

REQUEST FOR BIDS

BUTANO FARMS HABITAT ENHANCEMENT PILOT PROJECT

Sponsored by the
SAN MATEO RESOURCE CONSERVATION DISTRICT

Distributed
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REQUEST FOR BIDS

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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 HABITAT ENHANCEMENT PILOT 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

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 HABITAT ENHANCEMENT PILOT PROJECT

1. Introduction

Pacific Gas and Electric (PG&E) is planning work for line 101 Inline Inspection and Upgrade, and Lomita Park Station Rebuild Project in the City of Millbrae, San Mateo County, California. These public utility projects have the potential to impact federally threatened California red-legged frog (*Rana draytonii*), endangered San Francisco garter snake (*Thamnophis sirtallii tetrataenia*) and their habitat. As mitigation for potential impacts, PG&E has provided financial and in-kind contribution to conservation partners, San Mateo Resource Conservation District (RCD) for management of land with emphasis on management for San Francisco garter snake (SFGS) and California red-legged frog (CRLF).

The entire project for SFGS and CRLF encompasses 65-acres of riparian, aquatic and upland habitat enhancement on Peninsula Open Space Trust (POST)'s Butano Farms property. The goals of this project are consistent with the recovery actions outlined in the San Francisco Garter Snake Recovery Plan (1985). The recovery plan concludes restoration of upland, riparian, aquatic habitat, and recovery of CRLF is needed to aid in the recovery of the SFGS. At the project site, owned by POST, dense woody vegetation has encroached on adjacent aquatic and upland habitat areas, including native and invasive species. This encroachment has greatly reduced historic grassland and herbaceous wetlands commonly used for movement, foraging, and breeding by SFGS, CRLF and a suite of other grassland dependent species. In addition to woody encroachment, upland erosion from gullies that drain into the pond has further reduced both aquatic habitat quantity and quality. To integrate existing conservation documents, such as the Butano Farms Conservation and Carbon Plan (RCD, 2018) and to provide multi-beneficial and long-term solutions, this project aims to utilize innovative methods for land management. In preparation for the larger 65-acre enhancement project, the RCD is conducting a 4.75-acre pilot project for upland habitat enhancement, outlined in this request for bids. The experimental component of this pilot project will explore treatment methods for woody encroachment and integrate soil enhancement. This pilot project will inform management actions across the total 65-acre section of Butano Farms and to future grassland enhancement projects.

The RCD seeks qualified contractors (Contractor) to develop and implement a technical approach for the 4.75-acre pilot project at Butano Farms. This work will integrate woody encroachment control, invasive species removal and soil enhancements across grass and shrubland. Work is anticipated to start Fall of 2019.

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 Butano Farms Habitat Enhancement (pilot project) is 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 long-term project 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. The pilot project encompasses 4.75 acres of upland habitat dominated by coyote brush shrublands intermixed with native perennial grasslands. The pilot project area lies uphill of two drainage areas that have developed into large gullies. These gullies drain into a small stock water pond that most likely shares hydrology with Butano Creek.

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.

- o Subcontracts are allowable for specialized work. Subcontractors are subject to approval by the RCD, and should be identified on the Cost Proposal form.
- o Labor costs (including subcontractor labor costs) shall be based on current prevailing wage rates (see section entitled "Wages" below).
- o 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 between \$20,000 - \$35,000.

6. Documentation

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

- EXHIBIT A: Project Plans and Specifications
- EXHIBIT B: Cost Proposal
- EXHIBIT C: Sample Contract
- EXHIBIT D: San Mateo RCD Insurance Requirements
- EXHIBIT F: Certificate of Compliance
- EXHIBIT G: Billing Instructions for Contractors
- EXHIBIT G: Project Biological Opinion
- EXHIBIT H: Concept Level Plan

Additional project specifications and information may be provided at the bid tour. 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. The Bid Evaluation Form (Exhibit C) will be used by RCD staff to objectively score all bids for presentation to the Board of Directors.

7. Proposal and Work Schedule

Date of announcement	7/2/2019
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RSVP Bid Tour	7/12/2019 (via amy@sanmateorcd.org)
Bid Tour (mandatory)	7/15/2019
Questions/Inquiries Accepted	7/16/19 - 7/29/2019 at 5:00 pm
Deadline for proposal submissions	7/30/2019 at 5:00 pm Postmarked, Late proposal submissions will not be considered. Bids may be submitted digitally to amy@sanmateorcd.org or by hard copy to: San Mateo RCD Attn: Amy Kaeser 80 Stone Pine Road, Suite 100 Half Moon Bay, CA 94019
Anticipated Notification of Award	8/6/2019
Anticipated Contract Date	8/19/2019
Work Commence Date with the following conditions: -Permitting is complete -All work is dependent on favorable weather conditions -Contractor shall coordinate commencement with RCD -No work shall begin until authorized by RCD	9/2/2019
Work Completion Date	11/15/2019

8. Prevailing Wage Laws

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 all necessary 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.

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. See Exhibit H: Biological Opinion

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 will accept the proposal which is of the greatest advantage to the project and the RCD. RCD has the right to reject any and all proposals and add alternates. The Bid Evaluation Form (Exhibit C) lists the objective criteria that will be used to evaluate all bid proposals. **RCD is not required to accept the low bid.**

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 5(B) of the attached sample contract (Exhibit C). Payment policy and instructions for vendors are attached hereto as Exhibit H.

EXHIBIT A
Project Plans and Specifications
BUTANO FARMS HABITAT ENHANCEMENT PILOT PROJECT

Summary

As part of compensatory mitigation for potential impacts to SFGS and CRLF, and their habitat, PG&E has partnered with the RCD for the restoration of 65 acres within Butano Farms (Figure 1). The entire project is broken down into two major components: aquatic and upland enhancement. This RFB focuses on the latter. The entire project will integrate both habitat types for SFGS and CRLF, addressing the components separately assists to focus on specific goals and objectives.

This 4.75-acre pilot project is an initial step towards enhancing Butano Farms for SFGS and CRLF recovery for upland habitat. This project will serve to inform longer term management decisions for the entire 65-acre project through short-term experimental trials. Project work includes upland habitat enhancement through an integrated approach to invasive weed control, shrub control, and soil enhancements. Thus, the RCD is looking for contractors with creative, out of the box solutions for large scale restoration for the recovery of SFGS and CRLF.

Proposed actions are guided by objectives and goals laid out in the “Conceptual Management Plan for Butano Farms SFGS Habitat Enhancement” (Exhibit I).

