

## 3.10 REMOVAL OF DEWATERING FACILITIES

A. Prior to removal of the dewatering facilities, complete the following activities:

1. Complete required tests and inspections.
2. Thoroughly cleanup work site.
3. Perform final walkthrough with Engineer.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Dewatering will not be separately measured for payment.

### 4.2 PAYMENT

A. Dewatering will be paid for at the lump sum contract price for Dewatering, which price will include payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the dewatering operations, as specified, including temporary cofferdams, pumping, silt control, filter fabric, sediment control, erosion control, removal of muck, disposal of materials, and removal of dewatering facilities.

| Pay Item | Pay Unit |
|---|---|
| Dewatering | Lump Sum |

**END OF SECTION**

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# SECTION 312323
# ENGINEERED FILL

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# SECTION 312323
# ENGINEERED FILL

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work covered by this section consists of furnishing all plant, labor, and materials, and performing all operations necessary for the construction of Engineered fills, including surveying, subgrade preparation, furnishing, loading, and on-site and off-site hauling of materials, processing, drying, screening placement and compaction of Engineered Fill materials, construction of ramps, and other incidental earthwork as may be necessary to complete the Engineered Fills, as shown on the Drawings, as specified, or as otherwise directed by the Engineer.

B. All grading shall comply with Section 19 of the Standard Specifications. It shall be the responsibility of the Contractor to visit the site and make his own interpretations with regard to materials, methods and equipment necessary to perform the work required for this project.

C. Temporary erosion control and BMP's shall be installed in accordance with the Drawings and specifications, and approved by the Engineer prior to beginning Engineered Fill Construction.

D. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

E. A geotechnical report has not been prepared for this project. Contractor is notified that the project area may have groundwater level at or near the surface. Project scheduling, phasing, and equipment selection should account for the need to excavate ponds from dry ground at project perimeter and process saturated soils prior to their placement as engineered fill.

### 1.2 RELATED SECTIONS

1. Section 312316, Stripping and Excavation
2. Section 311100, Clearing and Grubbing

### 1.3 REFERENCES

A. American Society for Testing of Materials (ASTM) Standards:

| | |
|---|---|
| D1557 | Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Moistures Using 10 lb (4.54 kg) Rammer and 18-inch (457 mm) Drop |
| D2974 | Test Method for the Organic Content of Soils |
| D4318 | Test Method for the Liquid Limit and Plastic Limit of Soils |
| ASTMD6938 | Standard Test Method for in place density and water content of soil and soil aggregate by nuclear methods (shallow depth) |
| D422C | Particle-Size Analysis of Soils |

B. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition.

C. Surveys. All construction staking shall be performed by the Contractor. Survey control points are shown on the Drawings.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Water. Refer to Section 015000, Mobilization

B. Engineered Fill Materials. All materials from the specified excavations shall be used in the construction of required permanent engineered fill, except as noted below. The suitability of materials for specific purposes will be subject to the approval of the Engineer, in conformance with these specifications. Materials used for engineered fill shall conform to the quality and gradation requirements as follows:

1. less than 5% organic material;
2. shall contain no rock or clods greater than 4-inches in diameter;
3. shall contain no sod, brush, roots, or other perishable or unsuitable material;

C. Surplus Materials. All surplus or unsuitable excavated materials generated from proposed excavations will be placed as Engineered Fill, either within the proposed Bench or Sediment Retention Berms, as indicated on the Drawings. Final grades of proposed Bench may be adjusted by the Engineer in the field to accommodate materials.

D. Imported Engineered Fill. Importing of Engineered Fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made therefore. Should such imported material be required, the Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance and provide an adequate sample size so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Special Provisions and the Standard Specifications. The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any imported material requiring density testing. Any proposed engineered fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer prior to import or placement in the work.

E. If a disagreement between the Contractor and the Engineer occurs over the suitability of imported materials, the Contractor shall perform laboratory testing to demonstrate compliance with the specifications. The failure of the Contractor to perform the testing shall not relieve the Contractor from the obligation to provide suitable materials.

## 3. EXECUTION

### 3.1 ENGINEERED FILL CONSTRUCTION

A. General. Compacted Engineered Fill in Engineered Fills shall be placed in the dry and compacted as specified herein.

B. Borrow Areas. Refer to Section 312316, Stripping and Excavation.

C. Subgrade Preparation. Following Clearing and Grubbing, the subgrade surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the Engineered Fill, and the surface materials of the subgrade shall be compacted and bonded with the first layer of Engineered Fill.

D. Prepared subgrade surface shall be free of loose, uncompacted earth in excess of two inches in depth normal to the slope and shall be at such a moisture content that the Engineered Fill can be compacted against it ensure a good bond between the engineered fill and the subgrade. Subgrade surfaces shall not be steeper than 1 horizontal to 1 vertical.

E. Fill shall not be placed until the required subgrade preparation has been completed and approved by the Engineer, including keyway excavations shown on the Drawings.

F. Fill shall not be placed on or in standing water.

G. Horizontal Layer Construction. The compacted Engineered Fill shall be constructed to a sufficient section so as to achieve the required compaction throughout the finished section. Materials excavated to form keyways or over-excavations, and suitable for use as Engineered Fill, shall be blended uniformly with other excavated soils. All fill placed on slopes steeper than 5 horizontal to 1 vertical shall be keyed and benched as shown on the Drawings. If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified parallel to the axis of the fill to a depth of not less than 2 inches before the next layer is placed. Fill placed around structures will be brought up at approximately uniform height on all sides of the structure.

H. Compaction. Fill shall be placed to minimum compaction of 85% RC. The fill should be graded to provide a uniform surface and compacted with a vibratory sheepsfoot compactor. The soil should be compacted by mechanical means in uniform loose lifts not exceeding 12 inches in thickness. The lifts should be compacted with a minimum of eight passes over the entire surface with a roller that weighs at least 5 tons. Bonding should be achieved between lifts, by scarification or, depending on the compaction equipment, full penetration of the sheepsfoot teeth.

I. Fill adjacent to structures, pipe, conduits, and anti-seep collars shall be compacted to a density equivalent to that of the surrounding fill by means of hand tampers or plate vibrators. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment. Fills compacted in this manner shall be placed in layers not greater than 4 inches in thickness before compaction, and shall meet the same density requirement as for the adjacent area. All compaction testing shall be performed by the Owner, unless otherwise noted. The cost of re-testing of areas that have failed to meet specified compaction requirements shall be borne by the Contractor.

J. At the discretion of the Engineer, the top 18 inches of fill, within areas specified to receive revegetation treatments, may be compacted to between 80% and 85% of the

maximum dry density, to facilitate plant establishment. Prior to seeding, the surface shall be prepared as specified in Section 329200, Seeding.

K. Contractor should assume soil will require moisture conditioning or blending to achieve desired compaction. If the material content does not allow for proper compaction, the Contractor will be required to moisture condition the soil. The moisture conditioning of fill materials shall be performed prior to placement in the section. The final minor moisture conditioning may be made on the fill, as required. Harrowing, or other approved methods will be required to work the moisture into the material until a uniform distribution of moisture is obtained. Water applied on a layer of fill shall be accurately controlled in amount and distribution so that free water will not appear on the surface during or subsequent to rolling. If the material is too wet for proper compaction or soft and yielding sub-grade is experienced (pumping), the Contractor will be required to aerate the material to a moisture content within the desired limits prior to compaction. If the top surface of the preceding layer of compacted becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened to an acceptable moisture content prior to placement of the next layer of fill.

L. Dressing. Engineered Fill slopes shall be dressed by over-building and cutting back to the required grade. The Contractor may compact the shoulder of each lift during the placement of fill materials to assist in the subsequent dressing of the slopes.

## 3.2 CROSS SECTIONS AND ZONING OF MATERIALS

A. Standard Engineered Fill Sections. The dimensions, slopes, and zoning of materials shall conform to the sections shown on the Drawings and specified herein.

B. Zoning of Materials. Unless otherwise specified, the Engineered Fill materials shall be homogeneous. The Engineered Fill shall be free of pockets, lenses, streaks, layers, etc. of different materials.

## 3.3 FINISH

A. The finished grades shall transition smoothly into adjacent existing grades to provide a functional and “natural-looking” finished surface. Due to the complex nature of the project and the desired aesthetic and functional features, not all details can be accurately represented on the Drawings. As a result, the Contractor may be directed by the Engineer to make minor adjustments to finish grades to best achieve these results. These adjustments may include smoothing or rounding conforms, or changing slope angles or daylight points as necessary to conform to the variable geometry inherent in natural topography. Compensation for this work shall be considered as included in the price paid for the various contract items of work involved, and no additional compensation will be allowed.

B. After the placement of the engineered fills and spoils, the sides and top shall be dressed by final passage of compaction equipment or by dragging to give a smooth surface. The surface area shall be graded to provide surface drainage to flow to desired locations.

## 3.4 ROADS AND RAMPS

A. Maintain Access. At locations where access roads to existing facilities are destroyed because of the work required under this contract, the Contractor shall provide temporary roads, if directed by the Engineer, to give access to fields and buildings

during the construction period. Such facilities shall be removed to the extent required by the Engineer.

B. Temporary Haul Roads. Temporary haul roads shall be constructed as required to transport materials from borrow source or excavation to Engineered Fill site. Temporary ramps to be constructed for the Contractors convenience need not comply with these foundation preparation and Engineered Fill construction requirements. Unless otherwise directed by the Engineer, temporary ramps shall be removed prior to completion of the work and original grades restored.

C. Refer to Section 015000, Mobilization, for additional requirements related to establishment of temporary access.

### 3.5 GRADE TOLERANCES

A. General. Engineered Fills shall be constructed to the net grade and cross section shown on the Drawings.

B. Grade Tolerances. At all points a tolerance of 0.3 (three-tenths) foot above, and 0.2 (two tenths) foot below the prescribed grade will be permitted in the final dressing, provided that any excess material is so distributed that the crown of the Engineered Fill drains in the desired direction and that there are no abrupt humps or depressions in surfaces. However, this tolerance above grade may be modified at locations where, in the opinion of the Engineer, such modifications will not impair the design or appearance of the project.

### 3.6 SPECIAL MEASURES

A. Measures and construction methods shall be incorporated as needed and practical that enhances fish and wildlife values, as directed by the Engineer or project biologist. Special attention shall be given to protecting visual resources and maintaining key shade, food, and den trees.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Engineered Fill. Engineered Fill will be measured on a lump sum basis.

### 4.2 PAYMENT

A. Engineered Fill, measured as specified above will be paid for at the contract lump sum price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to construct compacted Engineered Fills as specified, including hauling of excavated materials from the source.

B. No additional payment will be made for the Engineered Fill foundation preparation, shrinkage of material, drying or moisture conditioning of borrow, or materials placed above the net grades and slopes as allowance for shrinkage.

C. No separate payment will be made for incidental grading beyond the projected toe of the Engineered Fill cross section. The cost for this work shall be included in contract unit price for compacted Engineered Fill.

D. No payment will be made for construction or removal of temporary roads or ramps.

E. No additional payment will be made for costs associated with stabilizing unstable materials. The cost for this work shall be included in contract Lump Sum price for Engineered Fill.

F. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Engineered Fill | Lump Sum |

**END OF SECTION**

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# SECTION 323126
# WIRE FENCES AND GATES


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# SECTION 323126
# WIRE FENCES AND GATES

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, wire fences (a.k.a. Livestock Fence) and gates, as shown on the Drawings, and as specified, or as directed by the Engineer.

### 1.2 RELATED SECTIONS

1. Section 01 50 00, Mobilization

### 1.3 REFERENCES

A. NRCS Construction Specification RI-382(a) – Fences Barbed Wire, January 2010.

### 1.4 SUBMITTALS

A. Submit to the Engineer for review, the manufacturer's data for the following fence components:

1. Line Posts, Brace Posts, Post Backfill, Wire, Stays and Battens.
2. Gates

## 2. PRODUCTS

### 2.1 MATERIALS

A. Line Posts

a. Steel posts shall be painted or galvanized and weigh a minimum of 1.25 pounds per one foot of length. Lightweight stamped-steel posts shall not be allowed. The following steel posts are acceptable for line posts:
   i.Style 1 – "T" Section 1-3/8" x 1-3/8" x 1/8" thick

B. Brace Posts

1. Vertical Brace Posts shall be 5" diameter lumber composed of black locust, red cedar (mostly heartwood), redwood, and pressure treated pine or other wood of equal life and strength. Pressure treatment shall meet the requirements for ground contact.
2. Horizontal rail brace posts are to be 4" minimum diameter with length as shown on the Drawings.

C. Post Backfill Material

1. Post Backfill Material shall be Engineered Fill meeting the requirements of Section 312323.

D. Wire

1. Wire shall consist of class 3 galvanized 4-point barbs spaced not more than 5" apart. Galvanized barbed wire shall be fabricated from 12-1/2 gauge class 1 galvanized or better or 15-1/2 gauge class 3 galvanized strand wire and shall meet the requirements of ASTM

A121. HT Class 3 barbed 15 ½ gauge wire meeting the requirement of ASTM A121 may also be used.

E. Brace Wire. Brace wire shall be high tensile, galvanized steel, or 9-gauge soft wire.

F. Gate. Gate shall be 10-foot length and constructed out of 1-3/4 inch steel tubing with a rust resistant finish, a quick pin-latch system.

## 3. EXECUTION

### 3.1 FIELD ASSEMBLY:

A. Clear fence alignment of brush and trees per Section 311100, Clearing and Grubbing.

B. Wire Fences shall be constructed per the drawings on pages 6 through 9 of the NRCS Construction Specification RI-382(a) – Fences Barbed Wire, January 2010, https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_016341.pdf

C. Posts. If hand set, all backfilled material shall be thoroughly tamped in 4" layers. Post holes shall be at least 6" larger than the diameter or side dimension of the posts.

1. Line Posts
   a. Maximum spacing between line posts shall be 10 feet.
   b. All wooden line posts shall be set at least 30" below finished grade.
   c. All steel line posts shall be driven to a depth as shown on the Drawings.
   d. Every 50 feet or 4th line post in a row shall be wooden.
2. Brace Posts
   a. Posts shall be set and maintained in a vertical position and set 3 feet into the ground.
   b. Horizontal rail brace posts shall be installed 8"-12" below the top of the vertical brace post.
   c. Single H Brace corners and end braces shall only be installed at the ends of straight fence spans of 165 feet or less.
   d. All corners, fence line ends and gate openings require Double H Brace assemblies, except that Single H Braces bay be substituted in straight fence spans of 165 feet or less. A bend in the fence tighter than 20 degrees is considered a corner and not a "straight" pull brace.
   e. Double H Brace pull assemblies are required in straight fence spans at a maximum spacing of 660 feet.
   f. A fence adjoining an existing fence must terminate in a brace assembly as required above.

D. Wire

1. Barbed 3-wire fence shall be spaced as shown in the Drawings.
2. Wire shall be pulled taut and shall sag no more than 4" in the middle stretch of 100 feet (prior to attaching to posts).
3. The fencing wire shall be placed on the livestock side of line posts and on the outside of corners and posts in bends and braces in bends.
4. Each strand of barbed wire shall be attached to each wooden post using 9-gauge galvanized 1½" staples, driven diagonally with the grain of the wood and at a slight downward angle (except in dips). Staples shall not be driven tight to the post.

5. Wire splices shall be crimped or spliced with 8 wraps around the other ("Western Union Splice").
6. The wire shall be fastened to steel line posts with either 2 turns of 14 gauge galvanized steel wire or the post manufacturer's special wire clips.

E. Stays and Battens

1. If used, stays may be made of rot-resistant wood, plastic, fiberglass, or heavy galvanized twisted wire. Stays shall be properly fastened to each fence wire. Stay length shall be sufficient for attachment to all fence wires while maintaining correct wire spacing.

F. Gates

1. One Gate shall be installed at location to be flagged by the RCD. Install with hinges and pin-latches fastened to brace posts using galvanized steel hardware.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Livestock Fence will be measured by the linear foot of Livestock Fence installed in accordance with the Drawings, as specified, or as directed by the Engineer. Measurements will be taken along the post centerline.

B. Gates will not be separately measured for payment.

### 4.2 PAYMENT

A. Livestock Fence will be paid for at the contract unit price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing fence and one gate, complete in place, including post excavation and backfill, posts, wire stays and battons, as shown on the Drawings, as specified herein, or as directed by the Engineer.

B.

| Pay Item | Pay Unit |
|---|---|
| Livestock Fence | Linear Foot (LF) |

**END OF SECTION**

# INDEX
# SECTION 329200
# SEEDING

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# SECTION 329200
# SEEDING

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work covered under this section consists of furnishing all labor, tools, materials, equipment, and incidentals required to perform Seeding, as specified, as shown on the Drawings, or as directed by the Engineer.

### 1.2 RELATED WORK

A. The work described under this section is related to the following sections of the Specifications:

1. Section 312316, Stripping and Excavation
2. Section 329000, Planting

### 1.3 SUBMITTALS

A. Submit to the Engineer, for review, the following:

1. List of origin/collection location for each seed species
2. A representative one-ounce sample of each seed mixture supplied for the job, labeled as to content, purity, and germination percentage.
3. Duplicate copies of invoices for all materials. Invoices for fertilizer shall show the grade furnished.

### 1.4 QUALITY ASSURANCE

A. All seed shall be labeled in accordance with the California Food and Agricultural Code and shall be delivered to the site in sealed individual, unmixed bags with the vendor's certificate attached. Seed shall be sampled and tested in accordance with the State Standard Specifications, Section 21-2.01D(3). Seed treated with mercury compounds shall not be used.

B. Fertilizer shall be delivered in containers labeled in accordance with applicable state regulations and bearing the warranty of the producer for the grade furnished.

C. Seed which has become wet, moldy, or otherwise damaged in transit or in storage, will not be acceptable.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Quantities specified represent pure live seed (pls).

B. Seed shall be mixed on-site in the presence of the Engineer. At no time shall the seed mix contain noxious weed seed. Seed shall be maintained in optimal health and be protected at all times from animal damage; vandalism; inclement weather conditions, including drought, wind, and frost; toxic water; sunlight; moisture; or contact with vehicles, equipment, and tools and any other conditions that would damage or reduce the viability of the seed.

C. Seed Mix.

1. 32 lbs/acre of "NATIVE EROSION CONTROL MIX" from Pacific Coast Seed, or equivalent:

   http://store.pcseed.com/product/Native-Erosion-Control-Mix.aspx

   - Bromus carinatus, California Brome
   - Elymus glaucus, Blue Wildrye
   - Festuca microstachys, Small Fescue
   - Trifolium willdenovii, Tomcat Clover

2. Mixed with 25lbs/acre of "Regreen" (sterile wheat) to provide early erosion protection.

D. Fertilizer. "Biosol 7-2-1"

E. Fiber. "Hydrostraw - Original Formulation", or equivalent Fiber Mulch .

F. Tackifier. Ecology Controls "M-Binder" or equivalent Stabilizing Emulsion (Tackifier). Stabilizing emulsion shall be in a dry powder form, may be re-emulsifiable and shall be a processed organic derivative of the plantego plant (*Plantago insularis*) used as a soil binder.

## 3. EXECUTION

### 3.1 PREPARATION

A. General. Seed the areas disturbed by construction activities, as specified herein or as directed by the Engineer.

B. Debris Removal. Prior to ground surface preparation operations remove and dispose of all wire, rubbish, stones, and other material which might hinder proper grading, and subsequent maintenance.

C. Surface Preparation. Surfaces which are too hard or smooth to accept the seeding, as determined by the Engineer, shall be broken up to a minimum depth of 3 inches, by disking or other methods approved by the Engineer, until the condition of the soil is acceptable. When conditions are such, by reason of excessive moisture or other factors, that satisfactory results are not likely to be obtained, the work shall be stopped and shall be resumed only when directed. Slopes in excess of 25% shall be prepared by track-walking or equivalent method approved by the Engineer.

## 3.2 APPLICATION OF SEED

A. Existing Features. During seeding operations, care shall be taken to avoid damaging existing facilities, vegetation to remain, or any other items on or around the planting areas. This includes cautiously moving hoses and not coating plants to remain with hydroseed slurry.

B. Seeding Areas: Apply seed to the following areas:

- Fill bench along the Norwest side of site
- Temporary access road down slope from staging area to project site
- Staging area, shown on the Drawings

C. Time of Seeding: Perform all seeding between October 1st and October 15th of the year construction begins. The seeding operation shall be halted when, in the opinion of the Engineer, conditions of high winds, excessive moisture or other factors are not conducive to satisfactory results.

1. Perform seeding prior to placement of erosion control fabric, where erosion control fabric is specified.
2. Perform seeding after placement of slash, where slash is specified.

D. Method of Seeding: Seeding must be performed with hydro-seeding equipment, except for small repair areas (less than 1,000 sf) as discussed below.

E. Hydro-seeding. The seed and fertilizer shall be mixed with fiber and water to form a slurry. Mix the slurry in tanks having continuous agitation so that a homogeneous mixture is discharged hydraulically through hoses on the area to be seeded. Seed species shall be added to the hydro-seeder in the Engineer's presence to ensure a seeding rate and quality as specified on Drawings. Seed shall be discharged within 2 hours. If mixture remains in tank for more than 2 hours, it shall be removed from the job site and replaced at the Contractor's expense. The Contractor shall employ the following two-step Hydro-seeding process.

**Step 1: Apply a complete mixture as follows:**

1. Seed @ 60 lbs / Acre
2. Fertilizer @ 1000 lbs / Acre
3. Fiber Mulch @ 1,000 lbs / Acre

**Step 2: Apply a complet mix as follows:**

1. Fiber Mulch at 2,500 per acer
2. Tackifier at 100 lbs/acre

F. Broadcast Seeding. Broadcast seeding may be used to reseed any previously hydro-seeded areas disturbed during planting operations. Seed shall be dry-applied by the following method:

1. Broadcast seed and fertilizer (if specified), at the rates specified above, uniformly by hand, mechanical hand seeder, combination seed spreader and cultipacker, or other approved equipment. Where seed is broadcast by hand or mechanical hand seeder, half the seed shall be sown with the sower moving in one direction, and the remainder sown with the sower moving at right angles to the first sowing. Broadcast seeding shall not be done during windy weather.
2. Rake seed into the soil to achieve a sowing depth of approximately 1/8 inch to 1/4 inch.
3. Following the application of seed, straw mulch shall be pneumatically applied or hand broadcast at the rate of 3,000 pounds per acre where erosion control fabric is not specified, and 500 lbs per acre where erosion control fabric will be used.

### 3.3 REPAIR

A. General. When any portion of the ground surface becomes gullied or otherwise damaged following seeding within the period of Contractor's responsibility, repair the affected portion to re-establish the condition and grade of the soil prior to planting and then reseed as specified for initial planting, all at no cost to the Owner.