Goals

The goal of this project is to improve habitat for SFGS consistent with the recovery actions outlined in the San Francisco Garter Snake Recovery Plan (1985). The recovery highlights maintenance and repair of pond and upland habitat as key recovery actions. In particular, woody vegetation is rapidly spreading in the upland and aquatic area, filling in foraging and basking space for SFGS, CRLF, and a suite of other native grassland facultative species. Improvements to SFGS habitat for this project includes removing native woody vegetation in upland grasslands and around seasonal ponds to increase forage and basking space for SFGS (USFWS 1985). To integrate other conservation documents and to reduce sediment deposition within the pond, this project also aims to address sedimentation through soil enhancements.

This RFB focuses on three select goals:

1. Enhance soil to reduce sediment loading and to improve grassland quality,
2. Control of invasive species, and
3. Enhance upland habitat through woody encroachment control.

Soil Enhancement

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 should 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 amphibian egg and tadpole mortality through asphyxiation and can disrupt CRLF and SFGS 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.

Though there are many mechanisms towards improving water quality, this RFB is focusing on upland soil enhancements to reduce sediment loading and gully erosion activity. Actions towards habitat enhancement will be opportunistic and will utilize products generated by certain invasive species and woody encroachment control.

Reduce Invasive Species

Invasive species that occur in high densities in upland; in particular, jubata grass, Douglas fir and Monterey pine are identified as a high priority for this project. Invasive species have the potential to outcompete beneficial plant species for SFGS and CRLF. Jubata grass is considered an A-1 (highest priority) wildland weed. It is an aggressive colonizer that is known to displace native species occurring in coastal scrub, coastal dunes, and other coastal habitats. Jubata grass typically invades eroded or disturbed soils. Within the project area, jubata grass is heavily present within gully systems and compromises an acre-sized patch on a south facing slope near the pond. To allow for more natural habitat systems, this RFB is calling for control of jubata grass. Targeted spraying with herbicides is recommended to retain the structure of jubata grass that may be used by SFGS and to reduce soil erosion.

Although native to the state of California, Douglas fir and Monterey pine will be considered a weedy species in the scope of this project. Both trees are fast-growing species that type convert shrublands into monocultured forests. The goals of this RFB are to reduce the presence of Douglas fir and Monterey pine to promote grass and shrubland for use by SFGS and CRLF. As an integrated approach to weedy species removal, the mulch generated from this tree removal will be utilized as soil amendment in selected areas.

Woody Encroachment Control Trials

A shrub-grassland matrix provides both cover from predators and open ground necessary for thermoregulation. The San Francisco Garter Snake Recovery Plan (1985) identifies a range of brush densities that are likely beneficial to the species; these include “1 average sized bush/30 square meters to 1 large bush/20 square meters.” This equates to a cover density of roughly 10 – 50%. For the purposes of this project, our target goal will be to achieve between 25-33% cover across the project area.

Sustainable and cost-effective brush management is key for SFGS habitat, ranching and grassland conservation. Brush management, however has always been a large challenge for coastal California, due to the lack of prescribed fire and natural ruderal species. There are multiple ways to control woody encroachment. This RFB aims to focus on two possible control methods to understand a) cost effectiveness and b) sustainability. If possible, woody debris generated from control actions will act as additional mulch for soil amendments.

Objectives

The RCD is requesting contractors to provide a bid for the following work including a technical approach to each objective. The technical approach can include innovative or traditional methods for habitat enhancement.

Soil Enhancement (1.25 acres)

Utilizing mulch generated by woody encroachment and invasive species reduction, contractors will apply 1-3 inches of mulch to select bare soil areas (Soil enhancements, Figure 2).

The RCD is requesting a bid for the work to distribute mulch across 1.25 acres or less. The area available for mulching will be dependent on the amount of mulch generated from shrub and tree reduction. The final area for mulching may not reach 1.25 acres.

Reduce Invasive Species (1 acre)

The primary weed of concern is a 1-acre patch of jubata grass (Figure 2). The RCD is requesting contractors to reduce jubata grass in this targeted area in a way that minimizes soil erosions and retains the plant's structure for use by SFGS. No herbicide spray is allowed within 65 feet of the pond. Please see the attached Biological Opinion by USFWS (Exhibit I) for herbicide restrictions within the project area.

Any Douglas-fir or Monterey pine within the pilot project area under 8-inches should be removed (Invasive species reduction, Figure 2). Trees removed should be chipped on site, and will be utilized as mulch for soil enhancements.

The RCD is requesting bids for Jubata grass, tree removal and chipping. Bid should include cost proposal and a brief technical approach including total treatment costs, hourly rates and available equipment.

Woody Encroachment Control Trials (2.5 acres)

Contractors are to conduct removal of select shrubs to maintain the targeted 25-33% shrub cover. Some shrub “islands” will be flagged ahead of work to preserve dense patches for SFGS refugia. From this experiment, the RCD will be tracking shrub cover, brush recovery from control actions, perennial grass cover and cost effectiveness.

The RCD is requesting a technical approach from contractors with an experimental component. Contractors should present two options to brush control that are both a) cost-effective and b) long-term. Removal may be through mastication, mowing, hand crews or other methods that minimally disturb the soil. Both methods will be split between 2.5 acres of the pilot project site, 1.25 acres each (Woody encroachment control, Figure 2). Experimental approaches must minimize soil disturbance, minimize impacts to perennial grasses and gopher holes.

Access and Staging

Site is easily accessible by a gated dirt road off of Pescadero Road. Contractors will be provided gate access. The pilot project area is surrounded by two roads that are accessible to large equipment. There are multiple potential staging areas for equipment, including the bare soil areas selected for amendment. Roads may not be accessible when wet.



Figure 1. Project location within Butano Farms Property (owned by POST). Project encompasses two ridges bisected by a drainage that feeds into Butano Creek.

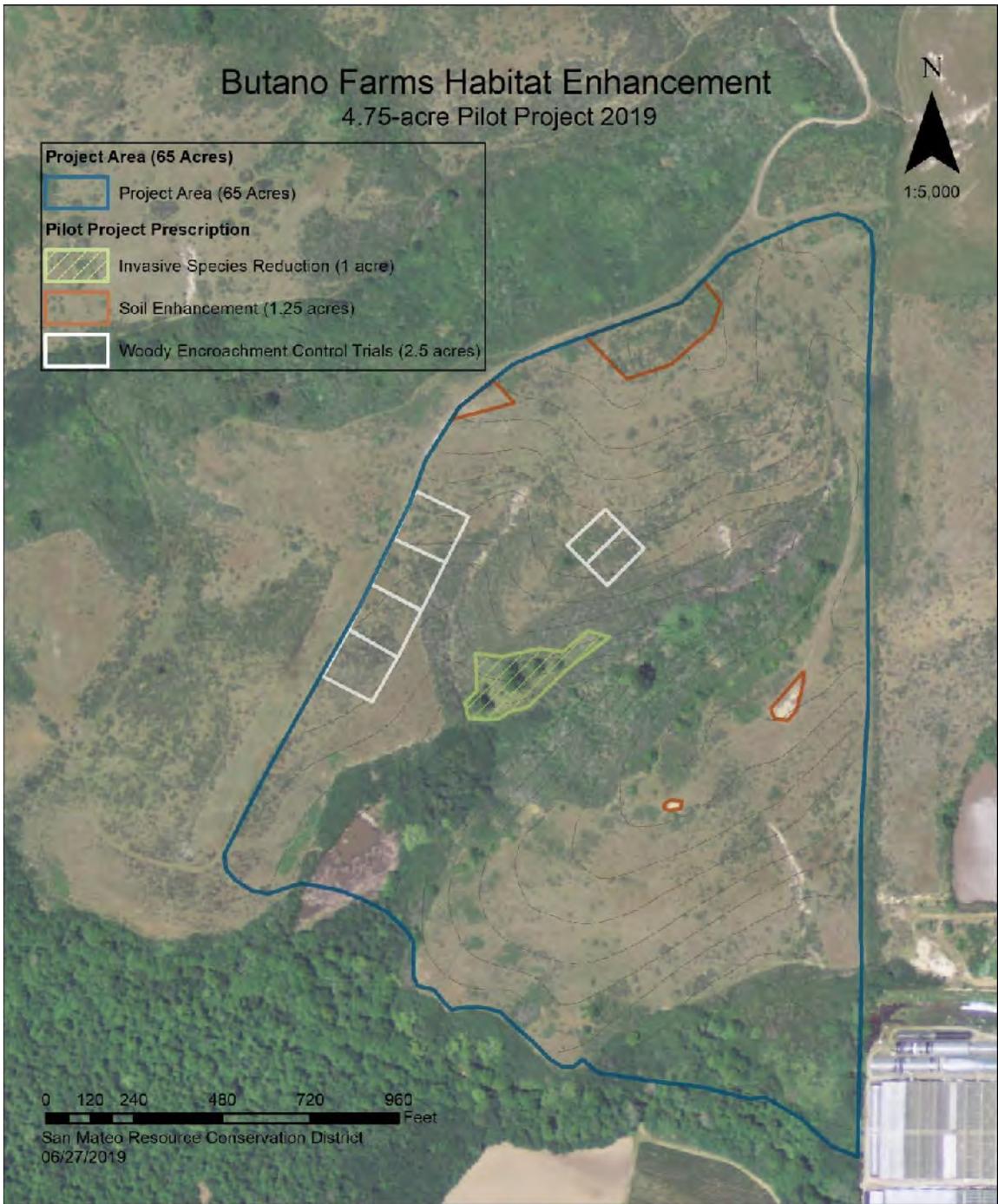


Figure 2. Butano Farms Habitat Enhancement Pilot Project. Map outlines prescribed action areas, adding up to 4.75 acres of habitat enhancement.

(Left) North facing view of project area. Note patchwork of shrubs and grasslands. (Right) View of project area that includes woody encroachment by Douglas fir.



(Left) Acre patch of jubata grass (*Cortaderia jubata*) amongst encroaching Douglas-fir. (Right) West most gully with jubata grass colonizing disturbed soil. Soil enhancement efforts will reduce gullying.



(Left) South facing view of project site with view of pond (aquatic plants before large riparian stand). (Right) Same south facing view but with larger swath of grass-shrubland. Note dense scrub encroaching upon grassland.



EXHIBIT B
Cost Proposal
BUTANO FARMS HABITAT ENHANCEMENT PILOT PROJECT

To: Board of Directors, San Mateo Resource Conservation District

We, the undersigned, having familiarized ourselves with all project plans 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, have included a detailed cost breakdown of each project action, including invasive species reduction, soil enhancement, and woody encroachment control trials. Cost proposals also include a brief technical approach to said actions, including methods and available equipment.

Total Bid (in numbers):

Total Bid (in words):

1. 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: _____

2. 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: _____

3. REFERENCES

List projects and contact information for use as reference or attach reference documentation.

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
Sample Contract

SAN MATEO RESOURCE CONSERVATION DISTRICT
PROFESSIONAL SERVICES AGREEMENT WITH
CONTRACTOR

THIS AGREEMENT ("Agreement"), made and entered into this ____ day of _____, 2019 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, the RCD received funding from Pacific Gas & Electric (PG&E) for the Butano Pond Mitigation Project; 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 Exhibit A, *Butano Pond Mitigation Project- **CONTRACTOR- 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 December 31, 2019 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 Exhibit A, RCD agrees to pay CONTRACTOR an amount not to exceed **AMOUNT AS TEXT, (\$XXX.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, (\$XXX.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 County 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 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 Exhibit A, 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 and all of its 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 Exhibit B 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. 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 County 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
CONTRACTOR

Date: _____ By: _____
17. Kellyx Nelson, Executive Director
18. San Mateo Resource Conservation District

EXHIBIT A
Butano Pond Mitigation Project- CONTRACTOR - Scope of Services

**EXHIBIT B
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 D
San Mateo RCD Insurance Requirements
Contract Construction Services
BUTANO FARMS HABITAT ENHANCEMENT PILOT 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 E
Labor Compliance Program
BUTANO FARMS HABITAT ENHANCEMENT PILOT 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. Contractors 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 journeyman, 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 Relations' 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 for 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 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 F
Certificate of Compliance
BUTANO FARMS HABITAT ENHANCEMENT PILOT PROJECT

TO: SAN MATEO RESOURCE CONSERVATION DISTRICT

PROJECT: BUTANO FARMS HABITAT ENHANCEMENT PILOT 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 G
Billing Instructions for Contractors
BUTANO FARMS HABITAT ENHANCEMENT PILOT 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. Include a breakdown of equipment and labor rates, hours and dates worked, materials, subcontractors and other costs.