B. Reseeding. When it becomes evident that the seeding has been unsuccessful, the Engineer will require that these areas be reseeded with the same seed and quantity as specified for the initial seeding. Complete reseeding within fifteen (15) days following notification and these areas shall be maintained by watering, as specified above, until the successful grass is established. Prepare the area to be reseeded as directed by the Engineer, to receive the reseeding.

### 3.4 FIELD QUALITY CONTROL

A. During the course of work or upon completion of the project, a check of the quantities of materials will be made against the areas treated, and if the minimum rates of application have not been met, the Engineer will require the distribution of additional quantities of those materials to make up the minimum applications specified.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Seeding will be measured on a per acre basis for each acre of seed furnished and installed by the Contractor and approved by the Engineer (as shown on the Drawings).

B. Areas disturbed by the Contractor and requiring seeding outside the designated limits of disturbance shall not be measured for payment.

### 4.2 PAYMENT

A. Seeding will be paid for at the contract unit price for each acre seeded, which price will include furnishing all labor, materials, tools, equipment, and incidentals necessary to

complete the Seeding as specified, as shown on the Drawings, or as directed by the Engineer.

B. The cost of seeding areas outside the designated limits of disturbance shall be solely borne by the Contractor.

C. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Seeding | Acre |

**END OF SECTION**

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# SECTION 329300
# PLANTING

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**SECTION 329300**

**PLANTING**

## 1. GENERAL

### 1.1 DESCRIPTION

A. The work required under this Section shall include, but is not limited to, all labor, tools, materials, equipment and incidentals required to supply and install all of the plants and appurtenances, as shown on the Drawings, described in these Specifications or as directed by the Engineer.

B. “Plants”, “Live Stake(s)”, “Live Stake Trench”, and “Willow Stake(s)” are interchangeable terms.

### 1.2 RELATED SECTIONS

A. The work described under this Section is related to the following Sections of the Specifications:

1. Section 354237, Rock Slope Protection
2. Section 329219, Seeding

### 1.3 SUBMITTALS

A. Section not used.

### 1.4 QUALITY ASSURANCE

A. Proper Installation. The Contractor shall be responsible for proper installation of the native plants to ensure healthy and vigorous growth and development according to the Plans, these Specifications and the Engineer’s direction.

B. Substitutions. No materials substitutions will be allowed without approval from the Engineer.

C. Willows. ASTM International. (2003). D6765-02 Standard Practice for Live Staking.

### 1.5 **PERFORMANCE CRITERIA**

A. Irrigation: Contractor shall apply a minimum of 50 gallons of water, at least once per week, to all transplanted willow rootwads, from the time of installation until the first of either, all work is approved and Contractor demobilizes, or November 15th.

B. The Contractor shall use invasive species control techniques that are approved by the Engineer. Invasive species shall be controlled at no additional cost to the Owner.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Willow Stakes. Willow stakes are woody plant cuttings, capable of rooting, that are taken from trees and shrubs. All plant materials must be top quality stock. Plant materials shall be of the Salix genus. They shall be sound, healthy specimens and first-class representatives of their species. Plant materials that have serious injuries, insect pests, diseases or are shriveled will be rejected. Willow stakes shall be cut from approved sources using a sharp tool. Live willow stakes shall be from 5 to 8 ft in length with a basal end of 0.75 to 2.0 inches in diameter. The top ends shall be blunt; butt ends shall be angled at 45 degrees. Stakes shall be stripped of all stems and leaves, taking care to minimize scarring or bruising of the willow stakes.

B. Willow Transplants. Willow Transplants are live willow boles with intact rootwads that have been excavated from the project area. They shall have a minimum rootwad diameter of 36 inches, and shall be subject to approval of the Engineer. Plant materials shall be sound, healthy specimens salvaged per the notes on the Drawings, as specified herein, and as directed by the Engineer.

C. Backfill Soil. Backfill soil material for planting pits shall be native soil found in the immediate vicinity of each planting pit or salvaged topsoil from the excavation of the Project area.

## 3. EXECUTION

### 3.1 GENERAL

A. Drawings. The Drawings are partially diagrammatic for graphic clarity and, therefore, do not show the exact individual planting locations for each species to be installed. The Contractor shall be responsible for the installation of all of the plants at the typical spacing and layouts shown on the Drawings and described in these Specifications, and as directed by the Engineer.

B. Schedule. The Contractor's strict conformance to the Project schedule is essential for the success of this Project. Unless otherwise directed by the Engineer, planting shall be conducted from October 1 through November 30. Planting shall not occur in saturated soils or while heavy rain is falling.

C. Disturbed areas. Do not disturb areas outside of the designated limits of disturbance, unless authorized in writing by the engineer. All associated restoration and revegetation of disturbed areas outside the designated limits of disturbance, as shown on the drawings, shall be borne solely by the contractor.

D. Sequence of Operations. The planting operations shall be conducted according to the following sequence of operations:

### 3.2 PREPARATION

### 3.3 SITE CONDITIONS

A. Site Conditions. The contractor shall verify site conditions and be familiar with existing grade conditions, locations of existing features to be preserved, and all existing vegetation to remain.

Field adjustments may be necessary to avoid disturbances to existing vegetation to remain. Before ordering materials or proceeding with work, the Contractor shall verify all dimensions and quantities between the Drawings, these Specifications and field conditions; any and all discrepancies shall be reported immediately to the Engineer.

B. Field Adjustments. Field Adjustments necessary to accommodate or to minimize disturbances to existing site conditions shall be done at the Contractor's expense. Work shall be postponed in any area of discrepancy with the Drawings or these Specifications until the Engineer has provided a written resolution to the conflict. The Contractor shall assume full responsibility for proceeding with work without written approval.

## 3.4 WILLOW STAKE INSTALLATION

A. Handling. Install willow stakes within 6 hours of collection. If planting does not occur within 6 hours, plant material must be properly stored according to the guidelines given in the following section.

B. Storage. All woody plant cuttings collected more than 6 hours prior to installation, must be carefully bound, secured, and stored submerged in clean fresh water for a period of up to one week. If stored outdoors temperatures must be less than 50 degrees F. Temperature indoors and in storage containers must be between 34 and 50 degrees F. If the willow stakes cannot be installed during the dormant season, cut during the dormant season and hold in cold storage at temperatures between 33 and 39 degrees F for up to 2 months.

C. Location. Prior to placement or installation of willow stakes, the Contractor shall flag all plant material locations for approval by the Engineer. The Engineer may require adjustments to willow stake locations to meet field conditions.

D. Willow Stake Installation. Planting of willow stake shall be performed during above periods only when weather and soil conditions are suitable. Plant materials shall be placed at intervals as indicated on the Drawings, with butt end in contact with soil. Install eighty percent of the stake below ground, leaving only twenty percent of the willow stake extending above ground. Where used as "Brush Layers" within sediment retention Berms, willows shall be placed horizontally between lifts. Avoid direct contact with machinery during soil placement.

## 3.5 WILLOW TRANSPLANT INSTALLATION

A. Salvage

1. Willow Transplants to be salvaged for transplanting will be flagged in the field by the Engineer.

2. Prior to removal, branches shall be lopped to 6-12 inches above the root crown, using sharp, clean tools.

3. The rootwad and a minimum eighteen-inch layer (at sides and base) of roots and soil shall be removed from the ground and either transported directly to the proposed planting location for installation, or stored as outlined below. Perform salvage and relocation in such a manner as to minimize handling and associated disturbance to the soil bound by the roots.

4. If the Willow Transplant is not planted within fifteen minutes of salvage, it shall be immediately covered with a single layer of saturated burlap to prevent desiccation of the roots, and placed under shade covering. Contractor shall maintain saturation of the burlap and soil mass until planted.

5. Do not stack Willow Transplants on top of one another during storage.

6. In no event shall salvaged rootwads be stored for periods exceeding 72 hours, without prior written permission of the Engineer.

B. Installation

1. Live Shrubs shall be placed along the slopes of the Mitigation Areas at locations to be flagged in the field by the Engineer.

2. The excavated rootwad shall be placed in a pre-prepared hole. The hole shall be filled with water immediately prior to planting. The sides of the planting hole shall be scarified prior to planting.

3. If used, remove burlap prior to planting. Backfill the hole half-way with native soil and jet with water to remove voids after placement. Continue to add soil and water until the saturated backfill material covers the top of the root crown to the approximate original depth of soil, prior to salvage.

3.6 CLEAN UP

A. Daily Cleanup. Site cleanup shall occur on a daily basis. All garbage, construction debris, excess plants and dirt, other discarded materials, and extraneous equipment caused by or due to the Contractor shall be removed offsite at the Contractor's expense and in accordance with State and local regulations.

B. Salvage. All materials designated to be salvaged shall be handled and removed with care. The Contractor shall be responsible for salvaging, removing offsite, and recycling all plant containers and racks; at no time will the Agency or the Engineer be responsible for recycling plant containers and racks.

3.7 OBSERVATION AND TESTING

A. Observations. The Contractor shall provide the Engineer with 48-hours advance notification for the following required planting stage acceptance observations.

1. Field marking of individual planting site locations for willow rootwad transplants,
2. Observation and acceptance of plant materials before installation,
3. Planting operations. The Contractor shall be responsible for the complete installation of plants according to the Drawings and as specified herein. Any unacceptable plants or planting operations shall be corrected according to the Engineer's direction and at the Contractor's expense before the Final Acceptance observation.

3.8 MAINTENANCE PERIOD

A. Watering. Watering applications shall be conducted to establish and maintain healthy and vigorous plants. Water shall be applied in a manner that promotes deep root development and the "weaning off" of plants. The frequency of the watering shall depend on current weather patterns and site-specific moisture conditions. At no time shall any water be applied in a way that will cause erosion, damage to plants, or excessive runoff.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Willow Stake Planting. Willow Stake plantings will be measured on a unit basis for each individual Willow Stake completely supplied and installed by the Contractor and approved by the Engineer.

B. Willow Transplant. Willow Transplant will be measured on a unit basis for each individual Willow Transplant supplied and installed by the Contractor as shown on the drawings, as specified, and approved by the Engineer.

### 4.2 PAYMENT

A. Willow Stake Planting. Payment for Willow Stake planting, measured as specified, will be paid at the contract unit price for each Willow Stake, which price will include all costs in connection therewith.

B. Willow Transplant. Willow Transplant, measured as specified above, will be paid at the contract unit price for each Willow Transplant, which will include all costs in connection therewith.

END OF SECTION

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# ROCK SLOPE PROTECTION


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# SECTION 354237
# ROCK SLOPE PROTECTION

## 1. GENERAL

### 1.1 DESCRIPTION

A. Work within this section shall include furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing Rock Slope Protection (RSP), Energy Dissipaters, Weirs & associated Rock Grade Control Structures, backing layers, backfill and geotextile fabric where shown on the Drawings, as specified herein, or as otherwise directed by the Engineer. Stone protection, rock slope protection, and riprap are interchangeable in these Specifications and Drawings.

B. All loading, transport, temporary stockpiling, processing and mixing of stone materials to achieve designated gradations, washing, on-site hauling, excavation, preparation of sub-grade, placement, embedment, backfill, grading, compaction, finish grading, clean-up, and off-haul and disposal of excess materials needed to install all Rock Slope Protection work, where incorporated in the work, shall be considered as included in the applicable bid item unit price, and no additional compensation will be allowed.

C. The location, alignment, angles, elevations, grades, slopes, dimensions, etc. of the proposed structures as described in this section are shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allowed therefore.

D. The Contractor is hereby notified that the Engineer may direct the Contractor to place additional stone materials (not shown on the Plans) at select locations within the project work treatment areas to fit existing conditions at the time of construction. Any such additional stone materials and placement shall be considered as included in the unit prices paid for the designated stone materials as described elsewhere in these Technical Specifications and no additional compensation shall be allowed for.

E. Related sections:

1. Section 312319, Dewatering
2. Section 329000, Planting
3. Section 312316, Stripping and Excavation

### 1.2 SUBMITTALS

A. Submit to the Engineer, for review, the following:

1. Certified weights of the rock delivered to the site.
2. Certificate(s) and other material testing data as necessary to validate the source of the Rock Materials and their conformance with the Standard Specifications and these Technical Specifications. Include all applicable test results for grading, specific gravity, resistance to degradation, absorption, durability index, and soundness (as described elsewhere in these Technical Specifications).

3. A representative 3 cubic yard sample of the proposed Rock Materials specified herein shall be provided to the Engineer for approval, ten days prior to delivery of the remainder of material to the project site. The Engineer reserves to the right to reject said materials.

B. Sampling and Testing Assistance. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of the two random truck loads of rock. Mechanical equipment, a sorting site and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Client.

### 1.3 QUALITY ASSURANCE

A. Tolerances. Place rock to a vertical tolerance of minus 1 to plus 2 inches.

B. Subgrade Preparation. Prior to placement of rock, Engineer shall verify subgrade preparation, and placement of fabric for rock. Where backing is shown on the Drawings, Engineer shall verify subgrade preparation and backing placement prior to placement of outer rock course.

## 2. PRODUCTS

### 2.1 MATERIALS

A. Salvaged Rock Material. Native rock found on site may be salvaged for reuse, subject to compliance with the material requirements for the intended use, and subject to the approval by the Engineer. The Engineer may require the Contractor to provide testing (e.g. gradation curve, hardness, etc.) to ensure that materials are suitable for reuse. Salvaged creek bed material shall be placed on a hardened surface or other suitable material (i.e. steel plate, pavement, filter fabric) in order to protect the said material from contamination or mixing with other soils, earthen material and debris. The Engineer may, at his sole discretion, waive certain testing requirements to facilitate the Contractor's use of locally salvaged materials.

B. Rock materials and gradation shall conform to Section 72-2.02 Materials of the State Standard Specifications. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not readily disintegrate from the action of air, water, or the typical conditions experienced during handling and placing. All aggregate material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings.

C. Rock size classes not designated below shall be as shown on the Drawings, or as directed by the Engineer. All stone, rock, aggregate materials, and soils imported to the site shall be from a certified "Weed Free" source.

1. Gabion Rock. 50/50 mix, by volume of Caltrans Class I and Class III RSP.
2. Backfill. Backfill voids of gabion rock with native soil obtained from on-site excavations.

## 3. EXECUTION

### 3.1 GENERAL

A. All rock materials shall be placed in such a manner as to smoothly conform with adjacent graded areas. Smaller rock shall be chinked into the margins of larger rock placements, as

necessary to conform to earthwork and prevent migration of fines from adjacent graded areas into the rock matrix.

### 3.2 ROCK SLOPE PROTECTION

A. Install Rock Slope Protection in accordance with Section 72 of the State Standard Specifications Method B, as modified below, and to the lines and the minimum dimensions shown on the Drawings. Place rock so as to minimize the number of voids. Rock shall be placed in lifts with a thickness not exceeding the D100 of the specified stone. Each lift shall be backfilled to half its depth with "Backfill", prior to placement of the subsequent lift. Backfill shall be placed in a manner that does not interfere with direct rock to rock contact of successive lifts. Backfill shall be placed to match the finished surface of the RSP and water-jetted to fill all voids, as directed by the Engineer.

B. with permit conditions, prior to discharge to the creek. Comply with Section 312319, Dewatering.

C. In the event that the Engineered Streambed Materials are manipulated after placement, there is the potential for segregation by size class, which typically results in the larger fraction rising to the surface and fines being lost to the base of the lift. If in the opinion of the Engineer, there is excessive segregation of materials, the contractor shall remove all Engineered Streambed Materials, re-mix to a uniform gradation, and replace as specified.

### 3.3 ENERGY DISSIPATORS

A. Rock will not be allowed to be "dumped". Following Engineer's approval of subgrade, the rock shall be placed as directed by the Engineer for a natural appearance, which may require hand placement of rock. All rock is to be placed to minimize the potential for movement when flow is induced into the channel and this will be accomplished by interlocking the angular nature of the rock with itself, and by placing larger stones first, with direct stone to stone contact, and then chinking the voids with the smaller materials. The energy dissipator geometry shall conform to the finished grades of the slopes on all sides. Local surface irregularities of the rock rip-rap shall not vary from the planned slopes by more than two inches (2-in) measured at right angles to the slope.

B. Where rock is designated to be placed around trees to remain, rock shall be placed by hand within 18" of tree. Protect tree bark during placement by temporary barriers of plywood or equivalent.

## 4. MEASUREMENT AND PAYMENT

### 4.1 MEASUREMENT

A. Gabion Rock. Gabion Rock will be measured by the cubic yard of Gabion Rock, based on the dimensions shown on the Drawings. Gabion Rock is a "Final Pay Item" in accordance with Section 9-1.02C "Final Pay Quantities" of the Standard Specifications. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.

B. Volumetric measurements will be determined from the dimensions as shown on the Drawings or the dimensions constructed as directed by the Engineer. Materials placed in excess of these dimensions will not be included in the measurement for payment. Surface areas will be measured to the horizontal limits parallel to the ground surface.

C. Excavation and backfill for rock slope protection will not be separately measured for payment.

D. Backfill will not be separately measured for payment.

## 4.2 PAYMENT

A. Gabion Rock, measured as specified above, will be paid for at the contract price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the riprap placement, including subgrade preparation, geotextile fabric, processing work, backing, rock placement, backfill of voids, excavation and fill.

B. No separate payment will be made for excavation and backfill incidental to slope protection work. All costs in connection with this work will be considered incidental to the cost of construction of the associated slope protection work. Where embankment is shown to be placed over completed rock slope protection, the embankment shall be considered incidental to the cubic yard price paid for associated Rock Slope Protection work.

C. No separate payment will be made for rock backfill materials. All costs in connection with this work will be considered incidental to the cost of construction of the associated improvement.

D. Payment will be made under:

| Pay Item | Pay Unit |
|---|---|
| Gabion Rock | CY(F) |

**END OF SECTION**

**EXHIBIT J**
**Project Biological Opinion**

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-
2013-F-0430-R002

OCT 0 2 2018

Rick M. Bottoms, Ph.D.
Attn: Naomi Schowalter
Department of the Army
San Francisco District, Corps of Engineers
1455 Market Street
San Francisco, California 94103-1398

Subject: Second Reinitiation of Formal Consultation on the Pacific Gas and Electric Company (PG&E) Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project in the City of Millbrae, San Mateo County, California (U.S. Army Corps of Engineers [Corps] file number 2013-00142S)

Dear Dr. Bottoms:

This letter is in response to PG&E's May 14, 2018, request for the reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed PG&E Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project (proposed project) in the City of Millbrae, San Mateo County, California (Corps file number 2013-00142S). The request was received by the Service on May 14, 2018. PG&E requested the reinitiation of consultation to cover the effects of the implementation of the offsite restoration actions at Butano Farms near the Town of Pescadero, San Mateo County, California, that are part of the habitat compensation for the proposed project. At issue are the proposed project's effects on the federally threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat, and the endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the Corps' issuance of a permit to PG&E pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 et seq.) for the temporary disturbance of 0.09 acre of seasonal wetland habitat at the PG&E Lomita Park Station in the City of Millbrae, San Mateo County, California. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California red-legged frog and San Francisco garter snake. ***The biological assessment for the restoration actions at the Butano Farms habitat enhancement area concluded that the proposed project is not likely to adversely affect California red-legged frog critical habitat.***

In considering your request, we based our evaluation on the following: (1) the information provided in the Corps' May 7, 2013, letter; (2) the *Biological Assessment for the Line 101 In-line Inspection Upgrade and Lomita Park Regulator Station Rebuild Project* dated July 2014 (Swaim Biological Inc. 2014a); (3) the *Recovery Action Plan for the San Francisco Garter Snake West-of-Bayshore Property, San Francisco International Airport* dated April 24, 2008 (LSA Associates 2008); (4) the Service's August 18, 2014, biological

opinion for the proposed project (Service file number 08ESMF00-2014-F-0430, Service 2014); (5) the "Long-Term Management Plan Millbrae Substation Conservation Area, San Mateo County, California", dated November 27, 2017 (LSA Associates 2017); (6) the "Concept Level Project Description Butano Farms Habitat Pond Project Wetland and Upland Habitat Enhancement for San Francisco Garter Snake", dated ~~March 7~~***May 9***, 2018 (San Mateo Resource Conservation District (San Mateo RCD) 2018***a***); (7) ***the Service's April 12, 2018, first amendment to the biological opinion for the proposed project (Service file number 08ESMF00-2014-F-0430-R001, Service 2018); (8) the "Effects Analysis for Butano Farms SFGS Habitat Enhancement Project, San Mateo County, California", dated May 11, 2018 (San Mateo RCD 2018b); (9) the "Herbicide Use Guidance Butano Farms SFGS Habitat Enhancement Project Wetland and Upland Habitat Enhancement for San Francisco Garter Snake", dated July 12, 2018 (San Mateo RCD 2018c); (10)*** conversation and communications among PG&E, the Corps, LSA Associates, Swaim Biological Inc., San Mateo RCD, Peninsula Open Space Trust (POST), and the Service; and ~~(8)~~ ***(11)*** other information available to the Service.

***The Service concurs that the proposed project is not likely to adversely affect California red-legged frog critical habitat because: (1) the restoration activities at the Butano Farms habitat enhancement area are designed to benefit the California red-legged frog through improved water quality, enhancement of shallow water breeding and tadpole rearing habitat, increasing open water habitat, and increasing the longevity of the breeding pond by reducing sedimentation into the pond; (2) habitat disturbance at the Butano Farms habitat enhancement area will be temporary; and (3) best management practices will be implemented to minimize the potential for the degradation and contamination of breeding habitat at the Butano Farms pond.***

The remainder of this document provides our biological opinion on the effects of the proposed project on the California red-legged frog and San Francisco garter snake. Changes to the April 12, 2018, first amendment to the biological opinion are illustrated below with additions in ***bold italics*** and deletions with ~~strikethrough~~ notation.

## Consultation History

| | |
|---|---|
| February 19, 2013: | The Service attended a meeting with PG&E and the California Department of Fish and Wildlife (CDFW) to discuss the proposed project. |
| May 8, 2013: | The Service received a letter from the Corps requesting initiation of consultation for the proposed project. |
| January 29, 2014: | PG&E contacted the Service to inquire about the status of the proposed project. |
| March 24, 2014: | The Service attended a site visit. |
| June 3, 2014: | The Service met with representative from PG&E, Swaim Biological, and San Francisco International Airport at the project site. |
| June 4, 2014: | The Service received a revised biological assessment (Swaim Biological Inc. 2014a). |
| June 21, 2014: | The Service provided comments on the *California Red-legged Frog and San Francisco Garter Snake Habitat Mitigation and Monitoring Plan for the Line 101 In-line Inspection Upgrade and Lomita Park Regulator Station Rebuild Project* (Swaim Biological Inc. 2014b). |
| August 6, 2014: | The Service received a revised Habitat Mitigation and Monitoring Plan. |
| August 7 to 13, 2014: | The Service and PG&E exchanged emails to finalize the project description. |
| August 18, 2014: | The Service issued the biological opinion for the proposed project (Service file number 08ESMF00-2014-F-0430, Service 2014). |

2015-2016: PG&E constructed the Lomita Park Station Rebuild Project portion of the proposed project in 2015. PG&E informed the Service that they would be unable to implement the proposed on-site 5.25-acre Habitat Mitigation and Monitoring Plan at the West-of-Bayshore property (Swaim Biological Inc. 2014b) because the landowner, the San Francisco International Airport, informed PG&E that the San Francisco International Airport would like to reserve any compensatory mitigation opportunities on their West-of-Bayshore property for use for their own projects. Therefore, PG&E would only be able to implement the portions of the proposed habitat compensatory mitigation plan that occur on PG&E's Millbrae Substation property (5.17-acre Millbrae conservation area) that are contiguous with the southern portion of the San Francisco International Airport's West-of-Bayshore property. PG&E proposed reducing the amount of habitat compensation and/or implementing the habitat compensation in phases since only part of the proposed project (the Lomita Park Station Rebuild Project) had been constructed. PG&E stated that they did not know when they would have the funding to begin construction of the Line 101 In-line Inspection and Upgrade (horizontal directional drilling (HDD)) portion of the proposed project. The Service stated that the biological opinion would need to be amended to address the changes to the proposed habitat compensatory mitigation and that PG&E could not begin construction of the Line 101 In-line Inspection and Upgrade Project until the Service had received and approved a revised habitat compensatory mitigation plan and issued an amendment to the biological opinion.

November 10, 2016: The Service attended a site visit to the proposed project site and the proposed Millbrae conservation area.

July 20, 2017: The Service participated in a conference call with PG&E to discuss the use of PG&E's proposed 5.17-acre Millbrae conservation area as habitat compensation for several PG&E projects. PG&E estimated that they could provide the long-term management plan and conservation easement documents for the Millbrae conservation area for the Service to review within a few weeks. PG&E proposed that of the 5.17 acres of California red-legged frog and San Francisco garter snake habitat compensation available on PG&E land at the Millbrae conservation area, 0.88 acre would be dedicated to the PG&E Line 132 Elbow Investigation Project (Service file number 08ESMF00-2015-F-0216-R002, Service 2017), 2.19 acres would be dedicated to the built portions of the Lomita Park Station Rebuild Project (Service file number 08ESMF00-2013-F-0430, Service 2014) that were constructed in 2015, and the remaining 2.10 acres would be dedicated to provide partial compensatory mitigation for the portions of the PG&E Line 101 In-line Inspection and Upgrade Project (Service file number 08ESMF00-2013-F-0430, Service 2014) yet to be built. The details of the revised compensatory mitigation strategy for the PG&E Line 101 In-line Inspection and Upgrade Project (in addition to the 2.10 acres at the Millbrae conservation site) would be addressed during the reinitiation of consultation for the PG&E Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project (Service file number 08ESMF00-2013-F-0430-R001).

November 28, 2017: The Service received via electronic mail from PG&E the long-term management plan (LSA Associates 2017) and draft conservation easement documents for the 5.17-acre Millbrae conservation area.

November 29, 2017: The Service received via electronic mail from PG&E two draft proposals for offsite habitat compensation near the Town of Pescadero in San Mateo County, California: POST's Butano Farms in the Butano Creek watershed and the California Department of Parks and Recreation's Quiroste Valley Cultural Preserve in the Whitehorse Creek watershed (San Mateo RCD 2017a, 2017b). PG&E is considering utilizing the two sites to provide habitat compensation for the effects on the San Francisco garter snake and California red-legged frog of the PG&E Line 101 In-line Inspection and Upgrade Project (Service file number 08ESMF00-2013-F-0430-R001) and/or other future PG&E projects that would be covered by the recently permitted PG&E Bay Area Operation and Maintenance Habitat Conservation Plan (ICF 2017).

December 11, 2017: The Service discussed with the Corps the need to reinitiate consultation on the proposed project to address the proposed changes to the habitat compensation.

February 28, 2018: The Service attended a site visit with PG&E, San Mateo RCD, and POST to the two proposed offsite San Francisco garter snake and California red-legged frog habitat compensation sites near the Town of Pescadero at Butano Farms and the Quiroste Valley Cultural Preserve. The Service observed several California red-legged frog egg masses and tadpoles in the pond at the Butano Farms site during the site visit.

March 9, 2018: The Service received via electronic mail from the Corps the request to reinitiate formal consultation on the proposed project to incorporate the changes to the proposed habitat compensation.

March 13, 2018: The Service received from PG&E the revised habitat compensation proposal which includes pond and upland habitat enhancement and management of approximately 65 acres for the San Francisco garter snake and California red-legged frog over a 30-year period at POST's Butano Farms near the Town of Pescadero in San Mateo County (San Mateo RCD 2018*a*); 7.43 acres of the habitat compensation will be credited to the PG&E Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project (Service file number 08ESMF00-2013-F-0430-R001) and the remaining 57.57 acres, if approved by the Service, may be credited toward other PG&E projects that will be covered by the PG&E Bay Area Operation and Maintenance Habitat Conservation Plan (ICF 2017).

***April 12, 2018:*** ***The Service issued the first amendment to the biological opinion for the proposed project that changed the conservation strategy by replacing the proposed onsite habitat enhancements with 7.43 acres of offsite habitat restoration at the 65-acre Butano Farms habitat enhancement area (Service file number 08ESMF00-2013-F-0430-R001, Service 2018). The amendment to the biological opinion stated that the effects of the implementation of the restoration actions at the 65-acre Butano Farms habitat enhancement area would be covered under a future section 7 consultation.***

***April 16, 2018:*** ***The Service provided comments to PG&E on the Long-Term Management Plan and draft conservation easement documents for the Millbrae conservation area. PG&E informed the Service that they were considering looking for an alternative to the Wildlife Heritage Foundation (possibly San Mateo RCD) to be the conservation easement holder for the Millbrae conservation area.***

| | |
|---|---|
| *May – July 2018:* | ***The Service received from PG&E the monthly construction monitoring reports for the PG&E Line 101 In-line Inspection and Upgrade Project.*** |
| *May 14, 2018:* | ***The Service received from PG&E the revised project description, conservation measures, and effects analysis for the offsite habitat restoration and management actions at the 65-acre Butano Farms habitat enhancement area (San Mateo RCD 2018a, 2018b).*** |
| *May 30, 2018:* | ***The Service sent via electronic mail to PG&E and San Mateo RCD a request that herbicide use best management practices be included for invasive plant species control work at the Butano Farms habitat enhancement area and that the measures in the "The Declining Amphibian Task Force Code of Practice" be implemented to prevent the introduction and spread of amphibian diseases.*** |
| *July 17, 2018:* | ***The Service received from San Mateo RCD the requested information on the herbicide use best management practices that would be implemented at the 65-acre Butano Farms habitat enhancement area (San Mateo RCD 2018c).*** |
| *August 1, 2018:* | ***The Service received via electronic mail from PG&E notification of the observation of a dead California red-legged frog that had desiccated along the outside of the wildlife exclusion fencing for the PG&E Line 101 In-line Inspection and Upgrade Project. PG&E stated that the biological monitors will conduct more frequent detailed inspections of the outside of the wildlife exclusion fencing to ensure no California red-legged frogs are stranded in areas where they cannot find cover.*** |

## BIOLOGICAL OPINION

### Description of the Action

The proposed Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project, in Millbrae, San Mateo County, California will include replacing a section of pipeline and upgrading the Lomita Park Regulator Station equipment that regulates pressure along the pipeline. A 3,700-foot section of the line will be replaced by installing a new 3,200-foot pipe in a parallel alignment using horizontal directional drilling (HDD) and connecting it with the existing line at two points. The existing section of pipe will be retired in place. Upgrades to the pressure regulator station located north of the pipeline replacement section will include the installation of new and upgraded equipment and will require an expansion of the existing station and access roads totaling 0.12 acre.

*Project Location*

The project is located in northern San Mateo County, west of San Francisco International Airport and U.S. Highway 101, and east of the Caltrain right-of-way (i.e., railroad tracks that are owned and operated by the Peninsula Corridor Joint Powers Board). The project is located within undeveloped parcels (collectively known as the West-of-Bayshore property) that are owned by the City and County of San Francisco. The undeveloped parcels contain a utility corridor that includes Line 101 and aboveground electric transmission lines and structures. Bay Area Rapid Transit (BART) aerial structures and tracks transect the West-of-Bayshore property. Single-family homes are located immediately adjacent to the undeveloped parcels.

The new 24-inch-diameter pipeline will stretch from the Lomita Park Regulator Station in the north to approximately 700 feet southeast of Santa Paula Avenue in the south. Between Madrone Street and Santa Paula Avenue, the pipeline will run parallel to Bay Street for approximately 1,535 feet. The

pipeline passes underneath South Lomita Canal and Marina Vista Park. The existing Lomita Park Regulator Station is located approximately 200 feet east of the BART aerial structures and tracks and 250 feet west of U.S. Highway 101.

*New Pipeline Installation*

To minimize impacts to sensitive aboveground resources, PG&E will utilize HDD techniques to install approximately 3,200 feet of 24-inch-diameter pipe. Prior to HDD activities, PG&E will establish two excavation areas; the northern excavation area will be used for the entry bore pit and the southern excavation area will be used for the exit bore pit. Once inserted, PG&E will connect the new pipe to the existing Line 101 pipe. The excavation areas will measure a combined maximum of approximately 0.37 acre. These areas will be excavated to a depth of approximately 20 feet, resulting in a maximum of approximately 11,891 cubic yards of excavated material. Both excavation areas will be surrounded by temporary work areas that will be used for equipment storage and construction crew access. PG&E will install temporary exclusion fencing around the temporary work areas.

The approximately 3,200-foot-long pipe will be composed of shorter pipe segments that will be welded together in a temporary work area (i.e., pipe weld run-out) that extends from the northern HDD excavation area to Cupid Row Canal. Grading and excavation will not take place within the pipe weld run-out. The pipe will be placed on rollers so that it can be inserted into the HDD bore pit. After the pipe is welded together, PG&E will conduct hydrostatic pressure testing, which is discussed in further detail in the following section. Temporary exclusion fencing will be installed around the pipe weld run-out area.
Next, within the HDD excavation area, a pilot hole will be drilled and enlarged by using a reamer. During the drilling process, the contractor will track the HDD bore by using an aboveground tracking wire. The tracking wire will run the entire length of the HDD bore; vegetation removal may be required to ensure that the wire does not become entangled. The new 24-inch-diameter pipe will be pulled into the hole and connected or tied into the existing pipe. The excavation areas will be backfilled with the excavated soil, restored to approximate pre-project contours, and revegetated according to an approved revegetation plan. Any remaining spoils will be hauled off site and taken to an approved PG&E disposal facility.

*Hydrostatic Testing*

Line 101 will be hydrostatically tested to verify that it is safe to operate at its designed maximum operating pressure. Test water will be taken from an on-site location and stored in liquid storage tanks throughout the filling process, or water will be brought in by truck from an off-site location. Once the pipeline is filled to the appropriate level and ready for testing, the water will be slowly pressurized to the appropriate test pressure. Following the test, the water will be collected into seven liquid storage tanks, such as Baker™ Tanks, staged within the parking lot along 1st Avenue and discharged into a publicly owned treatment work (POTW). No water will be pulled from or discharged into the on-site canals.

*Sniff Hole Installation*

A sniff hole typically consists of a vertical pipe that extends from an existing gas pipeline to several feet above ground. Three sniff holes will be installed within the existing pipeline in the following locations:

- Approximately 100 feet northwest of Lomita Park Regulator Station
- Approximately 100 feet southeast of Lomita Park Regulator Station (within the Lomita Park Regulator Station rebuild work area)
- Approximately 300 feet southeast of the southern HDD excavation area along the access road

Each sniff hole will require an excavation area of approximately 100 square feet surrounded by a work area footprint of approximately 0.04 acre.

*Existing Pipeline Retirement*

The existing 20-inch-diameter A.O. Smith pipe with drip that is bypassed will be retired in place. Liquids that have been collected in the drip (a trap connected to a gas pipe used for collecting liquids and condensation) located south of South Lomita Canal will be removed by installing a hose to connect the drip to a tanker truck parked on Madrone Street. The hose will drain the liquids trapped in the drip into the tanker trucks and the liquids will be disposed of at a POTW. The bypassed pipe will be "cut and capped" by cutting the existing pipe in two locations that are close to where the new pipe is connected.

*Lomita Park Regulator Station Rebuild*

The existing facilities at Lomita Park Regulator Station are located within an area that measures approximately 70 feet by 65 feet (0.1 acre), and are enclosed by a chain-link fence, which will be removed. Although these facilities are primarily located underground, the station does include several aboveground structures. To accommodate the required upgrades, the station will be expanded by a total of approximately 0.09 acre (18 feet to the west and 30 feet to south), for a new permanent footprint of approximately 0.19 acre. The expanded station will be located entirely within PG&E's existing parcel.

Prior to conducting construction activities at Lomita Park Regulator Station, a temporary exclusion fence will be installed around the existing station. The exclusion fence will encompass an approximately 2.74-acre temporary construction area to protect wildlife from construction activities. The area will be used for storing spoils and staging construction equipment associated with the station expansion and will include the excavation areas associated with two sniff holes. Additionally, two eucalyptus trees and two electric poles will be removed and a new electric pole will be installed within the exclusion fence.

Once the rebuild of Lomita Park Regulator Station is complete, the new facilities will be tied in to the Line 101 gas pipeline. Excavation areas for the tie-ins will be located north of the existing station and south of the expanded station area. The excavation areas will measure a combined maximum of approximately 390 square feet. These areas will be excavated to a depth of approximately 6 feet, resulting in a maximum of approximately 87 cubic yards of excavated material. The excavation areas are surrounded by a large work area measuring a combined total of approximately 0.07 acre.

Following construction, the chain-link fence surrounding the existing Lomita Park Regulator Station will be reinstalled; however, the fence will be expanded approximately 10 feet west and 30 feet south to accommodate the expanded station footprint. PG&E will install a gate at the northwestern end of the station. Finally, the approximately 2.74-acre temporary construction area within the temporary exclusion fence will be restored to approximate pre-project conditions.

*Dewatering*

Groundwater is likely to be present within the two HDD excavation areas and station expansion area. To ensure that the work area is dry, water encountered during construction will be pumped into eight liquid storage tanks; four of the tanks will be located approximately 200 feet south of Lomita Park Regulator Station and four will be located approximately 200 feet south of the southern HDD excavation area. Water will pass through the liquid storage tanks, sediment will be trapped at the bottom, and water quality testing will be conducted. PG&E will discharge water at a POTW. A maximum of approximately 300 water tankers may be required to discharge water at a POTW.

*Site Access, Road Modifications and Staging Area*

The work areas will be accessed using six gates, three access routes, and a walking path. Two of the access roads, totaling 1.10 miles in length, contain ruts or potholes and will require repairs in order to make them serviceable. A 100-foot section of road will be realigned to the west of Lomita Station, and a new 60-foot long section of road will be built to provide access to the station following completion. An approximately 5.5-acre undeveloped generally barren/ruderal area owned by San Francisco International Airport located between Highline Canal and Millbrae Avenue will be used as a staging area for materials and equipment.

The roads that will be used and the necessary road improvements are described in further detail as follows:

- Lomita Park Regulator Station Rebuild, the northern HDD excavation area, and the pipe weld run-out area will be accessed using a road that extends 0.80 mile from Gate H (at 1st Avenue) in the north, and from a road that extends 0.30 mile from Gate G (at the intersection of Monterey Street and Madrone Street) in the south. Both of these roads will be bladed to provide an adequate surface for construction access, and 2-3 inches of compacted aggregate will be placed on them for final restoration. Neither of these roads will be expanded beyond its existing footprint. A two-track haul road that splits from the main road approximately 0.24 mile south of Gate H and merges with it again approximately 0.26 mile north of Gate G will be used to access the pipe weld run-out area and will not require modifications.
- To accommodate the station expansion, PG&E will realign approximately 100 feet of the existing eastern fork road approximately 10 feet to the west. To connect the eastern fork road to the station gate, PG&E will establish a new permanent approximately 60-foot-long access road.
- The southern HDD excavation area will be accessed using a road that extends from Gate E (at the intersection of Bay Street and Santa Paula Avenue) in the north to Gate B (near Aviador Avenue) in the south. The approximately 0.56-mile-long access road is in operable condition and no modifications to this road will be required.
- Minor tree trimming near Gate G will be conducted for vehicle clearance. Specifically, willow branches and herbaceous vegetation along approximately 1,600 feet of the access road will be trimmed to a width of 2 feet on each side of the road. Exclusion fencing will be installed along both sides of the road from Gate G to the north HDD work area.
- The existing Line 101 drip location will be accessed using a walking path located approximately 123 feet from an undesignated gate near the intersection of Madrone Street and Bay Street. Access to the staging area near Millbrae Avenue will be via Gate A along Aviador Avenue.

*Personnel and Equipment*

An average of approximately 20 crewmembers will be present on site each day during construction; however, the specific number of crewmembers will vary depending on the work activities. The construction equipment that is anticipated to be required is provided in Table 1.

*Schedule*

Pipeline replacement activities (including mobilization of equipment and materials, HDD construction work, pipe tie-in, and site grading and restoration) are anticipated to take approximately 10 weeks to complete. Lomita Park Regulator Station rebuild activities—including mobilization of equipment and materials, expansion work, pipe tie-in, and site grading and restoration—are anticipated to take approximately 15 weeks to complete. It is anticipated that work at the Lomita Park Station will begin August 2014 and continue through April 2015. HDD work is anticipated to begin April 2018 and continue through September 2018.

Work will generally occur 6 days per week from approximately 7:30 a.m. to 5:30 p.m.; however, some activities may occur outside of these hours. These activities will include pressure monitoring and venting/bleeding down at the end of the hydrostatic test. Extended work hours also will be required around the time of pipeline clearances, which are periods when the pipeline will be taken out of service. Activities associated with pipeline clearances may include welding, grinding, and the use of heavy equipment. Nighttime work is anticipated to be necessary for a maximum of 10 nights (not necessarily consecutive) and will be limited in extent and duration to the extent feasible.

**Table 1. Construction equipment and quantity required to complete the proposed project**

| Equipment Type | Approximate Quantity |
|---|---|
| Trackhoes/backhoes | 2 |
| Welding rigs | 4 |
| Bulldozer | 1 |
| Water trucks | 2 |
| Dump truck trips | 63 |
| Pickup trucks | 4 |
| Air compressors/sand blasters | 2 |
| Generators | 3 |
| Xray/NDE truck | 1 |
| Grader | 1 |
| Drill rig | 1 |
| Power unit | 1 |
| Control cab/parts van | 1 |
| Fluid tanks (water and mud mixing and cleaning) | 2–3 |
| Pump (water and mud) | 1 |
| Fuel storage tank (1,300 gallons) | 1 |
| Vacuum trucks with booster pumps | 2 |
| 5-ton haul trucks | 2 |
| Trailers | 5 |
| Bulk storage containers | 2–3 |
| Auxiliary equipment storage | 2–3 |
| Cranes | 2 |
| Sidebooms | 5 |
| Pipe support roller stands | 52 |
| Timber mats | 24 |
| Trackhoes | 1 |
| Liquid storage tanks | 15 |
| Tanker trucks | Up to 300 (trips) |

*Impacts to Habitat*

Table 2 summarizes impacts to habitat for California red-legged frog and San Francisco garter snake. Other project related impacts will occur in developed areas that do not provide habitat for these species. These include existing graveled roads, a staging area on Aviador Avenue that is used regularly for materials storage by the airport, and a paved parking lot located on First Avenue.

**Table 2. Summary of impacts to California red-legged frog and San Francisco garter snake habitat resulting from the Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project**

| Location of Activities | Impacts to Upland Habitat | | Impacts to Aquatic Habitat (Seasonal Wetlands) | | Total Area (acres) |
|---|---|---|---|---|---|
| | Temporary Impacts (acres) | Permanent Impacts (acres) | Temporary Impacts (acres) | Permanent Impacts (acres) | |
| HDD Pipe Weld Run-Out Area | 7.59 | -- | 0.01 | -- | 7.60 |
| HDD Excavation / Tie-In (North), and Lomita Park Regulator Station Area | 2.59 | 0.12 | 0.04 | -- | 2.75 |
| HDD Excavation / Tie-in (South) | 1.12 | -- | 0.04 | -- | 1.16 |
| Sniff Hole (Southern Excavation) Work Area | 0.04 | -- | -- | -- | 0.04 |
| Liquid Storage Tanks (Southern Excavation) | 0.06 | -- | -- | -- | 0.06 |
| **Total Project Impacts to Habitat** | **11.4** | **0.12** | **0.09** | **--** | **11.61** |

*Conservation Measures*

The following measures will be implemented as part of the proposed project to avoid and/or minimize the risk of potential impacts to listed species and their habitats:

1. At least 15 days prior to the start of any project related activities PG&E will submit the names and credentials of biologists proposed to perform preconstruction surveys and monitoring to the Service for written approval. Only biologists approved by the Service (Service-approved biologists) will participate in the capture, handling, or relocation of listed species, and in the hand-excavation of rodent burrows and other potential underground retreats.
2. Prior to the start of construction a Service-approved biologist will conduct an environmental awareness training session for all construction personnel. The training will include a description and photographs of the California red-legged frog and San Francisco garter snake, a description of their habitats, the general measures that will be implemented to conserve these species as they relate to the project, penalties for non-compliance, and the limits of the work areas. Construction personnel will sign a log indicating that they have received this training. No work (including materials staging, fence installation, parking, excavation, driving or walking onsite, or any other action activity) will be performed by individuals who have not received this training.
3. A Service-approved biologist will be present at the site during all project activities. The biologist will have the authority to stop any action that might result in take of listed species or unanticipated impacts to their habitat, provided that it does not risk the safety of the construction crews or the public.
4. Prior to the start of work the Service-approved biologist will identify acceptable locations to which California red-legged frogs may be relocated if this species is encountered within a work area. Relocation areas will be a minimum of 500 feet from the boundary of any active work area, will contain adequate cover and nearby aquatic habitat, and will not include staging areas or roads.