Please submit your invoice to:

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

EXHIBIT H
Project Biological Opinion



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2013-F-0430-R002

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 02 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-Baysshore 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) 2018a); (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 <i>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</i> (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 2018a); 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 Aviator 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 Aviator 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 weed 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 2018a); 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

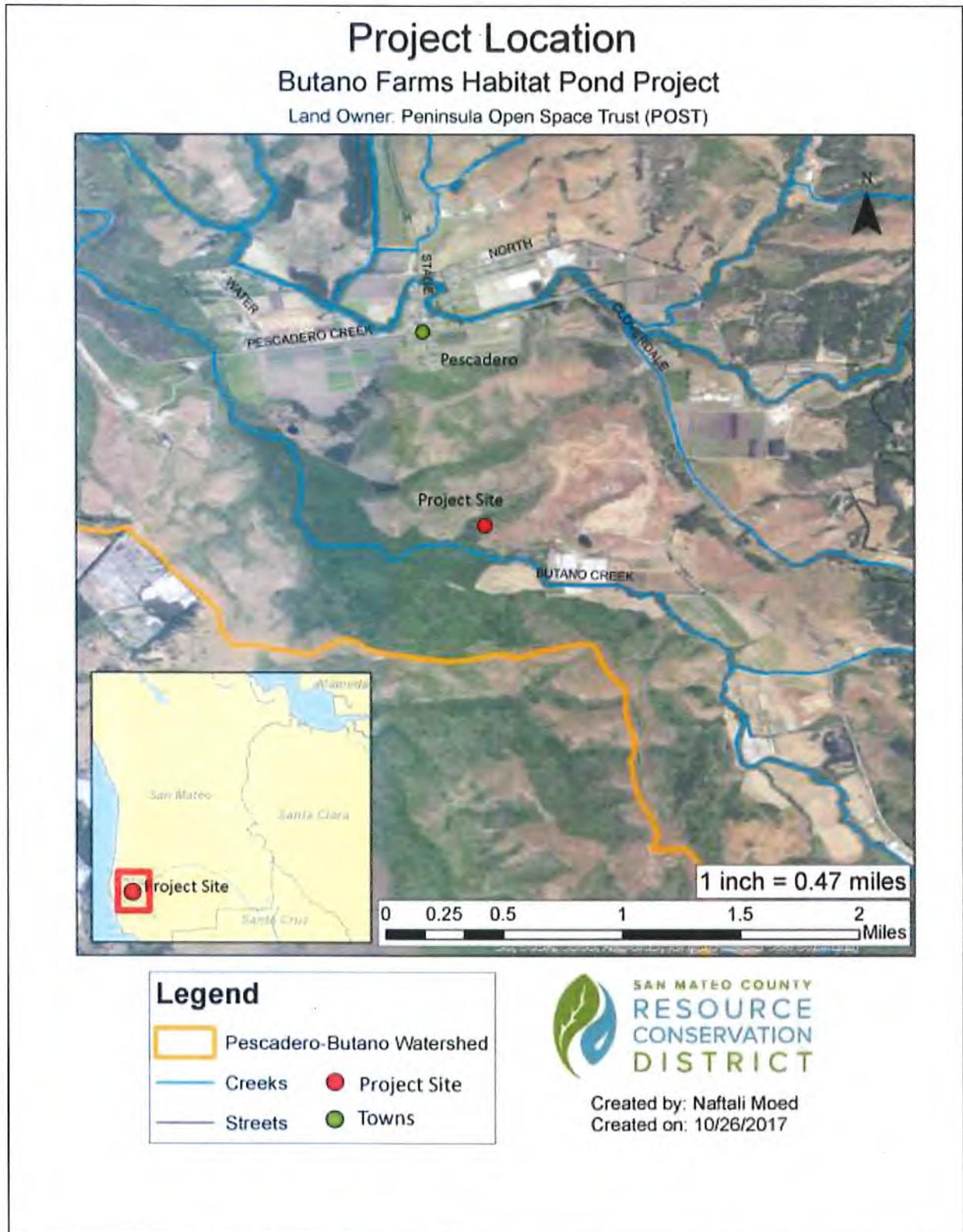


Figure 2. Location of the Butano Farms habitat enhancement area near the Town of Pescadero, San Mateo County (copied from Figure 1 in San Mateo RCD 2018a).