5. Each morning prior to the start of work a Service-approved biologist will inspect the construction area, including staged materials and equipment, excavations, and fencing to ensure that no listed species or nesting birds are present.
6. No construction-related vehicles will enter the West-of-Bayshore property without having a Service-approved biologist present. The biologist will check the area in front of vehicles as they drive on the road to access the site to ensure that no San Francisco garter snakes or California red-legged frogs are present on the roadway. Motorized vehicles traveling within the site will not exceed 5 miles per hour.
7. Prior to moving, operators will check underneath under vehicles and equipment that have been parked onsite for more than 30 minutes and will notify the Service-approved biologist if any reptile or amphibian is observed.
8. Prior to the start of any ground disturbing activities within the Lomita Park Regulator Station work areas, the north and south HDD work areas, and the pipe run-out area, ground-level vegetation that may provide cover for California red-legged frogs and San Francisco garter snake will be removed. Ground-level vegetation also will be removed from within existing roads to be used and within three feet of the edges of these roads prior to any road improvement work. Immediately before vegetation removal a Service-approved biologist will visually survey the area. Vegetation will then be cut to a height of no less than 8 inches using hand tools (including weed whackers), and loose vegetation will be removed to increase visibility. The Service-approved biologist will then visually survey the area a second time to ensure that no listed species are present. The remaining vegetation will then be removed using hand tools.
9. Shrub and understory vegetation removal will be done using hand tools, including weed eaters and chain saws, to prevent adverse impacts from mowers, excavators, and other heavy equipment. A Service-approved biologist will be present during any vegetation removal. If vegetation is chipped onsite, the wood chips will be contained within a collection bin and will not be piled on the ground or spread onsite as ground cover. All vegetation cleared from the site will be loaded into containers and removed from the site the same day. No cleared vegetation will be stored onsite.
10. Following the removal of vegetation within the Lomita Park Regulator Station work areas, and the north and south HDD work areas, all rodent burrows, soil crevices, and other potential subterranean retreats will be inspected for the presence of California red-legged frogs and San Francisco garter snakes. After inspection, a Service-approved biologist will excavate burrows, soil crevices, and other potential subterranean retreats by hand to ensure that no California red-legged frogs or San Francisco garter snakes are present in the area. If a California red-legged frog or San Francisco garter snake is encountered during preconstruction surveys the protocol described under *Conservation Measure 19* will be followed.
11. Following the excavation of potential subterranean retreats, temporary wildlife exclusion fencing will be installed to completely enclose the Lomita Park Regulator Station work area, the north and south HDD work areas, the access road from G Gate to the north, the HDD work area, and the pipe weld run-out work area. The fencing, which can be made of wood, geotextile fabric, or other durable material, will be a minimum of three feet in height and will be buried at least six inches underground. Gates will be installed to allow vehicles to enter from access roads. These gates will be designed to form a seal with the ground that will prevent the entry of listed species into the work area. Gates will be kept closed to the extent practicable during construction, and will be closed at the end of each work day. Exit funnels will be installed where appropriate to allow small vertebrates to leave the work area unharmed. Once exclusion fencing is in place it will be maintained until all work within the enclosure has been completed. During construction activities the biological monitor will inspect the exclusion fencing each morning prior to the start of work, and again at the end of

each work day. Any damaged areas will be reported to PG&E and will be repaired immediately upon discovery. Wildlife exclusion fencing will be removed following project completion.

12. Preconstruction surveys, vegetation removal, and hand-excavation of burrows will take place prior to October 15 so that any San Francisco garter snakes present in the area can find a suitable alternative winter retreat prior to the onset of cold weather conditions. Once these activities are completed temporary wildlife exclusion fencing will be installed around the work area and will be maintained to prevent the re-entry of California red-legged frog and San Francisco garter snake. Between October 15 and March 31 ground disturbing work will only take place within work areas completely enclosed by wildlife exclusion fencing.
13. If ground disturbance within aquatic habitats is required while water is present, then cofferdams or other measures will be installed to allow for dewatering of the areas that will be subject to disturbance. Prior to dewatering, these areas will be visually surveyed for the presence of San Francisco garter snakes and California red-legged frog adults, egg masses, and tadpoles by a Service-approved biologist. If any California red-legged frog tadpoles or eggs are observed, the approved biologist will contact the Service to determine if moving any of these life-stages is appropriate. If a work site is to be temporarily dewatered by pumping, the area first will be surrounded by exclusion fencing. Intakes will be completely screened with wire mesh not larger than 0.2 inch to prevent California red-legged frogs from entering the pump system. Pumps used for dewatering will be placed within a sump or intake basin designed to exclude frogs; any auxiliary equipment will be placed within secondary containment and will be located at least 50 feet from any wetland or aquatic feature. Dewatering will not take place between December 1 and July 1 when egg masses and tadpoles have typically been observed in on-site aquatic habitats.
14. If any burrows or other potentially suitable underground refuges are found in the compacted areas adjacent to the access road, these features will be either flagged for avoidance, or excavated by a Service-approved biologist prior to the movement of equipment that may result in soil disturbance in the area.
15. The limits of the access roads will be staked and flagged or fenced to ensure that vehicle traffic is confined to designated areas.
16. Speed limit signs will be posted along the access roads and on the gate to the site.
17. Signs notifying all personnel of the potential presence of California red-legged frogs and San Francisco garter snakes on the access roads will be posted.
18. The total area of activity will be limited to the minimum necessary to achieve the goal of the project. All areas outside of the marked access roads and outside of designated work areas will be designated as environmentally sensitive, and no construction activities will take place within these areas.
19. If any San Francisco garter snakes are found within the work areas during project activities, the following protocol will be followed:
    a. Any construction in the area that could result in direct injury, disturbance, or harassment of the individual will cease.
    b. The foreman, the Service-approved biologist, and the PG&E biologist assigned to the project will be notified immediately.
    c. The animal will be allowed to move out of the area on its own volition as determined and monitored by the Service-approved biologist.

    If any California red-legged frogs are found within the work areas during project activities, the following protocol will be followed:
    a. Any construction in the area that could result in direct injury, disturbance, or harassment of the individual will cease.
    b. The foreman, the Service-approved biologist, and the PG&E biologist assigned to the project will be notified immediately.

c. If a California red-legged frog is found inside an exclusion fence or in another work area, the individual will be moved to a previously identified relocation area (see measure 4 above). Only Service-approved biologists will be allowed to handle, transport, and relocate California red-legged frogs.
d. The Service-approved biologist will monitor the translocated individual until it is determined that it is not imperiled by predators or other dangers.

20. During project activities all trash will be contained and removed from the site on a daily basis. All trash and construction-related debris will be removed from the work areas following the end of construction.
21. All steep-walled excavations more than one foot deep will be either covered at the end of each work day or equipped with one or more escape ramps positioned at no greater than a 45-degree angle so that wildlife does not become entrapped. All open excavations will be inspected for wildlife at the beginning of each day prior to the start of work. Excavations will be checked for the presence of listed species by the Service-approved biologist immediately prior to backfilling.
22. Work will be limited to daytime hours to the extent practicable. If nighttime construction cannot be avoided, night work will be limited to a maximum of 10 nights and will be limited in extent, duration, and brightness to the maximum extent feasible. Lighting will be faced downward and will only be utilized in the immediate workspace. A Service-approved biologist will be present during all construction activities including all night work.
23. All fueling and maintenance of vehicles and other equipment will occur at least 65 feet from any riparian habitat or water body. Prior to the start of construction, PG&E will develop a prompt and effective response plan to be implemented in the event of any accidental spills. All workers will be informed of the importance of preventing spill and the appropriate measures to take should a spill occur. Spill kits will be maintained onsite and will be immediately available in areas where refueling occurs.
24. Activities involving ground disturbance (i.e. excavation, grading and contouring) will be limited to periods of dry weather (less than 0.25 inch per 24-hour period and less than 40 percent chance of rain). Ground disturbance will not be initiated unless no precipitation is forecast within the project area. Construction activities will cease 24 hours prior to a 40 percent or greater forecast of rain from the National Weather Service. Construction may continue 24 hours after the rain ceases and there is no precipitation in the 24-hour forecast.
25. Erosion control materials will be used that do not pose an entrapment hazard to reptiles and amphibians. Plastic monofilament netting will not be used. Loosely-woven jute netting, fiber rolls, and similar natural materials are acceptable alternatives. Erosion control material will be removed after construction is complete and the worksite stabilized. Soils exposed by project operations will be mulched to prevent sediment runoff and transport. Mulches will be applied so that not less than 90 percent of the disturbed area is covered. All mulches, except hydromulch, will be applied in a layer not less than 2 inches deep. Where feasible, all mulches will be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils will be reseeded with a mix of native plants common to the area, free from seeds of noxious or invasive week species, and applied at a rate which will ensure establishment.
26. No pets from project personnel, firearms (other than firearms carried by authorized security personnel), or campfires will be allowed anywhere in the project area during construction.
27. Following the completion of project activities, areas subject to ground disturbance will be returned to approximately pre-project contours and will be restored in accordance with a Service-approved Revegetation Plan.
28. PG&E will provide the Service with a written (email is acceptable) implementation and compliance report prepared by a Service-approved biologist by the last calendar day of each

month during which project activities occur. The report will identify and describe the location and acreage of temporary and permanent effects to date, the location, method, and acreage of restoration activities conducted to date, and a summary of construction monitoring activities including results of preconstruction and daily clearance surveys, compliance inspections, and observations of listed species.

29. Effects to California red-legged frog and San Francisco garter snake resulting from project activities will be compensated for through a combination of (1) the development and implementation of a Service-approved off-site long-term management plan that will benefit the California red-legged frog and San Francisco garter snake outside adjacent to the West-of-Bayshore property in the vicinity of the project site (Millbrae conservation area) and (2) the development and implementation of a Service-approved off-site habitat enhancement and management plan that will benefit the California red-legged frog and San Francisco garter snake at a site near the Town of Pescadero in San Mateo County, California.
    a. The off-site long-term management plan at PG&E's 5.17-acre Millbrae conservation area (Figure 1) will include the preservation, restoration, enhancement, and management in perpetuity of 4.29 acres of upland habitat for the California red-legged frog and San Francisco garter snake under a conservation easement with a Service-approved long-term management plan with a fully funded non-wasting endowment to compensate for the effects of the proposed project (LSA Associates 2017). The Millbrae conservation area is contiguous with the southern portion of the West-of-Bayshore property in the City of Millbrae, San Mateo County, California. The ~~Wildlife Heritage Foundation will be the~~ conservation easement holder for the 5.17-acre Millbrae conservation area ***will be approved by the Service***. The long-term management plan will include the preservation, management, and enhancement of 5.17 acres of upland habitat for these species. The long-term management plan may include wetland design criteria (as applicable), proposed upland enhancement methods, mechanism for habitat preservation, a schedule for implementation, and criteria to measure the success of the restoration and enhancement activities. The long-term management plan shall be reviewed and approved by the Service in writing prior to the initiation of construction of the PG&E Line 101 In-line Inspection and Upgrade Project (estimated in April 2018). Funding for the long-term management plan will be provided by October 2018 and the conservation easement recorded by December 2018. Work within the HDD area will not begin until written approval of the long-term management plan is received from the Service (note: the long-term management plan will cover the entire 5.17-acre Millbrae conservation area but 0.88 acre will be dedicated to provide habitat compensation for the PG&E Line 132 Elbow Investigation Project (Service file number 08ESMF00-2015-F-0216-R002, Service 2017), 2.19 acres will be dedicated to the built portions of the Lomita Park Station Rebuild Project that were constructed in 2015, and the remaining 2.10 acres will be dedicated to provide partial compensatory mitigation for the portions of the PG&E Line 101 In-line Inspection and Upgrade Project yet to be built (Service file number 08ESMF00-2013-F-0430, Service 2014)).


Figure 1. Millbrae conservation area (copied from Figure 2 in LSA Associates (2017)).

b. The off-site habitat enhancement and management plan at POST's Butano Farms near the Town of Pescadero in San Mateo County, California (Figure 2), will include pond and upland habitat enhancement and management of approximately 65 acres for the San Francisco garter snake and California red-legged frog over a 30-year period (Figure 3) (San Mateo RCD 2018*a*); 7.43 acres of the habitat compensation at Butano Farms will be credited to the PG&E Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project and the remaining 57.57 acres, if approved by the Service, may be credited toward other PG&E projects that will be covered by the PG&E Bay Area Operation and Maintenance Habitat Conservation Plan (ICF 2017). Proposed habitat enhancement actions at Butano Farms include enhancing the existing 1-acre pond and surrounding 65-acre upland complex through a suite of restoration actions aimed at enhancing both pond and upland habitat for the San Francisco garter snake and California red-legged frog. These actions could include: (a) reducing encroachment of woody vegetation into the pond through grading to increase the depth and total area of open water; (b) creating a shallow open bench and herbaceous species dominated transition area(s) between the open water and the adjacent uplands to support San Francisco garter snake foraging and California red-legged frog metamorphosis; (c) increasing the longevity of the enhanced pond through reducing upland erosion and sedimentation transport through a mix of drainage improvements, gully stabilization, and possibly creation of a sediment collection forebay upstream of the existing pond; and (d) restoring grassland habitat within the pond's watershed through removal and control of encroaching coyote brush, jubata grass, Douglas fir, and invasive species (San Mateo

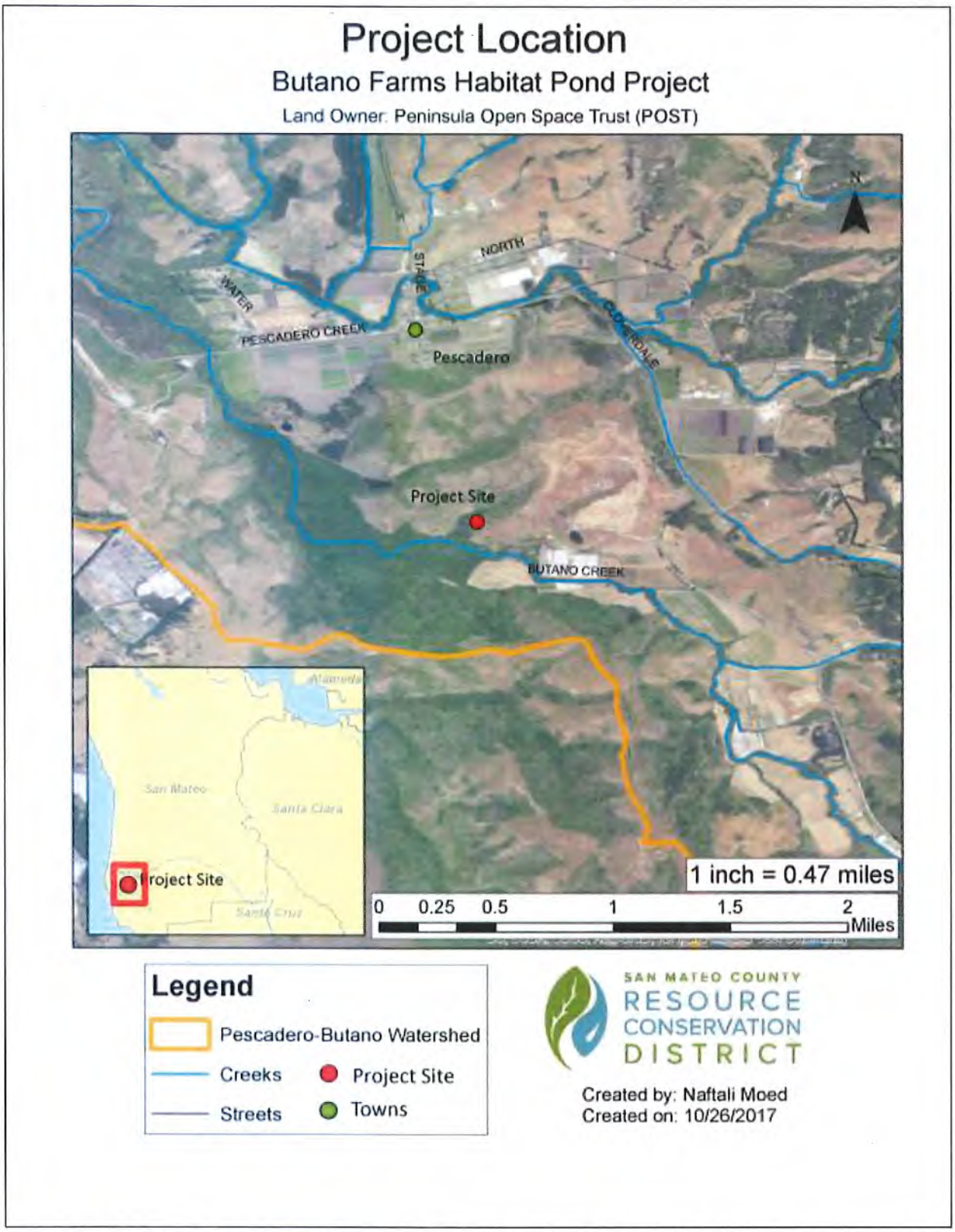


Figure 2. Location of the Butano Farms habitat enhancement area near the Town of Pescadero, San Mateo County (copied from Figure 1 in San Mateo RCD 2018*a*).


Figure 3. Map of the habitat enhancement features in the 65-acre habitat enhancement and management area at POST's Butano Farms near the Town of Pescadero, San Mateo County (copied from Figure 7 in San Mateo RCD 2018*a*).

RCD 2018*a*). The habitat enhancement project will improve and expand existing aquatic habitat within and adjacent to the pond to enhance habitat for the San Francisco garter snake and for the snake's food sources (e.g., Pacific tree frogs and California red-legged frogs). Work within the existing 1-acre pond will include enhancing a 0.25-acre area of the pond to provide open water aquatic habitat and expansion of the pond habitat on approximately 0.25 acre of riparian forest (mostly willows) to create shallow water habitat for Pacific tree frogs and California red-legged frogs. The southern portion of the pond is filled in with a dense mix of tules and cattails which help filter sediment from the drainage before entering Butano Creek, and it is recommended that this section remain relatively intact as-is. Livestock exclusion fencing will be installed to exclude cattle from a portion of the pond and riparian area to minimize erosion and preserve vegetation. The funding for the habitat enhancement and management at Butano Farms is anticipated to be provided in June 2018 after the agreement is approved by San Mateo RCD and the Service. Upland habitat restoration work and draining of the pond is expected to begin in late summer 2019. Aquatic habitat restoration work is expected to begin in the summer 2020. The 30-year management plan for the 65-acre habitat enhancement area at Butano Farms is expected to be approved in the summer 2018 and will be implemented beginning in early 2020. ~~The implementation of the habitat enhancement and restoration actions at Butano Farms is not covered under this biological opinion but will be covered under a future Section 7 consultation under the Act.~~ ***The following ecological objectives provide the basis for long-term management of the Butano Farms pond: (a) create and maintain shallow "bench" habitat around the northern and western sides of the pond margin with open emergent or submergent vegetation that allows sunlight to penetrate and warm the water; (b) maintain at least 25 percent cover of open water habitat in the pond; (c) maintain a 25-75 percent cover of emergent vegetation (i.e., tules, cattails, juncus, etc.) around the pond margins; (d) protect pond water quality (sediment, nutrients, and pathogens) to the greatest extent practicable; (e) control and eradicate invasive species, especially bullfrogs; and (f) establish and maintain appropriate upland habitat in the 61-acre area around the pond to provide upland forage and basking habitat and minimize erosion. The restoration and management activities to be conducted at the 65-acre Butano Farms restoration site are described in detail in San Mateo RCD (2018a, 2018b, and 2018c) and summarized below:***

1) ***Aquatic Habitat Work Summary (1.25 acre footprint): This restoration project will improve and expand existing aquatic habitat within and adjacent to the pond to enhance habitat for the San Francisco garter snake and its food sources (e.g., California red-legged frog and Pacific tree frog). Work within the existing 1.0-acre pond will include: (a) enhancing a 0.25-acre area of the pond to provide open water aquatic habitat through removing sediment and reshaping the pond surface to provide a deep-water section which will increase storage capacity and maintain open water habitat; (b) expansion of the pond habitat by lowering a 0.25-acre area of the riparian forest (mostly willows) along the northwest section of the pond to a depth of approximately 18 inches to provide shallow water habitat for California red-legged frogs and Pacific tree frogs; and (c) a 0.75-acre southern portion of the pond that is filled in with a dense mix of tules and cattails will remain***

*relatively intact as-is to help filter sediment from the drainage before entering Butano Creek.*

2) *Riparian Habitat Work Summary: This restoration project will transition 0.5 acre of riparian habitat adjacent to the pond feature to aquatic and grassland habitat to improve conditions for San Francisco garter snake food source production and access to the aquatic habitat. Sediment control structures will be installed in the 1.5-acre riparian area to be protected. Some riparian trees (mostly willows) will need to be removed to install the structures: (a) a 0.5-acre area of riparian habitat will be transitioned to grassland dominated habitat to improve access for San Francisco garter snake by removing riparian tree species around the west and northern areas of the pond; (b) check dams or berms constructed from material removed from the pond will be placed in the willowed area to the northeast of the pond to slow the flow of water moving through the floodplain and allow sediment to fall out prior to the water reaching the pond (the berms will function similarly to check dams and will ultimately build up the elevation of the floodplain area to increase the water table elevation and minimize future erosion in the gullies, some riparian tree species will need to be removed to install these structures); (c) livestock fencing will be installed to exclude livestock from a portion of the pond and riparian area to minimize erosion and preserve vegetation that provides structure for egg-laying, foraging, and sheltering habitat for California red-legged frogs and San Francisco garter snakes; and (d) livestock fencing will also be installed in the upland areas in order to manage grazing.*

3) *Upland Habitat Enhancement: This restoration project will enhance approximately 61 acres of upland grassland and scrubland habitat in the surrounding watershed of the pond to improve it to provide better San Francisco garter snake basking and breeding habitat. This work will additionally improve soil health, decrease erosion, and reduce the amount of sediment entering the pond. The specific areas will be selected from within the project area outlined in the site map (Figure 3) during the design process: (a) much of the upland area to be selected during the design process is currently dominated by shrubs (primarily coyote brush) which will be strategically removed at rates to be determined during the design process, and invasive trees and grasses will also be removed from these areas; (b) the addition of compost to the upland areas treated as described above will help improve soil health, encourage revegetation of deep rooting native grasses, and help minimize future erosion from these areas; (c) the woody material removed may be mulched and placed in the gullies to provide soil cover and help decrease erosion; (d) some revegetation and erosion control features may be undertaken in the gullies to further reduce sedimentation in the pond; and (e) all feasible steps will be taken to reduce potential for erosion in the upland areas treated that surround the gullies which might include slight modifications to the access road to the site, installation of waddles, targeted revegetation, and other efforts designed to preserve the longevity of the pond.*

4) *Maintenance and Monitoring: Prior to construction, photo monitoring of the pond and upland areas will be completed to establish a baseline condition. Regular, frequent monitoring will occur regularly during the initial phase of project implementation to ensure the project aligns with specifications established in designs, permit conditions, and address potential problems prior to completion of implementation. Following implementation of the pond improvements, biannual monitoring will be conducted in the spring and fall. Based off the results of these monitoring efforts, the project team will convene and determine whether sediment management, vegetation removal, or other actions are necessary in order for the project to continue meeting its established goals.*
5) *Herbicide Use: Herbicides represent an important tool in efforts to manage vegetation. In the context of the Butano Farms habitat enhancement work, they have been identified for potential use to control invasive plants in the upland portions of the project area (areas more than 60 feet away from any aquatic areas as defined in the best management practices below). The target species for potential herbicide application include coyote brush (Baccharis pilaris), jubata grass (Cortaderia jubata), and may include other species that are identified as the project moves forward with development. Herbicide is being considered for these species due to its minimal impacts on erosion, the economical efficacy of herbicide applications compared to other removal methods as well as the fact that it can often cause less disturbance to the area than mechanical removal. At this time the San Mateo RCD is not considering the use of herbicides to control willows (Salix ssp.), cattail (Typhaceae spp.), sedges (Scirpus ssp.), or rushes (Juncus ssp.) due to their proximity to sensitive aquatic habitat and will likely pursue mechanical or cultural measures for vegetation management in these areas. A strict riparian buffer will be observed, and herbicides will not be used near any aquatic areas as part of this habitat enhancement project. All herbicides utilized will be post emergent. The exact application rates, formulations, and methods will be determined by the San Mateo RCD in conjunction with the landowner and contractor and may be influenced by the size of the plants (whether or not they have already been mowed), weather, time of year, and other factors. When feasible, mechanical and cultural controls will be utilized in place of or in conjunction with herbicide.*
    i. *The following herbicides may be used to target coyote brush:*
        1. *Glyphosate, 10 percent rate, drizzle applicator at ~20 pounds per square inch (PSI) during the fall;*
        2. *Glyphosate, 100 percent rate, injected/applied to cut stumps during the fall;*
        3. *Glyphosate, 5 percent rate, foliar spray at ~30 PSI during the fall/spring;*
        4. *Imazapyr, 5 percent rate, foliar spray at ~30 PSI during the fall/spring;*
        5. *2,4-D, 5 percent rate, foliar spray at ~30 PSI during the fall/spring; and*

6. *Triclopyr, 5 percent rate, foliar spray at ~30 PSI during the fall/spring.*

ii. *The following herbicides may be used to target jubata grass:*

1. *Glyphosate, 2 percent rate, foliar spray at ~30 PSI during the summer/fall;*
2. *Glyphosate, 8 percent rate, low volume foliar spray at ~30 PSI during the fall;*
3. *Glyphosate, 33 percent rate, rope wick applicator during the summer/fall; and*
4. *Fluazifop, 4 percent rate, low volume foliar spray at ~30 PSI during the fall/spring.*

*The following avoidance and minimization measures will be implemented during restoration and management activities at the Butano Farms habitat enhancement area (San Mateo RCD 2018b, 2018c):*

1. *Within two days of the start of work on the pond, the pond will be sampled by a Service-approved biologist to ensure that all California red-legged frogs from that pond are in post-metamorphic stage and will be minimally affected by draining the pond. If the construction plans allow for existing open water and emergent vegetation areas to remain wetted and be isolated from construction activities, a Service-approved biologist will be on-site during draining of the work area to ensure that any remaining tadpoles or metamorphs are safely relocated to areas with standing water.*
2. *No more than 24 hours prior to conducting pond enhancement activities visual surveys shall be conducted by walking at least a 50-foot buffer area around the pond in an attempt to locate individual turtles, snakes, and frogs. A Service-approved biologist shall capture, transfer, and release in a safe area any turtles and frogs deemed to be in danger of being harmed by restoration activities. If a turtle, snake, or frog is located during the pre-treatment surveys but escapes capture, the area where the animals were lost shall be marked by a flag, and a 50-foot (15 meter) radius will be actively patrolled during the work. After the pre-construction survey, an avoidance strategy will be devised and presented to all individuals involved in pond enhancement prior to starting any activities. San Francisco garter snakes will not be removed or handled.*
3. *Draining of ponds to perform authorized work shall only occur during the part of the year when the tadpole life stage of the California red-legged frog has been completed and before the subsequent breeding season (i.e., between August 15 and November 1).*
4. *All biological monitors for the project shall be approved by the Service prior to commencement of project activities.*
5. *Service-approved biologists shall be on the project site while all project activities are being conducted including delineating access roads, vegetation removal, pond excavation, pond draining, and pond repair work.*
6. *Prior to project activities, a Service-approved biologist shall clearly mark/flag or erect temporary construction fencing to designate the work area and to delineate the areas that shall be avoided. Flagging and/or temporary construction fencing shall be removed immediately after the completion of construction work.*
7. *Dredge spoils shall be placed in a containment area away from the creek and allowed to disperse. The area where dredge spoils will be placed shall be surveyed for*

*California red-legged frogs and San Francisco garter snakes. If burrows are present in this area, the biological monitor shall hand excavate burrows until the burrow terminates or until a maximum depth of 11.8 inches (30 centimeters). If San Francisco garter snakes are found, all work shall cease and the Service and CDFW shall be notified immediately.*

8. *Any vehicle parked on site for more than 15 minutes shall be inspected by the Service-approved biologist before it is moved to ensure that California red-legged frogs and San Francisco garter snakes have not moved under the vehicle. Any parking areas shall be checked in advance by the Service-approved biologist.*
9. *If a California red-legged frog enters the work area, all work shall stop until the Service-approved biologist relocates the animal or it leaves on its own. Only the Service-approved biologist can handle and relocate California red-legged frogs. Any sightings and/or injuries of this species shall be immediately reported to the Service per instructions below.*
10. *Prior to the onset of any project-related activities, the Service-approved biologist must identify appropriate areas to receive California red-legged frog adults from the project areas. These areas must be in proximity to the capture site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species to the best of the Service-approved biologist's knowledge. Translocation shall only be performed by the Service-approved biologist.*
11. *Prior to and within 48 hours of the planned start of project activities, a focused survey for San Francisco garter snakes using an agency-approved protocol shall be conducted by a Service-approved biological monitor to determine if they are in the area. If a San Francisco garter snake is found, the Service shall be notified immediately to determine the correct course of action and project activities shall not begin until approved by the Service.*
12. *Prior to conducting non-native plant (e.g., jubata grass) removal or treatments (e.g., spraying with herbicide, cutting, pulling, digging out), the permittee shall make every reasonable attempt to ensure that California red-legged frogs and San Francisco garter snakes are not hidden within the plant or residual plant matter to be treated.*
13. *Activities that result in ground disturbance will occur May 1–October 30 (active season for the San Francisco garter snake). Vegetation will be cut to 3 inches in height. Once the ground is visible, a visual survey for the San Francisco garter snake will be conducted by the Service-approved biologist prior to additional ground disturbance. Field crews will install solid exclusion fencing if the work is in areas of known species presence. If work needs to occur during the inactive period (November 1– April 30) and is located in an area of known occupancy, the Service-approved biologist will flag and avoid any burrows by at least 10 feet wherever possible. If any burrows cannot be avoided by this distance, a Service-approved biologist will inspect following activities to determine whether or not the burrow has been collapsed. If a burrow is collapsed, the Service-approved biologist shall make efforts to open the burrow.*
14. *The Service-approved biologist shall walk directly in front of the vehicle or large equipment while utilizing the roads cleared for vehicle access to ensure San Francisco garter snakes are not in the road. If a San Francisco garter snake is found on the road, the Service-approved biologist shall tell the vehicle operator to stop, and the San Francisco garter snake shall be allowed to leave on its own volition.*

15. *The Service-approved biologists shall have the responsibility and authority of stopping the proposed project if any crews or personnel are not complying with the provisions outlined in this biological opinion.*
16. *Vehicular and equipment refueling will be prohibited within 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, a secondary containment area will be constructed subject to review by the San Mateo RCD and/or Service-approved biologist. Spill prevention and cleanup equipment will be maintained in refueling areas.*
17. *Wetlands on-site shall be avoided to the maximum extent possible. Fencing shall be erected adjacent to the areas where construction is occurring to avoid unintended impacts to wetlands outside the work area.*
18. *Any excavation necessary shall be completed from outside of wetlands, where feasible, by using an excavator or backhoe tractor, thereby limiting the driving of heavy equipment across wetlands.*
19. *When possible, activities near streams, wetlands, or on saturated soils shall be conducted during the dry season (generally May 15–October 15) or during periods of minimum flow. If it is not possible to perform the work in the dry season, perform rainy season work during dry spells between rain events.*
20. *No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into waters of the State. Any of these materials placed within or where they may enter waters of the State by the applicant or any party working under contract, or with the permission of the applicant shall be removed immediately. When operations are completed, any excess material shall be removed from the work area and any areas adjacent to the work area where such material may be washed into waters of the State. During construction the contractor shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.*
21. *A Worker Environmental Awareness Training shall be conducted for all construction crews and contractors by the Service-approved biological monitor. The education training shall be conducted prior to starting work on the project and upon the arrival of any new worker. The training shall include a brief review of special-status species, locations of sensitive areas, possible fines for violations, avoidance measures, and correction actions should sensitive species be encountered. The program shall cover the avoidance and minimization measures, environmental permits, and regulatory compliance requirements. Additional training shall be conducted as needed, including morning "tailgate" sessions to update crews as they advance into sensitive areas for projects with multiple work areas. In addition, a record of all personnel trained during the project shall be maintained for compliance verification.*
22. *To prevent the spread of invasive species, all equipment shall be washed prior to entering the property, with special attention on cleaning the undercarriage and wheels of the vehicles. In the event that high- or medium-priority noxious weeds are disturbed or removed during construction or construction-related activities, the contractor shall contain the plant material associated with the noxious weeds and dispose of it in a manner that will not promote the spread of the species. Areas where noxious weeds are disturbed or removed shall be immediately replanted with fast-growing native grasses or a native erosion control seed mixture.*

23. *The applicant shall revegetate all disturbed areas using native plant species and seed stock, as needed. Revegetation shall occur promptly upon completion of grading activities at each pond.*
24. *Plants selected for the restoration project shall be native riparian species that currently exist onsite or within the restoration project's watershed. Plant material will be obtained from a native plant nursery with Phytophthora best management practices in place, with emphasis on collection or propagation from local plant sources or be grown by the applicant from propagules collected from local watersheds.*
25. *Impacts to special-status plant species shall be avoided to the maximum extent possible. If avoidance is not feasible, impacts shall be minimized by implementing the following mitigation measures:*
    a. *Focused botanical surveys shall be conducted in April-June to determine if any special-status plant species are present with the project area.*
    b. *Timing of work activities within occupied habitat should occur after the bloom period of special-status plant species, to allow for maximum seed set and avoidance of direct mortality.*
    c. *Limit work areas with occupied habitat to the minimal area practical.*
    d. *If construction is to occur prior to the month of July, individual plants within the work areas that have the potential to be impacted should be enumerated, photographed, and conspicuously flagged to maximize avoidance, as well as to determine the total number of individuals affected. Timing of field surveys and flagging should correspond with the blooming period when this species is most conspicuous and easily recognizable, if feasible.*
    e. *Seed collection from individual plants with mature seed that are likely to be impacted should be conducted and properly stored for post-construction propagation and reestablishment. Perennial individuals that are likely to be impacted could be translocated by digging up plants and replanting in suitable habitat under the supervision of the project biologist.*
26. *If project construction is to begin during the migratory bird breeding season (between February 1 to August 31), a preconstruction survey for active nests shall be conducted within the project footprint and shall encompass adjacent habitats up to 300 feet from the project boundary. Surveys shall be conducted by a qualified biologist no more than two weeks prior to equipment or material staging, pruning/ grubbing or surface-disturbing activities. If no active nests are found within the survey area, no further mitigation is necessary. If active nests, i.e. nests with eggs or young present, are found within the survey area, non-disturbance buffers shall be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, species' tolerance to disturbance, and type/duration of potential disturbance. No work shall occur within the non-disturbance buffers until the young have fledged as determined by a qualified biologist.*
27. *Prior to and within 48 hours of the planned start of construction, a focused survey for western pond turtles shall be conducted by a CDFW-approved biological monitor to determine if they are in the area. If these species are found, the CDFW shall be notified immediately to determine the correct course of action, and construction activities shall not begin until approved by the CDFW. In the event a western pond turtle is found in the project area, the permittee shall exercise measures to avoid direct injury to them as well as avoid areas where they are observed to occur. If a western pond turtle is observed, it shall be left alone to move out of the area on its own. If it does not move on its own, it can be relocated by the biological monitor or*

*the qualified biologist to at least 328 feet (100 meters) away from the project location to a suitable habitat.*

28. *All staff and contractors will adhere to minimization measures to prevent the spread or introduction of amphibian diseases, such as chytrid, as suggested in "The Declining Amphibian Task Force Code of Practice" (https://www.fws.gov/ventura/docs/species/protocols/DAFTA.pdf).*
29. *The following herbicide use best management practices will be implemented:*
    a. *All pesticide use shall be implemented consistent with Pest Control Recommendations prepared annually by a licensed Pest Control Advisor.*
    b. *Applicators shall follow all pesticide label requirements and refer to all other best management practices regarding mandatory measures to protect sensitive resources and employee and public health during pesticide application.*
    c. *Pesticide applicators shall have or work under the direction of a person with a Qualified Applicator License or Qualified Applicator Certificate. Contractors and staff may apply approved herbicides after review and approval by the San Mateo RCD and under the direction of Qualified Applicator License/ Qualified Applicator Certificate field supervisors.*
    d. *All storage, loading, and mixing of herbicides shall be set back at least 300 feet from any aquatic feature or special-status species or their habitat or sensitive natural communities. All mixing and transferring shall occur within a contained area. Any transfer or mixing on the ground shall be within containment pans or over protective tarps.*
    e. *Appropriate non-toxic colorants or dyes shall be added to the herbicide mixture to determine treated areas and prevent over-spraying.*
    f. *Application Requirements - The following general application parameters shall be employed during herbicide application:*
        1) *Application shall cease when weather parameters exceed label specifications, when wind at site of application exceeds 7 miles per hour, or when precipitation (rain) occurs or is forecasted with greater than a 40 percent probability in the next 24-hour period to prevent sediment and herbicides from entering the water via surface runoff;*
        2) *Spray nozzles shall be configured to produce a relatively large droplet size;*
        3) *Low nozzle pressures (10-70 PSI) shall be observed during foliar applications;*
        4) *Spray nozzles shall be kept within 24 inches of vegetation during spraying;*
        5) *Drift avoidance measures shall be used to prevent drift in locations where target weeds and pests are in proximity to special-status species or their habitat. Such measures can consist of, but would not be limited to, the use of plastic shields around target weeds and pests and adjusting the spray nozzles of application equipment to limit the spray area.*
    g. *Notification of Pesticide Application – Signs shall be posted notifying the public, employees, and contractors of the San Mateo RCD's use of pesticides. The signs shall consist of the following information: signal word, product name, and manufacturer; active ingredient; U.S. Environmental Protection Agency registration number; target pest; preserve name; treatment location in preserve; date and time of application; date which notification sign may be*

*removed; and contact person with telephone number. Signs shall generally be posted 24 hours before the start of treatment, and notification shall remain in place for 72 hours after treatment ceases. In no event shall a sign be in place longer than 14 days without dates being updated. See the Integrated Pest Management Guidance Manual for details on posting locations, posting for pesticide use in buildings and for exceptions.*

h. *Disposal of Pesticides – Cleanup of all herbicide and adjuvant containers shall be triple rinsed with clean water at an approved site, and the rinsate shall be disposed of by placing it in the batch tank for application. Used containers shall be punctured on the top and bottom to render them unusable, unless said containers are part of a manufacturer's container recycling program, in which case the manufacturer's instructions shall be followed. Disposal of non-recyclable containers shall be at legal dumpsites. Equipment shall not be cleaned, and personnel shall not bathe in a manner that allows contaminated water to directly enter any body of water within the treatment areas or adjacent watersheds. Disposal of all pesticides shall follow label requirements and local waste disposal regulations.*

i. *All appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, and local jurisdictions shall be followed. All applications shall adhere to label directions for application rates and methods, storage, transportation, mixing, and container disposal. All contracted applicators shall be appropriately licensed by the state. San Mateo RCD staff shall coordinate with the County Agricultural Commissioners, and all required licenses and permits shall be obtained prior to pesticide application.*

j. *Sanitation and Prevention of Contamination - All personnel working in infested areas shall take appropriate precautions to not carry or spread weed seed or plant and soil diseases outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles prior to entering or leaving the site.*

k. *All staff and contractors shall be properly trained to prevent spreading weeds and pests to other sites.*

l. *To minimize effects to California red-legged frogs during the breeding season (November – April), all herbicide use will primarily occur between August 15th to November 1st. Some target treatment of individual weeds may occur in April or May to increase long term treatment effectiveness and reduce the overall amount of chemical applied. A decision to spray in the spring time window would be made by San Mateo RCD staff.*

## Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the proposed project, the action area encompasses the 11.61 acres of suitable habitat within the proposed project footprint at the 190-acre West-of Bayshore property. The action area also includes the 4.29 acres of California red-legged frog and San Francisco garter snake habitat at the 5.17-acre Millbrae conservation area (directly adjacent to the West-of-Bayshore property to the south) that will be preserved and managed in perpetuity for these listed species to compensate for the effects of the proposed project.

The action area also includes the ~~7.43 acres of California red-legged frog and San Francisco garter snake habitat at the~~ 65-acre Butano Farms habitat enhancement and management area near the Town of Pescadero that will be enhanced and managed over a 30-year period for ~~these listed species~~ ***the California red-legged frog and San Francisco garter snake*** ~~to compensate for the effects of the proposed project~~.

## Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

## Status of the Species

*California Red-legged Frog*

**Listing Status:** The California red-legged frog was listed as a threatened species on May 23, 1996 (61 FR 25813) (Service 1996). Critical habitat was designated for this species on April 13, 2006 (71 FR 19244) (Service 2006) and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816) (Service 2010). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer *et al.* 2010). A Recovery Plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

**Description:** The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

**Distribution:** The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70

percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay Area and the Central California Coast. Isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (CDFW 2018).

**Status and Natural History:** California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger *et al.* 2003, Stebbins 2003). However, they also inhabit ephemeral creeks, drainages and ponds with minimal riparian and emergent vegetation. California red-legged frogs breed from November to April, although earlier breeding records have been reported in southern localities. Breeding generally occurs in still or slow-moving water often associated with emergent vegetation, such as cattails, tules or overhanging willows (Storer 1925, Hayes and Jennings 1988). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984).

Habitat includes nearly any area within 1-2 miles of a breeding site that stays moist and cool through the summer including vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees (Fellers 2005). Sheltering habitat for California red-legged frogs potentially includes aquatic, riparian, and upland areas and includes any landscape feature that provides cover, such as animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water. Some individuals remain at breeding sites year-round, while others disperse to neighboring water features. Dispersal distances are typically less than 0.5-mile, with a few individuals moving up to 1-2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger *et al.* (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred from one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger *et al.* (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, i.e., California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger et al. 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment in eastern Contra Costa County, Tatarian (2008) noted that a 57 percent majority of frogs fitted with radio transmitters in the Round Valley study area stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. This study reported a peak seasonal terrestrial

movement occurring in the fall months associated with the first 0.2-inch of precipitation and tapering off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the base of trees or rocks, logs, and under man-made structures; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1 to 4 days; however, one adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Upland refugia closer to aquatic sites were used more often and were more commonly associated with areas exhibiting higher object cover, e.g., woody debris, rocks, and vegetative cover. Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after 6 to 14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand resulted in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3½ to 7 months following hatching and reach sexual maturity 2 to 3 years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). California red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations can fluctuate from year to year; favorable conditions allow the species to have extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the animal may temporarily disappear from an area when conditions are stressful (e.g., during periods of drought, disease, etc.).

The diet of California red-legged frogs is highly variable; changing with the life history stage. The diet of the larval stage has been the least studied and is thought to be similar to that of other ranid frogs, which feed on algae, diatoms, and detritus (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have preyed on Pacific tree frog, three-spined stickleback and, to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods; juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination, feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

**Recovery Plan:** The Recovery Plan for the California red-legged frog identifies eight recovery units (Service 2002). The establishment of these recovery units is based on the determination that various regional areas of the species' range are essential to its survival and recovery. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of its range. The goal of the recovery plan is to protect the long-term viability of all extant

populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations. Thus when combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy identified within the Recovery Plan will allow for the recolonization of habitats within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

**Threats:** Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs, and suggested that bullfrogs could prey on subadult California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with California red-legged frog reproduction by eating adult male California red-legged frogs. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; Jennings 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to California red-legged frog habitat has also affected the threatened amphibian. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks dispersal, and the introduction of predatory fishes and bullfrogs. Diseases may also pose a significant threat, although the specific effects of disease on the California red-legged frog are not known. Pathogens are suspected of causing global amphibian declines (Davidson et al. 2003). Chytridiomycosis and ranaviruses are a potential threat because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson et al. 2003; Lips et al. 2006). Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric threespine sticklebacks in northwestern California. Non-native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2006). Humans can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e., contaminated boots, waders or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from vehicle-related mortality, habitat degradation, noise and light pollution, and invasive exotic species. Forman and Deblinger (1998) described the area affected as the "road effect" zone. One study along a 4-lane road in Massachusetts determined that this zone extended for an average of 980 feet to either side of the road for an average total zone

width of approximately 1,970 feet. However, in places they detected an effect greater than 0.6-mile from the road. The road effect zone can also be subtle. Van der Zandt *et al.* (1980) reported that lapwings and black-tailed godwits feeding at 1,575 to 6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increases near roads (MacArthur *et al.* 1979). Trombulak and Frissell (2000) described another type of "road-zone" effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads and elevated levels of metals in soil and plants were detected at 660 feet of roads. The "road-zone" varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the road-zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The road-zone with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads and well-used large paved areas in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. High-volume highways pose a nearly impenetrable barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (Ashley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road mortalities from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but may be an incorrect assumption for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to traffic mortality because they readily attempt to cross roads, are small and slow-moving, and thus are not easily avoided by drivers (Carr and Fahrig 2001).

**Metapopulation and Patch Dynamics:** The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more "permeable" areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a "corridor" must be determined from the perspective of the animal (Forys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldom 1990; Verboom et al. 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small

patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the "rescue" effect (Hanski 1982; Gotelli 1991; Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit *et al.* 1995; Buza *et al.* 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic "drain" for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that frequently make long-distance movements have higher mortality rates than do sedentary species.

*San Francisco Garter Snake*

**Listing Status**: The San Francisco garter snake was listed as an endangered species on March 11, 1967 (Service 1967) and was listed as endangered by the State of California in 1971. A detailed species account can be found in the *San Francisco Garter Snake 5 -year Review: Summary and Evaluation* (Service 2006b). Critical habitat has not been proposed or designated for the species. The San Francisco garter snake is a fully protected species under California law. See California Fish and Game Code, Section 5050(b). A recovery plan was published for the San Francisco garter snake in 1985 (Service 1985).