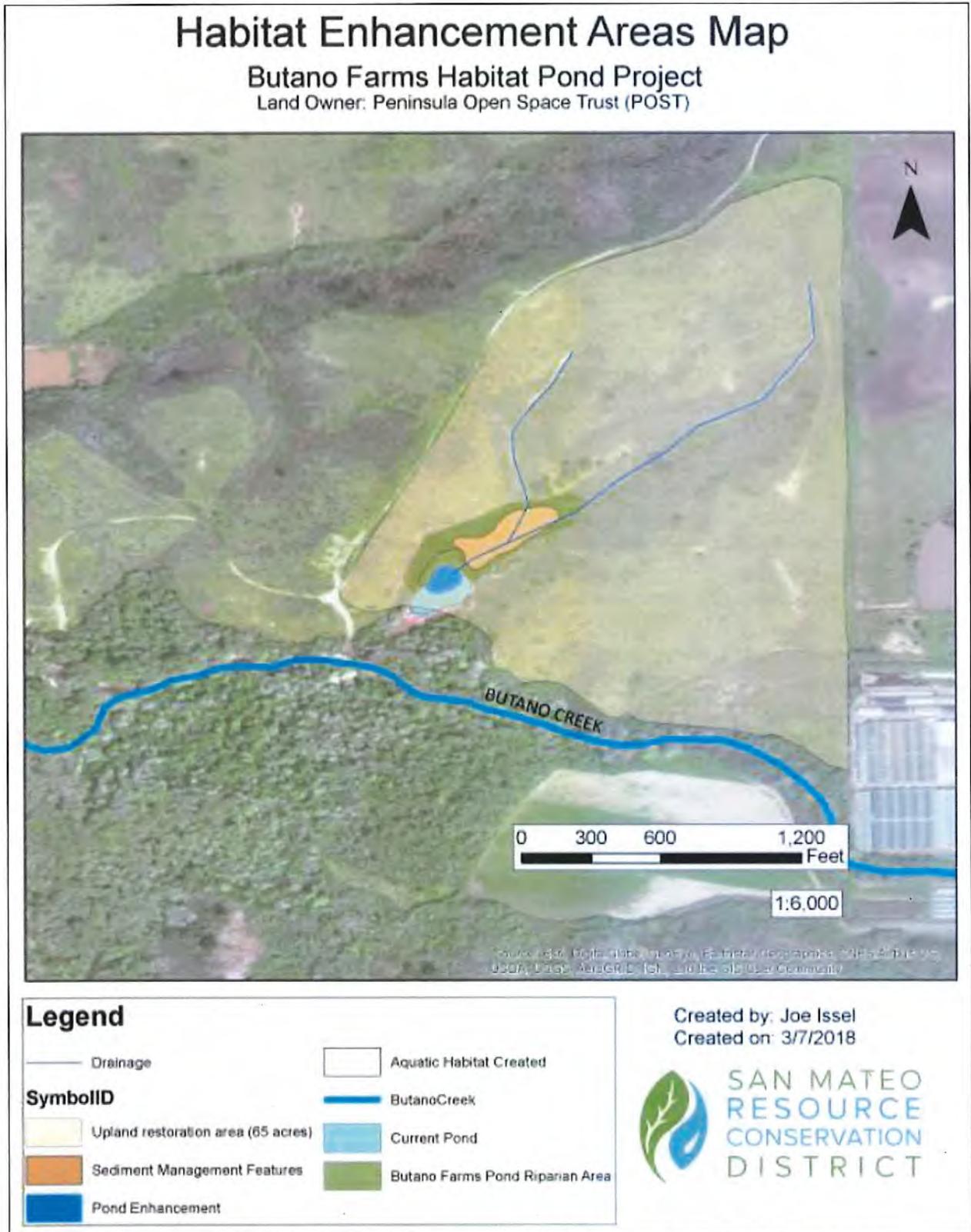


Figure 3. Map of the habitat enhancement features in the 65-acre habitat enhancement and management area at POST's Butano Farms near the Town of Pescadero, San Mateo County (copied from Figure 7 in San Mateo RCD 2018a).

RCD 2018a). 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 pilularis*), 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* spp.), cattail (*Typhaceae* spp.), sedges (*Scirpus* spp.), or rushes (*Juncus* spp.) 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

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 fence line. 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 2018a). 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 2018a, 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 2018a). 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 (CNDDDB 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 Millbrae (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 2018a, 2018b). The CNDDDB reports seven occurrences of the San Francisco garter snake within 0.3 – 1.5 miles of the Butano Farms habitat enhancement area (CNDDDB 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 riparian 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 CNDDDB of the CDFW. A copy of the CNDDDB 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 instructions 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

LITERATURE CITED

- Barry, S. 1992. Letter to Marvin L. Plenert, Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon, regarding proposed listing.
- _____. 1994. The distribution, habitat, and evolution of the San Francisco garter snake, *Thamnophis sirtalis tetrataenia*. M. S. Thesis. University of California, Davis, California.
- _____. 2005. Bullfrogs (*Rana catesbeiana*) in the diet of the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Paper presented at the Western Section of the Wildlife Society. Sacramento, California.
- _____. Undated. The San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) on the San Francisco watershed. Entrix, Sacramento, California.
- Bonnet, X., G. Naulleau, and R. Shine. 1999. The dangers of leaving home: dispersal in and mortality in snakes. *Biological Conservation* 89: 39-50.
- Buechner, M. 1987. Conservation in Insular Parks: Simulation Models of Factors Affecting the Movement of Animals Across Park Boundaries. *Biological Conservation* 41:57-76.
- Bulger, J. B., N. J. Scott, Jr., and R. B. Seymour. 2003. Terrestrial Activity and Conservation of Adult California Red-Legged Frogs *Rana aurora draytonii* in Coastal Forests and Grasslands. *Biological Conservation* 110:85-95.
- Bury, R.B and Whelan, J.A. 1984. Ecology and Management of the Bullfrog. Fish and Wildlife Service/Resource Publication 155.
- Buza, L., A. Young and P. Thrall. 2000. Genetic Erosion, Inbreeding and Reduced Fitness in Fragmented Populations of the Endangered Tetraploid Pea Swainsona *recta*. *Biol. Conserv.* 93:177-186.
- California Department of Fish and Wildlife (CDFW). 2018. California Natural Diversity Database (CNDDB) RAREFIND. Natural Heritage Division, Sacramento, California.
- Casagrandi, R., and M. Gatto. 1999. A Mesoscale Approach to Extinction in Fragmented Habitats. *Nature* 400: 560-562.
- Davidson, E. W., M. Parris, J. P. Collins, J. E. Longcore, A. P. Pessier, J. Brunner. 2003. Pathogenicity and Transmission of Chytridiomycosis in Tiger Salamanders (*Ambystoma tigrinum*). *Copeia* 2003(3):601-607.
- Emlen, S. T. 1977. "Double Clutching" and its Possible Significance in the Bullfrog. *Copeia* 1977(4):749-751.
- Fahrig, L. 1997. Relative Effects of Habitat Loss and Fragmentation on Population Extinction. *Journal of Wildlife Management* 61:603-610.
- _____. 1998. When Does Fragmentation of Breeding Habitat Affect Population Survival? *Ecological Modeling* 105: 273-292.

- Fellers, G. 2005. *Rana draytonii* Baird and Girard, 1852b California Red-Legged Frog. Pages 552-554 in M. Lannoo (editor). *Amphibian Declines: The Conservation Status of United States Species*. University of California Press. Berkeley, California.
- Fisher, R. N., and H. B. Schaffer. 1996. The Decline of Amphibians in California's Great Central Valley. *Conservation Biology* 10(5):1387-1397.
- Forys, E.A. and S.R. Humphrey. 1996. Use of Population Viability Analysis to Evaluate Management Options for the Endangered Lower Keys Marsh Rabbit. *The Journal of Wildlife Management* 63(1):251-260.
- Fox, W. 1951. The status of the garter snake, *Thamnophis sirtalis tetrataenia*. *Copeia* 1951:257-267.
- Garner, T. W. J., M. W. Perkins, P. Govindarajulu, D. Seglie, S. Walker, A. A. Cunningham, and M. C. Fisher. 2006. The emerging amphibian pathogen *Batrachochytrium dendrobatidis* globally infects introduced populations of the North American bullfrog, *Rana catesbeiana*. *Biology Letters*. 2:455-459.
- Gibbs, J.P. 1998. Amphibian Movements in Response to Forest Edges, Roads, and Streambeds in Southern New England. *Journal of Wildlife Management* 62: 584-589.
- Gilpin, M.E. and M.E. Soule. 1986. Minimum Viable Populations: Processes of Species Extinction. Pages 19-34 in Soule, M. E. (ed.), *Conservation Biology: Science of Scarcity and Diversity*. Si-nauer, Sunderland, Massachusetts.
- Gotelli, N.J. 1991. Metapopulation Models: The Rescue Effect, the Propagule Rain, and the Core-Satellite Hypothesis. *American Naturalist* 138:768-776.
- Hanski, I. 1982. Dynamics of Regional Distribution: The Core and Satellite Hypothesis. *Oikos* 38:210-221.
- _____. 1991. Single Species Metapopulation Systematics: Concepts, Models and Observations. *Biological Journal of the Linnean Society* 42:3-16.
- _____. 1994. A Practical Model of Metapopulation Dynamics. *Journal of Animal Ecology* 63:151-162.
- Hayes, M. P., and M. R. Jennings. 1988. Habitat Correlates of Distribution of the California Red-Legged Frog (*Rana aurora draytonii*) and the Foothill Yellow-Legged Frog (*Rana boylei*): Implications for Management. Pages 144-158 in R. Sarzo, K. E. Severson, and D. R. Patton (technical coordinators). *Proceedings of the Symposium on the Management of Amphibians, Reptiles, and Small Mammals in North America*. United States Department of Agriculture, Forest Service, Rocky Mountain Range and Experiment Station, Fort Collins, Colorado. General Technical Report (RM-166): 1-458.
- Hayes, M. P. and D. M. Krempels. 1986. Vocal Sac Variation among Frogs of the Genus *Rana* from Western North America. *Copeia* 1986(4):927-936.
- Hayes, M. P. and M. M. Miyamoto. 1984. Biochemical, Behavioral and Body Size Differences between *Rana aurora aurora* and *R. a. draytonii*. *Copeia* 1984(4):1018-1022.