**Description**: The San Francisco garter snake is a slender, colorful snake, with a burnt orange head, greenish-yellow dorsal stripe edged in black, bordered by a red stripe, which may be continuous or broken with black blotches, and then a black stripe. The belly color varies from greenish-blue to blue. The eyes are relatively large, and usually seven upper and ten lower labial scales are present. The body scales are in 19 rows and the dorsal scales are weakly to strongly keeled (Fox 1951). Large adults can reach 36 inches or more in length. Females give live birth from June through September,

with litters averaging 16 newborn (Stebbins 2003). The snakes are extremely shy, difficult to locate and capture, and quick to flee to water or cover when disturbed.

**Distribution**: Historically, San Francisco garter snakes occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point, San Mateo County, and Waddell Creek, Santa Cruz County, California (Barry 1994; Service 1985). Currently, the species has been reduced to only six significant populations in San Mateo County and northern Santa Cruz County. These sites are Pescadero Marsh, Año Nuevo, the San Francisco State Fish and Game Refuge, San Francisco Airport/Millbrae, Sharp Park Golf Course at Laguna Salada, and Cascade Ranch. Each of these six locations is considered by the San Francisco Garter Snake Recovery Plan to be essential to the long-term survival of the species (Service 1985) and these locations are recognized as important to achieving recovery in the San Francisco garter snake 5-year review (Service 2006a). Of these sites Fox (1951) considered the Sharp Park population to be the purest morphological example of San Francisco garter snakes.

**Status and Natural History:** There are two significant components to San Francisco garter snake habitat: ponds that support California red-legged frogs and Pacific tree frogs *(Pseudacris regilla),* and surrounding upland habitat that supports burrowing mammals such as Botta's pocket gopher *(Thomomys bottae)* and California vole *(Microtus californicus).*The preferred habitat of the San Francisco garter snake is vegetated ponds with an open water component near open hillsides where they can sun themselves, feed, and find cover in rodent burrows (Larsen 1994). However, considerably less ideal habitats can be successfully occupied by the snakes, including ditches and waterways, where snakes are believed to pursue and prey on California red-legged frogs and Pacific tree frogs (McGinnis 1987). San Francisco garter snakes have also been observed in ponds surrounded by dense stands of California redwood with some open area for basking, dramatically differing from the upland and dispersal areas that were historically considered suitable for the species. This has led to unanswered questions regarding species behavior and movements in wooded areas and what role these ecosystems may play in the life history of the species.

San Francisco garter snakes also utilize temporary ponds and other seasonal freshwater bodies for foraging. They avoid brackish marsh areas because their preferred prey base is primarily comprised of California red-legged frogs and Pacific tree frogs. Emergent and bankside vegetation such as cattails, bulrushes, and spike rushes *(Juncus* spp. and *Eleocharis* spp.) are apparently preferred and used by the snake for cover. However, in the absence of these species, dense stands of coyote bush, pampas grass *(Cortaderia selloana),* or blackberry *(Rubus* spp.) may substitute as adequate cover (Barry 1994; Larsen 1994). The interface between stream and pond habitats and grasslands or bank sides is used for basking while nearby dense vegetation or water often provides escape cover. Barry (1994) noted that scattered, as opposed to dense brush was the preferred basking habitat for San Francisco garter snakes. San Francisco garter snakes also use floating algal or rush mats, if available. Sag ponds, small seasonal freshwater ponds formed along the San Andreas rift, historically supported this snake, but many of these habitats have been destroyed by urbanization and high intensity agriculture (Barry 1994). Barry (1994) reported that the San Francisco garter snake was abundant in the sag ponds that were eliminated by the construction of Skyline Boulevard.

San Francisco garter snakes forage extensively in aquatic habitats. In addition to California red-legged frogs, adults may also feed on juvenile bullfrogs, but they are unable to feed on larger adult bullfrogs (Barry 1994, 2005, undated). The elimination of aquatic habitat used by the anuran prey base of the San Francisco garter snakes, such as these sag ponds, negatively impacts the San

Francisco garter snakes by removing both its prey and suitable habitat (McGinnis 1987). Additionally, San Francisco garter snakes have been observed regurgitating bullfrogs in experiments performed by Larsen (1994). Thus, some experts believe that this species may not be a suitable prey item for San Francisco garter snakes in the wild. Adult San Francisco garter snakes are known to gorge on tadpoles of both the California red-legged frog and Pacific tree frog, when ponds dry prior to metamorphosis (McGinnis 1989). Newborn and juvenile San Francisco garter snakes depend heavily upon juvenile Pacific tree frogs as prey (Larsen 1994) and young San Francisco garter snakes may not survive if newly metamorphosed Pacific tree frogs are not available. Adult bullfrogs likely prey on smaller garter snakes, and may be an additional threat. However, there is debate about the level of adverse effect caused by this predation (Barry 2005). San Francisco garter snakes are one of the few animals capable of eating the toxic California newt *(Taricha torosa)* without suffering serious side effects. Although primarily diurnal, captive San Francisco garter snakes housed in an outside enclosure have been observed foraging after dark on warm evenings.

Adult San Francisco garter snakes sometimes aestivate in rodent burrows during summer months when the ponds are dry. On the coast, the snakes hibernate during the winter, but further inland, if the weather is suitable, snakes may be active year round. Female San Francisco garter snakes exhibit a high level of site fidelity (McGinnis 1989), particularly to burrows that are used for aestivation. Females can be found daily at the entrance to their burrow, and may travel to wetland areas once or twice a day. Larsen (1994) reported movements of up to 671 meters for one female and 632 meters for one male. Additionally, San Francisco garter snakes have been observed moving between 1.12 and 1.3 miles over several days during the warmer spring and fall months (Larsen 1994). Whorton et al. (1989) observed snake movement of 1.3 miles over 111 days at the West-of-Bayshore site, indicating that individuals may be highly mobile under some circumstances. The largest and longest garter snake migrations have been observed between March and May and again during the month of November (Whorton et al. 1989; Larsen 1994). Long distance movements of San Francisco may be attributed to the search for food as they follow dispersing prey and newly hatched tadpoles in wetlands throughout their range (Service 2006b).

Mating occurs during both the spring and fall, but principally during the first few warm days of March. Increased mating activity in spring is thought to be due to the increased likelihood of encountering a mate as individuals emerge from hibernacula and congregate near aquatic foraging areas. Increased movement may correspond with the mating and foraging during the spring and fall (Service 2006).

**Threats:** The recovery plan for the San Francisco garter snake identified several threats to the species including loss of habitat from agricultural, commercial and urban development, and collection by amateur herpetologists (Service 1985). The historical threats to the species remain, but there are now additional threats to the species, which include: (1) declining numbers of the threatened California red-legged frog; (2) the introduction of non-native bullfrogs which prey on both the San Francisco garter snake and California red-legged frog; (3) possible hybridization with other garter snake species; (4) removal of aquatic habitat for flood control; (5) seral succession of the remaining breeding habitat to the level that much of it has become unsuitable for the species; (6) vehicle strikes along roadways, (7) use of fertilizers and pesticides at golf courses adjacent to San Francisco garter snake habitat, and (8) rapid global climate change (IPCC 2007).

**Recovery Plan:** Because of past range contraction and loss of populations throughout their historic range, the San Francisco Garter Snake Recovery Plan (Service 1985) identifies 6 extant San Francisco garter snake populations that are essential for long-term survival including: Pescadero Marsh, Año Nuevo State Reserve, San Francisco State Fish and Game Refuge, San Francisco

Airport/Milbrae, Sharp Park Golf Course at Laguna Salada, and Cascade Ranch. An additional 4 populations must be established and protected to achieve delisting of the San Francisco garter snake. In addition to protecting and establishing populations, the recovery plan calls for additional research into the life history traits of San Francisco garter snakes so that recovery objectives and management plans can be adjusted. The five-year review additionally recommended that the species remain listed as endangered and also recommended that additional ponds and other habitats continue to be created or restored for the species (Service 2006a).

**Environmental Baseline**

The West-of-Bayshore property is a 190-acre parcel located in northern San Mateo County, west of San Francisco International Airport and east of the Caltrain right-of-way. The parcel is owned by the airport and the City and County of San Francisco. The property consists of a 2.4-mile-long strip of relatively undeveloped natural land completely surrounded by intense urban development. Topography within the property is generally flat with elevations less than 10 feet above mean sea level. Habitats on the property include freshwater wetlands, riparian, mixed trees (including eucalyptus, acacia, and willow), grassland, and ruderal areas.

Both the San Francisco garter snake and California red-legged frog are found within the mosaic channelized aquatic habitat, upland grasslands and seasonal wetlands on the property. Aquatic habitat on the property consists of two canals, a drainage ditch, and several seasonal wetlands. The two canals, South Lomita Canal and Cupid Row Canal, provide a means to divert water draining from the surrounding watershed into and around the West-of-Bayshore property so that it can be flushed into the San Francisco Bay. In addition to providing drainage and preventing flooding of the property, the two canals also provide a year round source of fresh water aquatic habitat for California red-legged frogs and San Francisco garter snakes.

In response to degradation of habitat on the property resulting from sediment deposition and overgrowth of non-native vegetation, the airport in cooperation with the Service, developed a Recovery Action Plan for the San Francisco Garter Snake for the West-of-Bayshore property (LSA Associates 2008). The plan includes recovery actions to be implemented on the property to improve the amount and quality of habitat for California red-legged frog and San Francisco garter snake. Recovery actions include creating channel openings in canals to increase open water habitat, removing sediment in on-site canals, improving canal alignments and widening canals in specific locations, and deepening and enhancing two on-site seasonal wetlands. The first phase of the Recovery Action Plan has been implemented. Habitat and population monitoring for California red-legged frog and San Francisco garter snake is ongoing.

Ongoing threats to California red-legged frogs and San Francisco garter snake in the action area include habitat modification, aquatic and upland habitat degradation; competition and predation by introduced species and/or feral animals; and mortality due to vehicle strikes. Aquatic habitat on the West-of-Bayshore property experiences degradation from sediment deposition during wet season storm events and from the overgrowth of non-native aquatic vegetation. These conditions reduce the amount of open water and relatively deep areas within the on-site aquatic habitat and may result in reduced hydroperiods of seasonal wetlands. Upland habitat on the site is threatened by the spread of invasive plant species including iceplant and pampas grass in uplands.

Millbrae Conservation Area

The 5.17-acre Millbrae conservation area (Figure 1) is located at PG&E's Millbrae Substation Property (contiguous with the southern portion of the 190-acre West-of-Bayshore property), west of San Francisco International Airport, south of Interstate 380, between U.S. Highway 101 and State Route 82 in San Mateo County. The Millbrae conservation area is located just above what was historically San Francisco Bay marshland. A total of 0.88 acre of the 5.17-acre Millbrae conservation area is dedicated as habitat compensation for the effects on the San Francisco garter snake and California red-legged frog of the PG&E Line 132 Elbow Investigation Project at six dig sites near San Andreas Lake in San Mateo County (Service file number 08ESMF00-2015-F-0216-R002, Service 2017).

When the Old Bayshore Highway (now South Airport Boulevard) was constructed in the 1940s, the roadway was built on a rubble berm through the tidal marsh, separating the compensation area from the tidal waters of San Francisco Bay. Later construction of U.S. Highway 101, Interstate 380, and San Bruno Avenue, along with the installation of tide gates on the nearby drainage canals, has fully eliminated tidal influence. In addition, the San Francisco International Airport and California Department of Transportation have historically placed fill on portions of the site between the 1920s and 1960s. During that period, portions of the site were also used for cattle grazing. The site has remained in essentially its present condition since 1970.

The Millbrae conservation area is currently fenced to the north, west and south, and is open to the West-of-Bayshore property, which is directly adjacent to the east. The West-of-Bayshore property itself is fenced, thus, the entire conservation area is not accessible to the public (LSA Associates 2017). Six electrical transmission and distribution lines cross the Millbrae conservation area (Figure 1). Ten utility poles associated with these utility lines are located within the Millbrae conservation area. A paved maintenance road divides the Millbrae conservation area into four discrete areas (Figure 1). The road is not part of the long-term management plan area (LSA Associates 2017).

The site is relatively level, ranging in elevation from approximately 10 feet in the lowest portions of the conservation area at its eastern side, to approximately 20 feet in the western portion of the site. The Millbrae conservation area consists of upland habitats and receives water from direct precipitation, potential runoff from adjacent residential areas in the cities of Millbrae and San Bruno, and potential runoff from the watershed that lies between these urban areas and the Crystal Springs area to the west. There are no streams or wetlands located on the Millbrae conservation area.

Adjacent land uses include a racket club directly adjacent to the north, the PG&E Millbrae Substation located to the southwest, residential areas to the northwest and southeast, and an undeveloped area to the northeast, which is included in the 190-acre West-of Bayshore property owned by the San Francisco International Airport and managed for the benefit of the San Francisco garter snake and California red-legged frog (LSA Associates 2008).

The Millbrae conservation area has the potential for the restoration of new aquatic habitat for San Francisco garter snake and California red-legged frog (LSA Associates 2017). Currently, options for creating new aquatic habitat are being evaluated. Aquatic habitat creation will be allowed so long as they benefit the conservation values of the Millbrae conservation area, as defined in the conservation easement. No enhancement or restoration of habitat will be allowed without prior approval by the Wildlife Heritage Foundation, CDFW, and the Service.

The Millbrae conservation area supports the following plant communities: non-native grassland, upland ornamental and horticultural, and native shrubs. Approximately half of the Millbrae conservation area consists of annual grassland, and the other half consists of an interspersed mosaic of grassland, upland ornamental and native shrubs. The non-native grassland is dominated by non-native grasses including wild oats, Italian rye grass, ripgut brome, soft chess, and Harding grass. Mixed in are (mainly non-native invasive) forbs, including poison hemlock, prickly lettuce, curly dock, prickly ox-tongue, field bindweed, sweet fennel, and Italian thistle. Upland ornamental and horticultural plant species are interspersed across the site, including pampas grass, Himalayan blackberry, English ivy, and a 4-foot wide strip of iceplant along the northern fenceline. This community includes a grove of planted or escaped trees along the center access road, including coast redwood, Monterey pine, and cypress. A small stand of stunted fruit trees are located in the western corner of the conservation area. The native shrubs community is dominated by many vigorous coyote shrub and toyon.

The Millbrae conservation area is within 300 feet of suitable aquatic habitat for the San Francisco garter snake and California red-legged frog on the adjacent West-of-Bayshore property. Both the San Francisco garter snake and California red-legged frog are known to occur on the adjacent West-of-Bayshore property, and two San Francisco garter snakes were observed in the Millbrae conservation area during trapping surveys in 2007 (Figure 1) (Swaim Biological, Inc. 2008). The adjacent West-of-Bayshore property is currently covered by the Recovery Action Plan for the San Francisco Garter Snake (LSA Associates 2008); however, the Millbrae conservation area is not part of the recovery action plan.

Butano Farms Habitat Enhancement Area

The proposed 65-acre Butano Farms habitat enhancement and management area is in the Butano Creek watershed near the Town of Pescadero in San Mateo County, California (Figures 2 and 3) (San Mateo RCD 2018***a***). Up to 57.57 acres of the 65-acre Butano Farms habitat enhancement area, if approved by the Service, may be credited as habitat compensation toward other PG&E projects that will be covered by the PG&E Bay Area Operation and Maintenance Habitat Conservation Plan (ICF 2017). The Butano Farms property is currently owned by POST, a 501(c)(3) nonprofit organization that protects and cares for open space, farms, and parkland. Current land use on the property primarily includes preserved open space and livestock grazing. The site contains an approximately 1-acre pond that is currently used by the cattle operation as a stock water source. The proposed Butano Farms habitat enhancement area is adjacent to the Butano Creek floodplain restoration site, a recently completed San Mateo RCD habitat enhancement project that reconnected 100 acres of historic floodplain to the Butano Creek channel (Service 2016).

Dense woody vegetation at the Butano Farms habitat enhancement area is rapidly encroaching on adjacent aquatic and upland habitat areas, shifting vegetation away from historic grassland and herbaceous wetland commonly used for movement, foraging, and breeding by San Francisco garter snake, California red-legged frog, and a suite of other native wetland and grassland dependent species. In addition to woody vegetation encroachment, upland erosion from gullies that drain into the pond is further reducing both aquatic habitat quantity and quality as well as facilitating additional encroachment by woody species (San Mateo RCD 2018***a, 2018b***).

*California Red-legged Frog*

The proposed project is located in the South San Francisco Bay Core Area of the South and East San Francisco Bay Recovery Unit for the California red-legged frog (Service 2002). This Recovery

Unit extends from the northernmost portion of Contra Costa County including a portion of San Joaquin County, south to Santa Clara County, and includes the eastern portion of San Mateo County, and all of San Francisco County. Within this Recovery Unit, California red-legged frogs appear to have been largely eliminated from the western lowland areas near urbanization. However, isolated populations occur in the East Bay foothills (between Interstate 580 and Interstate 680) and the species is abundant in several areas in eastern Alameda and Contra Costa counties. This Recovery Unit is essential to the survival and recovery of California red-legged frog, as it contains the largest number of occupied drainages in the northern portion of the species' range. The recovery plan lists the following conservation needs for the South San Francisco Bay Core Area: (1) protecting existing populations; (2) controlling non-native predators; (3) increasing connectivity between populations; (4) reducing erosion; (5) implementing guidelines for recreation activities to reduce impacts; (6) implementing forest practice guidelines; and (7) reducing impacts of urban development.

Surveys for California red-legged frogs have been conducted since 2008 as described in the West-of-Bayshore Recovery Action Plan (LSA Associates 2008). California red-legged frogs have been observed in most of the aquatic habitats on the West-of-Bayshore property during these surveys and also have been captured in the adjacent uplands in funnel traps intended for San Francisco garter snakes. The on-site canals contain relatively permanent water and are frequently used by California red-legged frogs for breeding. Depending on rainfall, seasonal wetlands on the property also provide breeding habitat.

*Millbrae Conservation Area*

While no aquatic breeding habitat for the California red-legged frog is located within the Millbrae conservation area, California red-legged frogs likely utilize the upland habitats and rodent burrows within the Millbrae conservation area for foraging, sheltering, aestivating, and dispersal due to the known occurrence of breeding California red-legged frogs in the contiguous West-of-Bayshore property.

*Butano Farms Habitat Enhancement Area*

The Butano Farms habitat enhancement and management area is located within the South San Francisco Bay Core Area and the Central Coast Recovery Unit for the California red-legged frog (Service 2002) and the SNM-2 designated critical habitat unit for the California red-legged frog (Service 2010). The 65-acre Butano Farms habitat enhancement area contains a 1-acre California red-legged frog breeding pond surrounded by a dense riparian forest. The remainder of the site is dominated by grassland and shrubland habitat with extensive gullying resulting in high sedimentation levels into the pond. ~~Several~~ ***Two*** California red-legged frog egg masses and ***several*** tadpoles were observed within the pond ***by the Service and San Mateo RCD staff*** during a site visit on February 28, 2018. However, the suitability of the pond for California red-legged frog breeding is being reduced by the encroachment of woody vegetation into the pond reducing the availability of sunny shallow water areas for California red-legged frog egg mass deposition and tadpole development. ***Over half of the pond is dominated by emergent wetland vegetation (e.g., tule, cattails, rushes) which reduces the availability of breeding habitat, but the pond does have areas of shallow water habitat and vegetation cover for California red-legged frog breeding and foraging (San Mateo RCD 2018b).*** High sedimentation levels into the pond are degrading the quality of aquatic habitat for the California red-legged frog by increasing turbidity levels and threatening the longevity of the pond (San Mateo RCD 2018***a***). The California Natural Diversity Database (CNDDB) reports the observation of two adult and four juvenile California red-

legged frogs within 0.25 mile of the Butano Farms habitat enhancement area during preconstruction surveys for the Butano Creek floodplain restoration project on August 4, 2016, but numerous bullfrogs were also observed (CNDDB occurrence number 1455, CDFW 2018). Based on the known recent observations of California red-legged frogs within and near the Butano Farms habitat enhancement area, the Service believes the California red-legged frog is highly likely to occur within all suitable aquatic and upland habitat at the Butano Farms habitat enhancement area.

*San Francisco Garter Snake*

The West-of-Bayshore property supports the Milbrae (San Francisco Airport) population of the San Francisco garter snake described in the San Francisco Garter Snake Recovery Plan and is one of the six populations considered essential to the long-term survival of the species (Service 1985).

San Francisco garter snakes have been observed throughout most areas on the West-of-Bayshore property and the property contains the largest recorded population of San Francisco garter snake in San Mateo County. Surveys for San Francisco garter snake conducted in 2007 and 2013 as described in the West-of-Bayshore Recovery Action Plan (LSA Associates 2008) detected San Francisco garter snakes in and around on-site wetlands as well as in upland areas. Based on 2007 survey results, 458 individuals were trapped and the total population was estimated to be 534 individuals (LSA Associates 2008). Based on 2013 survey results, it is estimated that the San Francisco garter snake population has remained stable.

*Millbrae Conservation Area*

Two San Francisco garter snakes were observed within the Millbrae conservation area (Figure 1) during trapping surveys in 2007 (Swaim Biological, Inc. 2008). Because of the close proximity to known San Francisco garter snake breeding habitat on the contiguous West-of-Bayshore property, the entire Millbrae conservation area is highly likely to be utilized by San Francisco garter snakes as upland habitat, as it provides hibernation sites (rodent burrows) and suitable vegetation cover consisting of shrub and grassland mix. However, the suitability of the grassland habitat for the San Francisco garter snake at the Millbrae conservation area could be degraded without proper control of invasive plant species and encroaching trees and shrubs. The Millbrae conservation area is located within the West-of-Bayshore significant population of the San Francisco garter snake (Service 1985).

*Butano Farms Habitat Enhancement Area*

The Butano Farms habitat enhancement and management area is located within the Pescadero Marsh significant population of the San Francisco garter snake and is one of the six populations considered essential to the long-term survival of the species (Service 1985). The encroachment of shrubs into grassland habitat at the Butano Farms habitat enhancement area is degrading the suitability of the upland areas as basking and dispersal habitat for the San Francisco garter snake. The encroachment of dense woody vegetation into and around the pond is degrading the quality of the aquatic habitat for the San Francisco garter snake by reducing the snake's accessibility to the pond, reducing the suitability of the pond for the snake's amphibian prey species such as the California red-legged frog, and reducing the availability of shallow water areas for San Francisco garter snake foraging. High sedimentation levels into the pond from extensive gullying is degrading the quality of the aquatic habitat in the pond for the San Francisco garter snake and its amphibian prey species by increasing turbidity levels and threatening the longevity of the pond (San Mateo RCD 2018***a, 2018b***). The CNDDB reports seven occurrences of the San Francisco garter snake within 0.3 – 1.5 miles of the Butano Farms habitat enhancement area (CNDDB occurrence numbers

12, 18, 20, 29, 33, 40, and 68; CDFW 2018). ***San Francisco garter snake individuals have been found both upstream and downstream of the Butano Farms habitat enhancement area, but none have been found within the project site. The project area provides suitable habitat for the San Francisco garter snake. The pond, although heavily vegetated, does provide prey food (e.g., California red-legged frog and Pacific tree frog) and some basking space. There is plenty of vegetative cover and rodent burrows in the surrounding area for San Francisco garter snake shelter (San Mateo RCD 2018b).*** Based on the multiple known occurrences of the San Francisco garter snake near the Butano Farms habitat enhancement area, the lack of barriers to dispersal from known occupied habitat, the availability of suitable (though degraded) upland and aquatic habitat for the San Francisco garter snake at the site, and the known occurrence of breeding California red-legged frogs, the snake's primary prey species, in the Butano Farms pond, the Service believes the San Francisco garter snake is likely to occur within the 65-acre Butano Farms habitat enhancement and management area.