- Hayes, M. P., and M. R. Tennant. 1985. Diet and Feeding Behavior of the California Red-Legged Frog, *Rana aurora draytonii* (Ranidae). *Southwestern Naturalist* 30(4): 601-605.
- Hilty, J. A. and A. M. Merenlender. 2004. Use of Riparian Corridors and Vineyards by Mammalian Predators in Northern California. *Conservation Biology* 18(1):126-135.
- Holt, R.D. 1993. Ecology at the Mesoscale: The Influence of Regional Processes on Local Communities. Pages 77-88 *in* R. Ricklefs and D. Schluter, eds. *Species Diversity in Ecological Communities: Historical and Geographic Perspectives*. University of Chicago Press, Chicago.
- Hunt, L. 1993. Letter to Marvin L. Plenert, Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon, regarding proposed listing.
- ICF. 2017. Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan. Final. September. (ICF 03442.03.) Sacramento, California. Prepared for Pacific Gas and Electric Company, San Francisco, California.
https://www.fws.gov/sacramento/outreach/2017/11-22/docs/PGE_Bay_Area_HCP_Final.pdf. Accessed on January 2, 2018.
- Jennings, M. R. 1993. Letter to Peter C. Sorensen, U.S. Fish and Wildlife Service, Sacramento, California.
- Jennings, M. R., and M. P. Hayes. 1985. Pre-1900 Overharvest of California Red-Legged Frogs (*Rana aurora draytonii*): The Inducement for Bullfrog (*Rana catesbeiana*) Introduction. *Herpetological Review* 31(1):94-103.
- _____. 1990. Final Report of the Status of the California Red-Legged Frog (*Rana aurora draytonii*) in the Pescadero Marsh Natural Preserve. Final report prepared for the California Department of Parks and Recreation, Sacramento, California, through Agreement (4-823-9018). Department of Herpetology, California Academy of Sciences, Golden Gate Park, San Francisco, California. 30 pages.
- _____. 1994. Amphibian and Reptile Species of Special Concern in California. Report prepared for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. 255 pages.
- Jennings, M. R., M. P. Hayes, and D. C. Holland. 1992. A Petition to the U.S. Fish and Wildlife Service to Place the California Red-Legged Frog (*Rana aurora draytonii*) and the Western Pond Turtle (*Clemmys marmorata*) on the List of Endangered and Threatened Wildlife and Plants. 21 pages.
- Kruse, K. C. and M. G. Francis. 1977. A Predation Deterrent in Larvae of the Bullfrog, *Rana catesbeiana*. *Transactions of the American Fisheries Society* 106(3):248-252.
- Kupferberg, S. J. 1996a. Hydrologic and Geomorphic Factors Affecting Conservation of a River-Breeding Frog (*Rana boylei*). *Ecological Applications* 6: 1322-1344.

- _____. 1996b. The Ecology of Native Tadpoles (*Rana boylei* and *Hyla regilla*) and the Impacts of Invading Bullfrogs (*Rana catesbeiana*) in a Northern California River. PhD dissertation. University of California, Berkeley, California.
- _____. 1997. Bullfrog (*Rana catesbeiana*) Invasion of a California River: The Role of Larval Competition. *Ecology* 78(6):1736-1751.
- La Polla, V.N. and G.W. Barrett. 1993. Effects of Corridor Width and Presence on the Population Dynamics of the Meadow Vole (*Microtus pennsylvanicus*). *Landscape Ecology* 8:25-37.
- Larsen, S. S. 1994. Life History Aspects of the San Francisco garter snake at the Millbrae habitat site. M.S. Thesis. California State University, Hayward, California. 105 pp.
- Levins, R.A. 1970. Extinction. *American Mathematical Society* 2:77-107.
- Lips, K. R., F. Brem, R. Brenes, J. D. Reeve, R. A. Alford, J. Voyles, C. Carey, L. Livo, A. P. Pessier, and J. P. Collins. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Science* 103(9):3165-3170.
- Lindenmayer, D.B., and H.P. Possingham. 1996. Modeling the Interrelationships Between Habitat Patchiness, Dispersal Capability and Metapopulation Persistence of the Endangered Species, Leadbeater's Possum, in Southeastern Australia. *Landscape Ecology* 11:79-105.
- LSA Associates. 2008. Recovery Action Plan for the San Francisco Garter Snake, West-of-Bayshore Property, San Francisco International Airport, San Mateo County. 56 pp.
- _____. 2017. Long-Term Management Plan Millbrae Substation Conservation Area, San Mateo County, California. November 27, 2017. LSA Associates, Point Richmond, California. 17 pp. plus appendices.
- McGinnis, S. 1987. Distribution and feeding habitat requirements of the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Final Report to California Department of Fish and Game, Sacramento, California. 40 pp.
- _____. 1989. Life history of the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Final Report to California Department of Fish and Game, Sacramento, California. 47 pp.
- Moyle, P. B. 1976. Fish Introductions in California: History and Impact on Native Fishes. *Biological Conservation* 9(1):101-118.
- Petit, L.J., D.R. Petit, and T.E. Martin. 1995. Landscape-Level Management of Migratory Birds: Looking Past the Trees to See the Forest. *Wildlife Society Bulletin* 23:420-429.
- San Mateo Resource Conservation District (San Mateo RCD). 2017a. Concept Level Project Description Butano Farms Habitat Pond Project Wetland and Upland Habitat Enhancement for San Francisco Garter Snake. November 13, 2017. Half Moon Bay, California. 14 pp.

- _____. 2017b. Project Description for Quiroste Valley Cultural Preserve Habitat Enhancement Project Upland and Wetland Enhancement for San Francisco Garter Snake. October 30, 2017. Half Moon Bay, California. 8pp.
- _____. 2018a. Concept Level Project Description Butano Farms Habitat Pond Project Wetland and Upland Habitat Enhancement for San Francisco Garter Snake. ~~March 7~~ **May 9**, 2018. Half Moon Bay, California. ~~13~~ **19** pp. *plus appendices*.
- _____. **2018b. *Effects Analysis for Butano Farms SFGS Habitat Enhancement Project, San Mateo County, California. May 11, 2018. Half Moon Bay, California. 18 pp.***
- _____. **2018c. *Herbicide Use Guidance Butano Farms SFGS Habitat Enhancement Project Wetland and Upland Habitat Enhancement for San Francisco Garter Snake. July 12, 2018. Half Moon Bay, California. 7 pp.***
- Sloan, L. 2007. Global Warming and California's Future handout from the U.C. Day 2007, UCSF Alumni Gathering, Sacramento, California.
- Stamps, J.A., M. Buechner, and V. V. Krishnan. 1987. The Effects of Edge Permeability and Habitat Geometry on Emigration from Patches of Habitat. *The American Naturalist* 129(4):533-552.
- Stebbins, R. C. 2003. *A Field Guide to Western Reptiles and Amphibians*. Houghton Mifflin Company, Boston, Massachusetts.
- Storer, T. I. 1925. *A Synopsis of the Amphibia of California*. University of California Publications in Zoology 27:1-1-342.
- _____. 1933. Frogs and their Commercial Use. *California Department of Fish and Game* 19(3)203-213.
- Swaim Biological, Inc. 2008. San Francisco Garter Snake Monitoring Report, West-of-Bayshore property, San Francisco International Airport: 2007 Baseline Survey Results. Prepared for San Francisco International Airport.
- _____. 2014a. Biological Assessment for the Line 101 In-line Inspection Upgrade and Lomita Park Regulator Station Rebuild Project. July. Livermore, California. Prepared for Pacific Gas & Electric Company, San Ramon, California.
- _____. 2014b. 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. July 28. Livermore, California. Prepared for Pacific Gas & Electric Company, San Ramon, California.
- Tatarián, P. J. 2008. Movement Patterns of California Red-Legged Frogs (*Rana Draytonii*) in an Inland California Environment. *Herpetological Conservation and Biology* 3(2):155-169. November.
- Twedt, B. 1993. A Comparative Ecology of *Rana aurora* Baird and Girard and *Rana catesbeiana* Shaw at Freshwater Lagoon, Humboldt County, California. Unpublished. Master of Science thesis. Humboldt State University, Arcata, California. 53 pages plus appendix.

- U.S. Fish and Wildlife Service. 1967. Native Fish and Wildlife, Endangered Species. Federal Register 32: 4001.
- _____. 1985. Recovery plan for the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Portland, Oregon. 77 pp.
- _____. 1996. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Red-Legged Frog. Federal Register 61:25813-25833.
- _____. 2002. Recovery Plan for the California Red-Legged Frog (*Rana aurora draytonii*). Portland, Oregon. 173 pages.
- _____. 2006a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Red-legged Frog (*Rana aurora draytonii*), and Special Rule Exemption Associated with Final Listing for Existing Routine Ranching Activities; Final Rule. Federal Register 71(71):19244-19346. April 13.
- _____. 2006b. San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2008. Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the California Red-legged Frog (*Rana aurora draytonii*); Proposed Rule. Federal Register 73(180):53492-53680. September 16.
- _____. 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-legged Frog (*Rana draytonii*). Federal Register 75(51):12816-12959. March 17.
- _____. 2014. Biological Opinion for the Line 101 In-line Inspection and Upgrade and Lomita Park Station Rebuild Project, Millbrae, San Mateo County, California (Corps file number 2013-00142S). August 18, 2014. U.S. Fish and Wildlife Service file number 08ESMF00-2013-F-0430. Sacramento Fish and Wildlife Office, Sacramento, California. 35 pp. plus appendix.
- _____. 2016. Formal Consultation on the Butano Creek Floodplain Restoration Project for the San Francisco Area Coastal Program in San Mateo County, California. June 1, 2016. U.S. Fish and Wildlife Service file number 08ESMF00-2016-F-1567. Sacramento Fish and Wildlife Office, Sacramento, California. 27 pp.
- _____. 2017. Second Reinitiation of Formal Consultation on the Pacific Gas and Electric Company (PG&E) Gas Pipeline 132 (Line 132) Elbow Investigation Project at Six Dig Sites near San Andreas Lake near the City of Millbrae, San Mateo County, California. August 3, 2017. U.S. Fish and Wildlife Service file number 08ESMF00-2015-F-0216-R002. Sacramento Fish and Wildlife Office, Sacramento, California. 47 pp.
- _____. ***2018. 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, Millbrae, San Mateo County, California (Corps file number 2013-00142S). April 12, 2018. U.S. Fish and Wildlife Service file number 08ESMF00-2013-F-0430-R001. Sacramento Fish and Wildlife Office, Sacramento, California. 47 pp.***

Verboom, B. and R. van Apeldoorn. 1990. Effect of Habitat Fragmentation on the Red Squirrel, *Sciurus vulgaris*. *Landscape Ecology* 4:171-176.

Verboom, B., K. Lankester, and J.A. Metz. 1991. Linking Local and Regional Dynamics in Stochastic Metapopulation Models. *Biological Journal Linnean Society* 42:39-55.

Whorton, J. C., J. M. Brode, and M. D. Knudsen. 1989. Ecological and life history aspects of the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) at the San Francisco International Airport study site. Final report for Caltrans interagency agreements C-226 and C-975 (FY 82/83-85/86).

With, K.A. and T. O. Crist. 1995. Critical Thresholds in Species' Responses to Landscape Structure. *Ecology* 76: 2246-2459.