**Effects of the Action**

*California Red-legged Frog and San Francisco Garter Snake*

The proposed project will result in temporary and permanent effects to habitat for California red-legged frog and San Francisco garter snake. This could result in individuals being directly and/or indirectly affected. The proposed project could (1) temporarily fragment and reduce the amount of habitat available to California red-legged frogs and San Francisco garter snakes in the area; (2) result in the injury and death of individual California red-legged frogs and San Francisco garter snakes; and (3) result in non-lethal harm and harassment of surviving individuals.

The proposed project will result in the permanent loss of 0.12 acre of upland habitat for California red-legged frog and San Francisco garter snake that will be developed by station expansion; an additional 11.4 acres of upland habitat and 0.09 acre of seasonal wetland will be temporarily disturbed by construction activities ***at the West-of-Bayshore property***. The area temporarily disturbed by construction will be restored and reseeded when work is complete.

The use of large and small construction equipment in work areas could disturb, collapse, or crush animal burrows resulting in injury or mortality to any California red-legged frogs or San Francisco garter snakes present. Use of heavy equipment in work areas and staging areas may result in individuals being crushed or hit and injured or killed. Noise and lighting associated with construction could result in increased disturbance potentially causing individuals in and near construction activities to vacate the area exposing them to greater risk of predation or vehicle strike. These effects will be minimized by conducting awareness training for employees, removing vegetation using hand tools prior to ground disturbance, installing temporary wildlife exclusion fencing around work areas and access roads, conducting preconstruction surveys for listed species, hand excavating burrows prior to ground disturbance, and having a Service-approved biologist present during all work-related activities to prevent injury to individuals.

Dewatering activities could result in injury or mortality to California red-legged frogs or San Francisco garter snakes if they become entrained or trapped in pumps used for dewatering the work area. In addition, project work could result in a temporary reduction in water quality. Hazardous substances from leaking equipment or uncured concrete could result in decreased water quality. Reduced water quality could result in mortality, reduced reproductive success, prey availability, and foraging success of California red-legged frogs and San Francisco garter snake. Contaminated equipment and workers could also introduce or spread nonnative invasive plant species, which

would diminish habitat quality. Implementing erosion control, restricting maintenance and fueling of vehicles and equipment to designated areas, having a Service-approved biologist present during all work, and properly screening pump intakes will minimize these effects.

Although preconstruction surveys and the presence of on-site biological monitors will reduce the likelihood of injury caused by ground disturbing activities within work areas, capturing and handling California red-legged frogs to remove them from a work area may result in the harassment, injury, or mortality of individuals. Stress, injury, and mortality may occur as a result of improper handling, containment, and transport of individuals. Death and injury of individuals could occur at the time of relocation or later in time subsequent to their release. Although survivorship for translocated California red-legged frogs has not been estimated, survivorship of translocated wildlife, in general, is lower because of intraspecific competition, lack of familiarity with the location of potential breeding, feeding, and sheltering habitats, and increased risk of predation. Improper handling, containment, or transport of individuals will be reduced or prevented by use of Service-approved biologists.

As noted previously in the Description of the Action section, the project proponent has also proposed a set of conservation measures, including the commitment to provide compensatory habitat as a condition of the action. This compensatory habitat is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from the disturbance of habitat described above. The compensatory habitat proposed will be in the form of (1) the preservation and management of 4.29 acres of upland habitat for the California red-legged frog and San Francisco garter snake off-site at the Millbrae conservation area, and (2) the enhancement, preservation, and management of 7.43 acres of suitable habitat for the California red-legged frog and San Francisco garter snake off-site at Butano Farms near the Town of Pescadero. These compensatory habitat actions are further described below.

A total of 4.29 acres of upland habitat for the California red-legged frog and San Francisco garter snake will be preserved and managed off-site at the 5.17-acre Millbrae conservation area (Figure 1) within the South San Francisco Bay Core Area of the California red-legged frog and the West-of-Bayshore significant population of the San Francisco garter snake under a conservation easement with a Service-approved long-term management plan and a fully funded non-wasting endowment (LSA Associates 2017). The upland habitat preservation and management at the Millbrae conservation site will ensure the site continues to provide suitable upland dispersal, aestivation, foraging, and refugia habitat for the California red-legged frog and basking, dispersal, and hibernacula habitat for the San Francisco garter snake adjacent to known large breeding populations of these species on the adjacent West-of-Bayshore property.

The compensatory habitat proposed will also include the enhancement, preservation, and management of 7.43 acres of suitable habitat for the California red-legged frog and San Francisco garter snake off-site at Butano Farms near the Town of Pescadero (Figures 2 and 3) within the South San Francisco Bay Core Area of the California red-legged frog and the Pescadero Marsh significant population of the San Francisco garter snake under a Service-approved 30-year management plan with an endowment. The aquatic habitat enhancement actions at Butano Farms will benefit the California red-legged frog by enhancing the quality of the pond for California red-legged frog breeding and tadpole development and ensuring the longevity of the pond by reducing sedimentation levels into the pond. The aquatic and upland habitat enhancement actions and removal of encroaching woody vegetation at Butano Farms will benefit the San Francisco garter snake by enhancing the snake's accessibility to the pond, enhancing shallow water foraging habitat for the snake, enhancing aquatic habitat for the snake's amphibian prey species, ensuring the

longevity of the pond by reducing sedimentation levels into the pond, and enhancing upland basking and dispersal habitat for the snake through removal of encroaching woody vegetation.

These components of the action will have the effect of protecting and managing lands for these species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for these species.

*Effects of the Habitat Enhancement at Butano Farms*

***Restoration activities at the 65-acre Butano Farms habitat enhancement area will temporarily disturb up to 65 acres of suitable habitat for the California red-legged frog and San Francisco garter snake including a 1.0-acre pond that will be partially dredged. The disturbance of aquatic and upland habitat will temporarily remove habitat the California red-legged frog and San Francisco garter snake utilize for breeding, foraging, sheltering, and dispersal.***

***Due to the natural processes of siltation, vegetation encroachment, and detrital build-up, maintenance of open water habitats in ponds necessitates periodic management intervention. The importance of open water as escape habitat for California red-legged frogs and foraging habitat for San Francisco garter snakes is paramount. In order to reduce the frequency of pond management for open water, some open water section will be maintained at greater than 3 feet deep to provide appropriate habitat and slow vegetative encroachment and pond filling.***

***However, instead of proposing recurring pond dredging, the restoration plan proposes controlling pond sedimentation through construction of sediment control basins and implementing practices in upland areas to improve soil health and reduce erosion. Sediment catchment basins upstream of the pond will be designed to capture large sediment size particles (i.e., sand). In upland areas within the drainage area, soil management practices like prescribed grazing, composting and seeding or planting will help improve soil health and reduce erosion rates (San Mateo RCD 2018a). The focus on reducing sedimentation into the pond will benefit the California red-legged frog and San Francisco garter snake by increasing the longevity of the pond while eliminating the need for recurring pond dredging events that would continue to disturb California red-legged frogs and San Francisco garter snakes.***

***Although emergent vegetation is an important habitat component for California red-legged frogs and San Francisco garter snakes, too much emergent vegetation can become problematic. Lack of management can lead to the development of nearly impenetrable stands of tules, cattails, and bur-reed around the pond margin and accelerated filling in of the pond by accumulated detritus. Dense emergent vegetation can also encroach on other important pond habitat components such as shallow bench habitat and open water habitat and can ring the entire pond, making access and egress for California red-legged frogs, San Francisco garter snakes, and other native amphibian prey species difficult. Finally, high levels of emergent vegetation can lead to high levels of detritus, in turn leading to reduced levels of dissolved oxygen. Therefore, management of emergent vegetation must take into account issues of both too much and too little emergent vegetation. Livestock will be allowed to enter the pond area and will be controlled with fencing to provide long term***

*vegetation management. The management objective for vegetation cover is 25 percent to 50 percent of the entire pond area. Controlled livestock use will be implemented seasonally and spatially to control establishment of emergent vegetation (i.e., willows, cattails, etc.) along specific portions of the pond margins to strive for less than 50 percent vegetation cover in the entire pond.*

*Control of water quality concerns such as sediment loading, nutrient loading, and the introduction of pathogens are central to managing and maintaining a healthy pond ecosystem. Efforts will be made to protect pond water quality to the maximum extent practicable. Sediment loading accelerates loss of water depth and encroachment of emergent vegetation into open water and can cause California red-legged frog egg and tadpole mortality through asphyxiation and can disrupt California red-legged frog and San Francisco garter snake adult foraging. Nutrient loading can lead to increased vegetation growth, which in turn, can lead to "choking" of the pond and decreased availability of dissolved oxygen. Pathogens introduced by cattle and humans can be a problem for California red-legged frogs, San Francisco garter snakes, and their prey species. Although there are a number of water quality concerns (sediments, nutrients, and pathogens) emanating from a diverse array of sources (cattle, roads, agriculture, humans, etc.), most of these can be managed or minimized via a handful of multiple objective mechanisms. Key mechanisms for managing water quality include the creation of a series of berms to catch sediment prior to entering the pond, installation of exclusion fencing and upland restoration to decrease the activity of the gullies that drain into pond, and the completion of regular road maintenance. San Mateo RCD will minimize the potential for degradation of water quality during herbicide use by avoiding applying herbicides within 60 feet of aquatic habitat and when there is a 40 percent chance or greater for rain.*

*With regards to predators, bullfrogs and other non-native species present a major obstacle to recovery of California red-legged frogs and San Francisco garter snakes. Bullfrogs have both direct and indirect effects on California red-legged frog and San Francisco garter snake populations. Adult bullfrogs directly impact San Francisco garter snake populations via predation on small or juvenile San Francisco garter snakes (Service 1985). In addition, bullfrogs have an indirect impact by decimating California red-legged frogs, a key prey item for San Francisco garter snakes. Draining of the pond in the late summer or early fall can be effective for bullfrog control if the pond is isolated and draining can occur in two consecutive years. Draining must be completed such that no small pools that can be used as bullfrog tadpole refugia remain. If draining does not work, the most effective (and cost-effective) method for long-term control of bullfrogs is to manage aquatic systems for co-existence between bullfrogs and native species. This can be done by shifting the competitive balance away from bullfrogs and toward native species through eradication of nonnative fish, creation of complex habitats where micro-habitat segregation can occur, and managing for a high level of predaceous native macro-invertebrate production.*

*The habitat enhancement project at Butano Farms is designed to improve habitat conditions for California red-legged frogs by increasing shallow water bench habitat for tadpoles and metamorphs, improving access and foraging for adults, and increasing open water for predator refuge. These improvements will be accomplished by installing livestock fencing to control livestock access, reducing sediment loading into the pond, and increasing pond size. Work within the existing 1.0-acre pond will include 1) enhancing a 0.25-acre area of the pond to provide open water aquatic habitat, and 2) expansion of the pond habitat on approximately 0.25 acre of ripatian forest (mostly willows) to create shallow water habitat for*

*California red-legged frogs. This work will require draining the pond (completely or partially), removal of vegetation around the pond, and construction around and within the pond. There is a high probability that California red-legged frogs will be encountered during project activities. The potential for injuring or killing California red-legged frog egg masses and tadpoles during pond dewatering and excavation work will be avoided by delaying pond work until after August 15 when a Service-approved biologist has determined that all California red-legged frog tadpoles have metamorphosed. Construction, vegetation management, and drainage of the pond may temporarily disturb California red-legged frog individuals within the project area and temporarily disturb suitable aquatic and upland habitat for the California red-legged frog. There may be further indirect effects due to construction activities, noise, and vibration causing California red-legged frogs to leave the area, leaving them more susceptible to predation.*

*The habitat enhancement project at Butano Farms will include pre-construction surveys for the California red-legged frog. Avoidance measures will include: slow, late season draining of the pond; potential for leaving portions of the pond wetted and unimpacted by construction activities; installing fencing and/or silt fencing around areas of the pond that will be avoided; and construction monitoring by Service-approved biologists during construction to assist in adherence to avoidance and minimization measures. Other additional measures will be taken to avoid and minimize potential effects to California red-legged frogs during construction. A Service-approved biologist will relocate any California red-legged frogs out of the work area if they are in danger of being injured or killed.*

*Habitat enhancement activities at Butano Farms are specifically intended to improve long term habitat conditions for San Francisco garter snakes by enhancing habitat for prey species, improving pond access and basking space, and improving upland habitat. This habitat enhancement project will enhance more than 60 acres of upland grassland and scrubland in the surrounding watershed of the pond to provide better San Francisco garter snake basking and breeding habitat. This includes reducing the percent cover of shrubs and implementing actions to improve soil conditions. Riparian vegetation removal, mostly willows, will be done on 0.75 acre of riparian habitat adjacent to the pond to improve conditions for San Francisco garter snake food source production and access to the aquatic habitat. In addition, upland vegetation management (shrub removal, invasive species control, tree removal, etc.) will be conducted in an area of approximately 61 acres. These activities could also result in temporary disturbance of San Francisco garter snake habitat but will result in long term improvements. The most likely effect will be San Francisco garter snakes avoiding areas where habitat disturbance is occurring. The potential for injury and mortality of hibernating or sheltering San Francisco garter snakes will be avoided by limiting activities that could collapse burrows to the snake's active season. Service-approved biologists will be onsite during all initial construction, grubbing, and clearing. If a San Francisco garter snake is encountered, all work will stop until the snake has left the work area voluntarily. Other additional measures will be taken to avoid and minimize potential effects to San Francisco garter snakes during construction including having a biologist walk ahead of vehicles and heavy equipment to ensure no San Francisco garter snakes will be killed on roads or access pathways within the project area.*

**Cumulative Effects**

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal

actions that are unrelated to the proposed Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project, are not considered in this section; they require separate consultation pursuant to Section 7 of the Act. The Service is not aware of specific projects that might affect the California red-legged frog or San Francisco garter snake in the action area that are currently under review by State, county, or local authorities.

Activities that could negatively impact listed species in the action area could result from private actions that may occur without consultation with or authorization by the Service. These include contamination associated with urban and industrial runoff and unauthorized collection/poaching of San Francisco garter snakes or California red-legged frogs.

### Conclusion

After reviewing the current status of the California red-legged frog and the San Francisco garter snake, the environmental baseline for the action area, and the effects of the proposed action, and the cumulative effects on these species, it is the Service's biological opinion that the proposed Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project, as described herein, is not likely to jeopardize the continued existence of these species. We base this conclusion on the following: (1) the temporary nature of most project-related effects; (2) the variety of conservation measures that will be implemented to minimize the likelihood or potential for take of individual California red-legged frogs and San Francisco garter snakes; (3) the preservation and management in perpetuity of 4.29 acres of habitat for these species at the Millbrae conservation area within the South San Francisco Bay Core Area of the California red-legged frog and the West-of-Bayshore significant population of the San Francisco garter snake under a Service-approved long-term management plan with a non-wasting endowment; and (4) the enhancement, preservation, and management of 7.43 acres of suitable habitat for the California red-legged frog and San Francisco garter snake at Butano Farms near the Town of Pescadero within the South San Francisco Bay Core Area of the California red-legged frog and the Pescadero Marsh significant population of the San Francisco garter snake under a Service-approved 30-year management plan with an endowment.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms

and conditions or (2) fails to require the (applicant) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Applicant must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

**Amount or Extent of Take**

*California Red-legged Frog*

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because of their life history. Specifically, when California red-legged frogs are not in their breeding ponds, they may be difficult to locate due to their cryptic appearance and behavior; they may be located a distance from the breeding ponds; and the finding of an injured or dead individual is unlikely because of their relatively small body size. Losses of these species also may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore, the Service anticipates that all California red-legged frogs inhabiting the 0.12 acre of upland habitat that will be permanently lost and the 11.4 acres of upland habitat and 0.09 acre of seasonal wetland that will be temporarily disturbed within the proposed project footprint at the West-of-Bayshore property will be subject to incidental take in the form of non-lethal harm, capture, and harassment. ***The Service anticipates that all life stages of the California red-legged frog inhabiting the 65 acres of habitat (including 1.0 acre of aquatic breeding habitat) disturbed at the Butano Farms habitat enhancement area will be subject to incidental take in the form of non-lethal harm and capture.*** In addition, the Service anticipates that no more than ~~two (2)~~ ***four (4)*** California red-legged frogs will be subject to incidental take in the form of death or injury as a result of construction-related activities. Upon implementation of the following Reasonable and Prudent Measures, incidental take of the California red-legged frog associated with the Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project will become exempt from the prohibitions described under section 9 of the Act.

*San Francisco Garter Snake*

The Service anticipates that incidental take of the San Francisco garter snake will be difficult to detect because of their life history. Specifically, they may be difficult to locate due to their cryptic appearance and behavior and the finding of an injured or dead individual is unlikely because of their relatively small body size. Losses of this species also may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime, or additional environmental disturbances. Therefore, the Service anticipates that all San Francisco garter snakes inhabiting the 0.12 acre of upland habitat that will be permanently lost and the 11.4 acres of upland habitat and 0.09 acre of seasonal wetland that will be temporarily disturbed within the proposed project footprint at the West-of-Bayshore property will be subject to incidental take in the form of non-lethal harm and harassment. ***The Service anticipates that all San Francisco garter snakes inhabiting the 65 acres of habitat disturbed at the Butano Farms habitat enhancement area will be subject to incidental take in the form of non-lethal harm.*** In addition, the Service anticipates that no more than one (1) San Francisco garter snake will be subject to incidental take in the form of death or injury as a result of construction-related activities. Upon implementation of the following Reasonable and Prudent Measures, incidental take of the San Francisco garter snake associated with the Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project will become exempt from the prohibitions described under section 9 of the Act.

## Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the California red-legged frog and San Francisco garter snake.

## Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measure is necessary and appropriate to minimize impacts of incidental take of California red-legged frog and San Francisco garter snake:

1. PG&E shall fully implement the proposed project, including the Conservation Measures as described in this biological opinion.

## Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above and outline required reporting/monitoring requirements. These Terms and Conditions are nondiscretionary.

The following Terms and Conditions implement the Reasonable and Prudent Measure:

1. If requested, PG&E shall ensure the Service, CDFW, or their authorized agents can examine the action area for compliance with the Project Description, Conservation Measures, and Terms and Conditions of this biological opinion before, during, or after project completion.
2. Any off-site preservation of habitat shall adhere to the Sacramento Fish and Wildlife Office Review Criteria for Section 7 Compensation revised January 30, 2014 (enclosed with this biological opinion) to ensure preservation and management of habitat in perpetuity.

*Reporting Requirements*

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, the applicant shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, the Corps must reinitiate formal consultation as per 50 CFR 402.16.

1. The Service must be notified within one (1) working day of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. Notification will be made to the Coast Bay Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6623, and must include the date, time, and precise location of the individual/ incident clearly indicated on a U.S. Geological Survey 7.5 minute quadrangle or other maps at a finer scale, as requested by the Service, and any other pertinent information. When an injured or dead individual of the listed species is found, the Corps shall follow the steps outlined in the Disposition of Individuals Taken section below.
2. All sightings of federally listed species shall be reported to the CNDDB of the CDFW. A copy of the CNDDB reporting form shall be submitted to the Service.

3. The Corps shall ensure that annual monitoring reports are submitted to the Service on the status of the implementation of the habitat management actions at the Millbrae conservation area.
4. The Corps shall ensure that annual monitoring reports are submitted to the Service on the status of the implementation of the habitat enhancement and management actions at the Butano Farms habitat enhancement area.

*Disposition of Individuals Taken*

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instruction s are received from the Service regarding the disposition of the dead specimen. The Service contact persons are the Coast Bay Division Chief of the Endangered Species Program at the SFWO at (916) 414-6623.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

1. The Corps should assist the Service with implementation of recovery actions identified by the Service in the Recovery Plans for the California red-legged frog and San Francisco garter snake.
2. The Corps should encourage or require the use of appropriate California native species in revegetation and habitat enhancement efforts.
3. The Corps should incorporate "environmentally friendly" erosion and stabilization techniques whenever possible in their projects.
4. Control bullfrogs, non-native tiger salamanders, and other invasive species within suitable breeding habitat for the California red-legged frog.
5. Control woody vegetation encroaching upon suitable grassland basking and dispersal habitat for the San Francisco garter snake.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

## REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in

this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any additional take will not be exempt from the prohibitions of section 9 of the Act, pending reinitiation.

If you have any questions regarding this response, please contact Joseph Terry (Joseph_Terry@fws.gov), Senior Fish and Wildlife Biologist, or Ryan Olah, Coast Bay Division Chief (Ryan_Olah@fws.gov) at the letterhead address or telephone (916) 943-6721 or (916) 414-6623.

Sincerely,

Jennifer M. Norris, Ph.D.
Field Supervisor

Enclosure

cc:
Randi Adair, California Department of Fish and Wildlife, Napa, California
Jeff Warshauer, Pacific Gas and Electric Company, San Ramon, California

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**Sacramento Fish and Wildlife Office**
**Review Criteria for Section 7 Compensation**
Revised January 30, 2014

## Property Assurances and Conservation Easement

- ☐ Title Report [*preliminary at proposal, and Final Title Insurance at recordation*]; no older than six months;
- ☐ Property Assessment and Warranty;
- ☐ Subordination Agreement [*include if any outstanding debts or liens on the property; may be needed for existing easements*];
- ☐ Legal Description and Parcel Map;
- ☐ Conservation Easement [*use the current SFWO standardized CE template*]; or
- ☐ Non-Template Conservation Easement [*this requires additional review*]

## Site Assessment and Development

- ☐ Phase I Environmental Site Assessment;
- ☐ Habitat Development Plan [*include if habitat will be constructed, restored, or enhanced*];
- ☐ Construction Security Analysis *[applicable if habitat is being constructed/enhanced/restored]*;
- ☐ Performance Security Analysis [*applicable if there are performance standards*];

## Site Management

- ☐ Interim Management Plan;
- ☐ Interim Management Security Analysis and Schedule;
- ☐ Long-Term Management Plan;
- ☐ Endowment Fund Analysis and Schedule;
- ☐ Endowment Funding Agreement or Trust Agreement or Declaration of Trust [*DFW calls this a "mitigation agreement"*]

## Guidelines

### Real Estate Assurances and Conservation Easement (CE)

Title Report

1. Who holds fee title to property?
2. Exceptions to title. Are there any liens or encumbrances (existing debts, leases, or easements) on the property? Note that any existing exceptions to title will have priority over a conservation easement for the mitigation project.
    a. Review Preliminary Title Report to evaluate liens and encumbrances (see Property Assessment and Warranty, below).
    b. Could any of these exceptions to title potentially interfere with either biological habitat values or ownership? If existing easements can potentially interfere with the conservation values/habitat of the property, those portions of the land should be deducted from the total compensation acreage available on the site.
    c. Split estates. Have the water or mineral rights been severed from title? If so, property owner should be encouraged to re-acquire those rights, or at least to acquire the surface-entry rights to remove or limit access for mineral exploration/development.

Property Assessment and Warranty

1. Property owner should submit a Property Assessment and Warranty, which discusses every exception to title listed on the Preliminary Title Report and Final Title Insurance Policy, evaluating any potential impacts to the conservation values that could result from the exceptions to title (see below).
2. The Property Assessment and Warranty should include a summary and full explanation of all exceptions remaining on the title, with a statement that the owner/Grantor accepts responsibility for all lands being placed under the CE as available for the primary purposes of the easement, as stated in the easement, and assures that these lands have a free and clear title and are available to be placed under the CE.

Subordination Agreement

1. A Subordination Agreement is necessary if there is any outstanding debt on the property; it could also be used to subordinate liens or easements. Review Subordination Agreement language for adequacy—the lending bank or other lien or rights holder must agree to fully subordinate each lien, encumbrance, or easement under the CE.

Legal Description and Parcel Map

1. Ensure accuracy of map, and location and acreage protected under the CE.
2. Both the map and the legal description should explain the boundaries of the individual project compensation site. The site should *not* have 'leftover' areas for later use.
3. Ask for an easement map to be prepared (if applicable), showing all easements on the property.

Conservation Easement from Template

1. Who will hold the easement?
   a. Conservation easements require third-party oversight by a qualified non-profit or government agency (=easement holder or Grantee). Minimum qualifications for an easement holder include:
      i. Maintaining accreditation by the Land Trust Accreditation Commission http://www.landtrustaccreditation.org/home.
      ii. Organized under IRS 501(c)(3);
      iii. Qualified under CA Civil Code § 815;
      iv. Bylaws, Articles of Incorporation, and biographies of Boards of Directors on file at;
         1. Must meet requirements of SFWO, including 51% disinterested parties on the Board of Directors;
      v. Approved by SFWO
2. Project Applicant should submit a redline version showing all of their proposed revisions in track changes or other editable electronic format, along with an explanation of all deviations from the template.

Non-Template Conservation Easement

1. If not using the CE template, the Project Applicant should specify objections they have to the template. This may substantially delay processing as the non-template CE will require review by the Solicitor's Office. Alternate CEs are subject to SFWO approval prior to being granted and recorded.
2. The Project Applicant must either 1) add SFWO as a third-party beneficiary, or 2) add language throughout the document, in all appropriate places, that will assure SFWO the right to enforce, inspect, and approve any and all uses and/or changes under the CE prior to occurrence (including land use, biological management or ownership).
3. Include, at a minimum, language to:
   a. Reserve all mineral, air, and water rights under the CE as necessary to maintain and operate the site in perpetuity;
   b. Ensure all future development rights are forfeited;
   c. Ensure all prohibited uses contained in the CE template are addressed; and

d. Link the CE, Management Plan, and the Endowment Fund within the document (e.g., note that each exists to support the others, and where each of the documents can be located if a copy is required).

4. Insert necessary language, particularly, but not exclusively, per: (can compare to CE template):
   a. Rights of Grantee
   b. Grantee's Duties
   c. Reserved Rights
   d. Enforcement
   e. Remedies
   f. Access
   g. Costs and Liabilities
   h. Assignment and Transfer
   i. Merger
   j. Notices
5. Include a signature block for USFWS to sign "approved as to form".

## Site Assessment and Development

Phase I Environmental Site Assessment

1. The Phase I ESA must show that the compensation site is not subject to any recognized environmental conditions as defined by the American Society for Testing and Materials (ASTM) Standard E1527-05 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, available at http://www.astm.org/Standards/E1527.htm, (i.e., the presence or likely presence of any Hazardous Substances or petroleum products).
2. If the Phase I ESA identifies any recognized environmental conditions, the Project Applicant must represent and warrant to the SFWO that all appropriate assessment, clean-up, remediation, or removal action has been completed.
3. If the Phase I ESA identifies any recognized environmental conditions, a Phase II ESA may be needed for sampling and laboratory analysis.

Restoration or Habitat Development Plan [*not required if the site is preservation only*]

1. The overall plan governing construction and habitat establishment activities required to be conducted on the Property, including, without limitation, creation, restoration, and enhancement of habitat.
   a. This plan should include the baseline conditions of the Property including biological resources, geographic location and features, topography, hydrology, vegetation, past, present, and adjacent land uses, species and habitats occurring on the property, a description of the activities and methodologies for creating, restoring, or enhancing habitat types, a map of the approved modifications, overall habitat establishment goals, objectives and Performance Standards, monitoring methodologies required to

evaluate and meet the Performance Standards, an approved schedule for reporting monitoring results, a discussion of possible remedial actions, and any other information deemed necessary by the SFWO.

2. Any permits and other authorizations needed to construct and maintain the site shall be included and in place prior to the start of construction of the habitat.
3. Full construction plans for any habitat construction are subject to SFWO approval and must be *SFWO-approved prior* to the start of construction of the habitat.

Construction Security

1. Construction Security in the amount of 100% of a reasonable third party estimate or contract to create, restore, or enhance habitats on the property in accordance with the Restoration or Habitat Development Plan.
2. Construction Security can be drawn on should the project proponent default.
3. The Construction Security should be in the form of an irrevocable standby letter of credit or a cashier's check.
   a. LOC: issued for a period of at least one year, and provide that the expiration date will be automatically extended for at least one year on each successive expiration date unless, until extension is no longer necessary.
   b. Beneficiary: a third party subject to approval by the SFWO.
   c. Language in a draft letter of credit subject to approval by the SFWO.

Performance Security *[only necessary if habitat if performance standards have been identified]*

1. Performance Security in the amount of 20% of the Construction Security.
2. Performance Security can be drawn on should the Performance Standards not be met, if remedial action becomes necessary.
3. The Performance Security in the form of an irrevocable standby letter of credit or a cashier's check.
   a. LOC: issued for a period of at least one year, and provide that the expiration date will be automatically extended for at least one year on each successive expiration date unless, until extension is no longer necessary.
   b. Beneficiary: a third party who is subject to approval by the SFWO.
   c. Language in a draft letter of credit is subject to SFWO approval.

## Site Management

Interim Management Plan

1. The Interim Management Plan should identify the short-term management, monitoring, and reporting activities to be conducted from the time construction ends until the Endowment Fund has been fully funded for three

years and all the Performance Standards in the Development Plan have been met. This may be the same as the Long-term Management Plan.

Interim Management Security Analysis and Schedule

*The purpose of the Interim Management Security is to allow the endowment to grow for at least three years without any disbursements, and is a safeguard to ensure that there will be enough funds in the endowment to pay for future management costs. The period can be longer than three years; a 5 year period is recommended by many land trusts.*

1. Interim Management Security (in the form of a standby letter of credit) in the amount equal to the estimated cost to implement the Interim Management Plan during the first three years of the Interim Management Period, as set for in the Interim Management Security Analysis and Schedule.
2. The Interim Management Security Analysis and Schedule should be in the form of a table and/or spreadsheet that shows all of the tasks (management, monitoring, reporting), task descriptions, labor (hours), cost per unit, cost frequency, timing or scheduling of the tasks, the total annual funding necessary for each task, and any associated assumptions for each task required by the Interim Management Plan. The total annual expenses should include administration and contingency costs.
3. The Interim Management Security:
   a. Held by a qualified, non-profit organization or government agency, subject to SFWO approval [see requirements under CE above], and
   b. Held according to minimum standards for assuring maximum success in earning potential, and will include assurances to safeguard against loss of principle.
   c. Instructions for disbursements or releases from the fund must be outlined in the Endowment Management Agreement/Trust Agreement/Declaration of Trust.

Long-Term Management Plan (LTMP)

1. The LTMP template identifies the long-term management, monitoring and reporting activities to be conducted.
2. The LTMP should include at minimum:
   a. Purpose of the Project and purpose of the LTMP;
   b. A baseline description of the setting, location, history, and types of land use activities, geology, soils, climate, hydrology, habitats present (once project meets Performance Standards), and species descriptions;
   c. Overall management, maintenance and monitoring goals; specific tasks and timing of implementation; and discussion of any constraints, which may affect goals;
   d. The Endowment Fund Analysis and Schedule (see below);

e. Discussion of Adaptive Management actions for reasonably foreseeable events and possible thresholds for evaluating and implementing Adaptive Management;
f. Rights of access to the Property and prohibited uses of the Property as provided in the CE; and
g. Procedures for Property transfer, land manager replacement, amendments, and notices.

3. The LTMP must be incorporated by reference in the CE.
4. The LTMP is considered a living document and may be revised as necessary upon agreement of the land manager, easement holder, and SFWO.

Endowment Fund Analysis and Schedule

1. Can use a PAR or PAR-like analysis and must be based upon the final LTMP, subject to SFWO approval.
   - The analysis should be developed with input by the land manager and conservation easement holder.
2. The analysis and schedule should be in the form of a table and/or spreadsheet that shows, at a minimum:
   - all of the tasks (management, monitoring, reporting)
   - task descriptions, with tasks numbers cross-referenced in management plan(s)
   - labor (hours)
   - materials
   - cost per unit (hr., linear ft., each, etc.).
   - cost frequency
   - timing or scheduling of the tasks,
   - the total annual funding necessary for each task, and
   - the assumptions required for each task by the Management Plan.
3. The total annual expenses should include administration and contingency costs (contingency can be included on each line item – identify the percentage). Unless there is a separate endowment for the purpose of monitoring and reporting on the CE conditions, then, the analysis should also include costs of
   - Monitoring and reporting CE conditions;
   - Defending the CE; and
   - Liability insurance.
4. The Endowment Fund::
   - Held by a qualified, SFWO-approved, non-profit organization or government agency [see requirements under CE above],
   - Held according to minimum standards for assuring maximum success in earning potential, and should include assurances for no loss of principle.
   - Disbursements or releases from the fund must be for documented expenditures, as they occur.

Endowment Funding Agreement

1. This is the agreement between the endowment holder and the Project Applicant, as to how the endowment is to be funded, held and disbursed;
2. USFWS is not signatory to this agreement, but there should be a signature block on the agreement for SFWO to sign "approved as to form";
3. USFWS has approval authority over the language in the document, and it must state that modifications or transfer of the endowment to another holder are subject to USFWS approval;
4. This agreement can also be called: "Trust Agreement", "Declaration of Trust"
5. When the CA Dept. of Fish and Wildlife is involved, this is called "Mitigation Agreement".

**EXHIBIT K**
**Mitigation, Monitoring, and Reporting Program**

| Mitigation | Implementing Responsibility | Monitoring Responsibility | Mitigation Timing |
|---|---|---|---|
| **BIOLOGICAL RESOURCES** | | | |
| ***Mitigation Measure BIO-1:*** Rare Plant Surveys<br><br>Rare plant surveys of the proposed disturbance areas will be conducted by a qualified botanist for the plant species that have the potential to occur within the project site. Surveys shall be done in accordance with CNPS's Botanical Survey Guidelines (CNPS 2001), CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2018), and USFWS's Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 1996). If present, special-status plant populations will be flagged and if possible avoided during construction. If the populations cannot be avoided during construction a mitigation plan will be developed for approval by the Department and CDFW which will include transplanting the plant population. | Project Applicant & Construction Contractor | Qualified Botanist | Before construction. |
| ***Mitigation Measure BIO-2:*** CRLF Avoidance and Minimization Measures<br><br>• Within two days of the start of work on a pond, the pond will be sampled by a qualified biologist to ensure that all frogs from that pond are in post-metamorphic stage and will be minimally affected by draining the pond. If the construction plans allow for existing open water and emergent vegetation areas to remain wetted and be isolated from construction activities, a qualified biologist will be on-site during draining of the work area to ensure that any remaining tadpoles or metamorphs are safely relocated to areas with standing water.<br>• Draining of ponds to perform authorized work shall only occur during the part of the year when the tadpole life stage of CRLF has been completed and before the subsequent breeding season (i.e. between August 15 and November 1).<br>• All biological monitors for the project shall be approved by USFWS prior to commencement of project activities. The biological monitors and qualified biologists shall have the responsibility and authority of stopping the proposed project if any crews or | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |

| Mitigation | Implementing Responsibility | Monitoring Responsibility | Mitigation Timing |
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| personnel are not complying with the provisions outlined in this IS/MND.<br>• Biological monitor(s) and/or qualified biologists shall be on the project site while initial ground-disturbing activities (excavation) or pond draining activities take place. A Service-approved biologist will be on-call during all project activities in the event a San Francisco garter snake or California red-legged frog is discovered, or for any other assistance relating to the avoidance and minimization measures.<br>• Prior to project activities, a biological monitor shall clearly mark/flag or erect temporary construction fencing to designate the work area and to delineate the areas that shall be avoided. Flagging and or temporary construction fencing shall be removed immediately after the completion of construction work.<br>• Dredge spoils shall be placed in a containment area away from the creek. The area where dredge spoils will be placed shall be surveyed for CRLF and SFGS. If burrows are present in this area, Permittee shall hand excavate burrows until the burrow terminates or until a maximum depth of 30 centimeters. If CRLF or SFGS are found, all work shall cease and Permittee shall notify CDFW and USFWS immediately.<br>• Any vehicle parked on site for more than 15 minutes shall be inspected by the biological monitor before it is moved to ensure that CRLF and/or SFGS have not moved under the vehicle. Any parking areas shall be checked in advance by the biological monitor or qualified biologist.<br>• If CRLF enters the work area, all work shall stop until the qualified biologist relocates the animal or it leaves on its own. Only the qualified biologist can handle and relocate CRLF. Any sightings and/or injuries of this species shall be immediately reported to the CDFW per instructions below:<br>o <u>CRLF Relocation</u>. Prior to the onset of any project-related activities, the qualified biologist must identify appropriate areas to receive CRLF adults from the Project Areas. These areas must be in proximity to the capture site, contain suitable | | | |

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| habitat, not be affected by project activities, and be free of exotic predatory species to the best of the approved biologist's knowledge. Translocation shall only be performed by the qualified biologist. | | | |
| ***Mitigation Measure BIO-3:*** SFGS Avoidance and Minimization Measures<br>• Prior to and within 48 hours of the planned start of project activities, a focused survey for SFGS using agency approved protocol shall be conducted by a USFWS-approved biological monitor to determine if they are in the area. If SFGS are found, the USFWS shall be notified immediately to determine the correct course of action and proposed project shall not begin until approved by the USFWS.<br>• Activities that result in ground disturbance will occur May 1–October 30 (active season). Vegetation will be cut using to 3 inches in height. Once the ground is visible, a visual survey for SFGS will be conducted by the biologist prior to additional ground disturbance. If SFGS is found, USFWS will be notified immediate to determine the correct course of action. If work needs to occur during the inactive period (November 1– April 30) and is located in an area of known occupancy, flag and avoid any burrows by at least 10 feet wherever possible. If any burrows cannot be avoided by this distance, a biologist will inspect following activities to determine whether or not the burrow has been collapsed. If a burrow is collapsed, the biologist shall make efforts to open the burrow.<br>• Prior to conducting non-native plant removal or treatments (e.g. spraying with herbicide, cutting, pulling, digging out), the permittee shall make every reasonable attempt to ensure that SFGS are not hidden within the plant or residual plant matter to be treated.<br>• The USFWS approved biological monitor shall walk roads cleared for vehicle access each morning prior to vehicle traffic to ensure San Francisco garter snakes are not in the road. Vehicles shall not drive at speeds greater than 5 miles per hour within the project area and drivers shall observe the road for San Francisco garter snakes. If a San Francisco | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |

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| garter snake is found on the road, the vehicle operator shall stop, and the San Francisco garter snake shall be allowed to leave on its own volition. | | | |
| ***Mitigation Measure BIO-4:*** Western Pond Turtle Avoidance and Minimization Measures<br>• Prior to and within 48 hours of the planned start of construction, a focused survey for WPT shall be conducted by a CDFW approved biological monitor to determine if they are in the area. If these species are found, the CDFW shall be notified immediately to determine the correct course of action and construction activities shall not begin until approved by the CDFW.<br>• In the event WPT are found in the project area, the RCD shall exercise measures to avoid direct injury to them as well as avoid areas where they are observed to occur. If a WPT is observed, it shall be left alone to move out of the area on its own. If it does not move on its own, it can be relocated by the biological monitor or the qualified biologist to at least 100-meters away from project location to a suitable habitat. | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |
| ***Mitigation Measure BIO-5:*** Nesting Bird Avoidance and Minimization Measures<br>• To the extent feasible, vegetation removal activities shall not occur during the bird breeding season of February 15 through August 31.<br>• If vegetation removal must occur during the breeding season the project site shall be surveyed by a qualified biologist to verify the presence or absence of nesting birds.<br>• Preconstruction surveys will be conducted no more than two weeks prior to the start of work from February 15 – August 31.<br>• If the survey indicates the potential presence of nesting birds, a buffer will be placed around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the CDFW, and will be based to a large extent on the nesting species and its sensitivity to disturbance. The buffers may be increased or decreased, as appropriate, | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |

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| depending on the bird species and the level of disturbance anticipated near the nest. | | | |
| ***Mitigation Measure BIO-6:*** San Francisco Dusky Woodrat Avoidance and Minimization Measures<br>• The removal of trees and large shrubs shall be minimized to the maximum extent practicable and shall be limited to those areas directly adjacent within the project footprint.<br>• Tree removal or construction activities with potential to disturb suitable habitat for dusky-footed woodrat (riparian scrub) shall only occur after a biologist conducts a pre-construction survey for woodrat nests within the woody riparian habitats to be removed and adjacent riparian habitat. If any woodrat nest is identified outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the next. No construction activities will occur within the exclusion zones. Exclusion zone radii for active nests will be 50 feet, if possible. Exclusion zones will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the nest. If a nest is identified within the disturbance footprint, then nest relocation procedure will be determined by the biologist, in consultation with CDFW. | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |
| ***Mitigation Measure BIO-7:*** American Badger Avoidance and Minimization Measure<br>• Pre-construction surveys shall be conducted in any grassland habitat within the project footprint for active badger dens. If a badger den is identified within the proposed disturbance footprint, exclusion zones around each den entrance will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No construction activities will occur within the exclusion zones. Exclusion zone radii for active dens will be at least 50 feet. Exclusion zones will be demarcated with staking and flagging that encircles each den or entrance but does not | Project Applicant & Construction Contractor | Qualified Biologist | Before and During Construction |

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| prevent access to the den by a badger. | | | |
| ***Mitigation Measure BIO-8:*** Open Water Protective Measures<br>• The project applicant would implement the BMPs outlined in Table 2 to minimize stormwater runoff, erosion, and potential water quality impacts associated with construction activities. In addition, all contractors working in a capacity that could increase the potential for adverse water quality impacts shall receive training regarding the environmental sensitivity of the site and need to minimize impacts. Contractors shall be trained in implementation of stormwater BMPs for protection of water quality.<br>• No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into open water habitat and/or waters of the State. Any of these materials placed within or where they may enter waters shall be removed immediately. When operations are completed, any excess material shall be removed from the work area and any areas adjacent to the work area where such material may be washed into adjacent waters.<br>• During construction the contractor shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.<br>• Any excavation necessary shall be completed from outside of wetlands, where feasible, by using an excavator or backhoe tractor, thereby limiting the driving of heavy equipment across wetlands.<br>• Prohibit vehicular and equipment refueling 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by the RCD and/or consulting biologist. | Project Applicant & Construction Contractor | Qualified Wetland Ecologist | Before and During Construction |

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| Maintain spill prevention and cleanup equipment in refueling areas. | | | |
| ***Mitigation Measure BIO-9:*** Wetland Protective Measures<br>• Prior to the start of construction within areas containing sensitive biological resources, the biological monitor should delineate and conspicuously flag all sensitive aquatic resources to prevent impacts to these resources. If required, setback or non-disturbance buffer zones around these resources should be established and monitored by a biologist.<br>• Construction activities nearby or within aquatic habitats should be limited to the maximum extent feasible.<br>• Any aquatic habitat that does not fall within the construction footprint should be flagged and avoided.<br>• Work within waters should be conducted during the dry season, when water is not flowing, to the extent possible.<br>• Worker environmental awareness training should be conducted for all construction crews and contractors. The education training should be conducted prior to starting work on the project and upon the arrival of any new worker. The training should include: locations of sensitive areas; possible fines for violations; environmental permits and regulatory compliance requirements including all relevant avoidance and mitigation measures, and required actions should sensitive species be encountered. Additional training should be conducted as needed, including morning "tailgate" sessions to update crews as they advance into sensitive areas for projects with multiple work areas. In addition, a record of all personnel trained during the project should be maintained for compliance verification. | Project Applicant & Construction Contractor | Qualified Wetland Ecologist | Before and During Construction |

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| **CULTURAL RESOURCES** | | | |
| ***Mitigation Measure CUL-1:*** Conduct Identification Training and Stop Work if Archaeological Resources are Encountered During Construction or if Unique Paleontological or Geological Resources are Encountered During Construction<br>• The construction contractor shall participate in a cultural and paleontological resource identification training session by a qualified archaeologist in order to be aware of the potential resources that might be uncovered. If archaeological or paleontological resources are encountered during project construction, work shall be temporarily halted in the vicinity of the discovered materials and construction contractor shall avoid altering these materials and their context until a qualified archaeologist or paleontologist has evaluated the resource. Recommendations on how to treat the resource may include evaluation, preservation in place, archaeological test excavation and/or archaeological data recovery, and a draft and final report documenting such activities. | Project Applicant & Construction Contractor | Qualified Cultural Resource Specialist | Before and During Construction |
| ***Mitigation Measure CUL-2:*** Discovery of Human Remains<br>• If at any time during site preparation, excavation, or other ground disturbance associated with the proposed project, human remains are discovered, the construction contractor shall immediately cease and desist from all further site excavation and notify the RCD. The RCD shall notify the sheriff-coroner. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission. The Native American Heritage Commission will identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendent makes recommendations regarding the treatment of the remains with appropriate dignity. Disturbance shall not resume until the significance of the human remains is determined and appropriate mitigations to preserve the resource on the site are established. | Project Applicant & Construction Contractor | Qualified Cultural Resource Specialist | During Construction |