Wright, A. H. and A. A. Wright. 1949. Handbook of Frogs and Toads of the United States and Canada. Comstock Publishing Company, Inc., Ithaca, New York. 640 pages

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 I
Concept Level Plan

Concept Level Project Management Plan Butano Farms SFGS Habitat Enhancement Project

Wetland and Upland Habitat Enhancement for San Francisco Garter Snake
May 9, 2018

Project Contacts:

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Consultant:

Jim Robins, Principal/Senior Ecologist

Alnus Ecological

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RESTORATION CONTEXT

The goals of this project are consistent with the recovery actions outlined in the San Francisco Garter Snake Recovery Plan (1985) that concludes restoration of upland, riparian and aquatic habitat is needed to aid in the recovery of the San Francisco garter snake (SFGS), and support recovery of the California red legged frog (CRLF). At the project site, dense woody vegetation has encroached on adjacent aquatic and upland habitat areas, which has greatly reduced historic grassland and herbaceous wetlands commonly used for movement, foraging, and breeding by SFGS, CRLF 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 has further reduced both aquatic habitat quantity and quality as well as facilitating additional encroachment by woody species. This project would result in enhancing the existing 1-acre pond and upland complex on POST's Butano Farms property through a suite of restoration actions aimed at enhancing both pond and upland habitat for SFGS and CRLF. These actions could include:

- Vegetation removal and grading to increase the depth and area of open water;
- Removing woody vegetation adjacent to the pond and grading a shallow open bench in transition areas between the open water and the adjacent uplands;
- Increasing the longevity of the pond through reducing upland erosion and sedimentation transport through creation of a sediment collection forebay upstream of the existing pond; and

- Restoring grassland habitat within the pond's watershed and adjacent lands through instillation of cattle fencing, application of soil amendments, native grass planting/seeding, removal of coyote brush, jubata grass, Douglas fir and other non-native/invasive species.

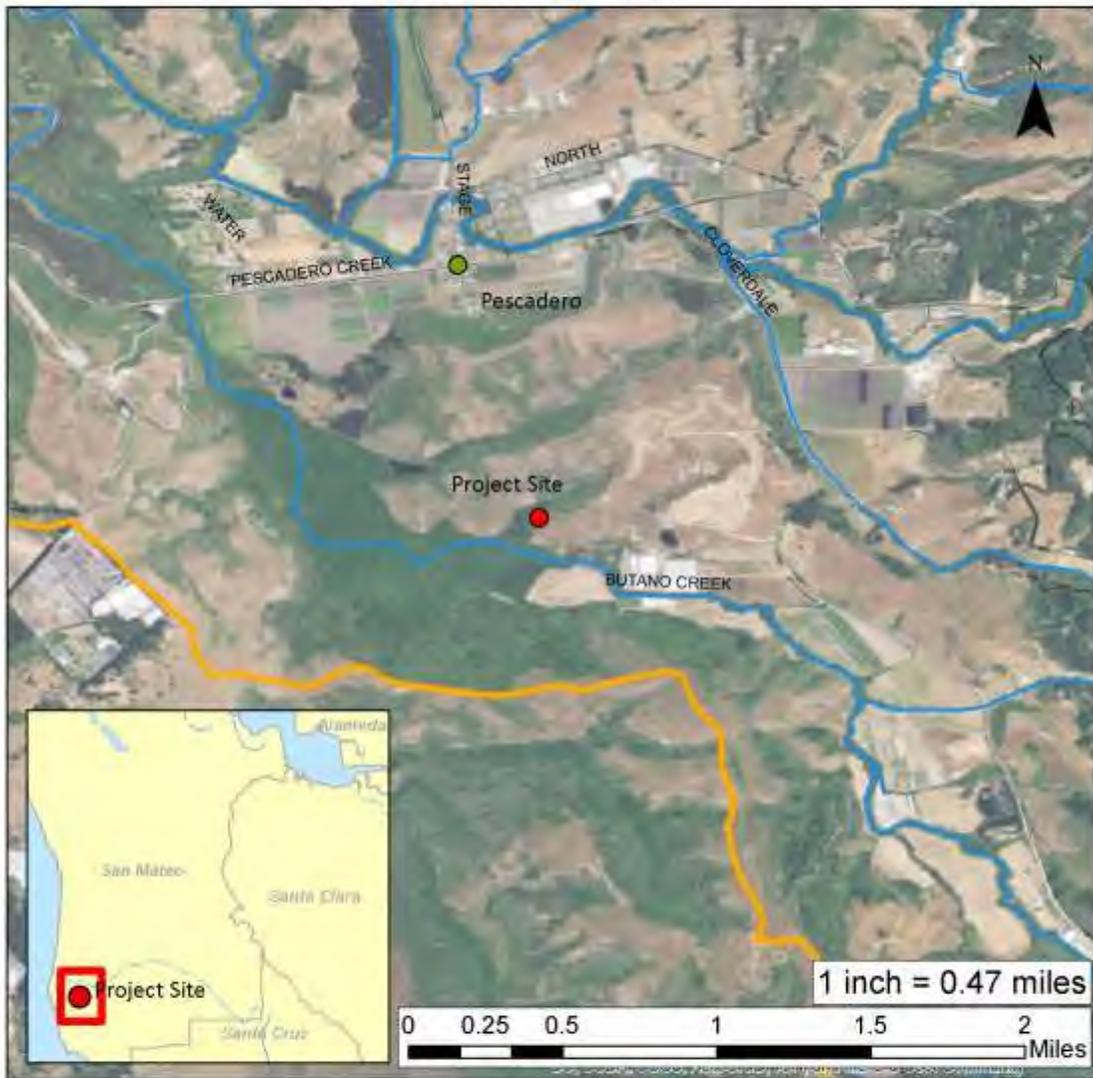
PROPERTY HISTORY

The Butano Farms property is currently owned by Peninsula Open Space Trust (POST). POST is a 501(c)(3) nonprofit organization that protects and cares for open space, farms and parkland. Since its founding in 1977, POST has been responsible for protecting more than 75,000 acres as permanent open space and parkland in San Mateo, Santa Clara and Santa Cruz counties. POST is supportive of the project and eager to move it forward as soon as possible. Current land use on the property primarily includes preserved open space and livestock grazing. The pond is currently used by the cattle operation as a stockwater source and the project will include development of an access point for cattle to utilize the water source or alternative water systems which are consistent with the habitat enhancement measures that are proposed. The proposed project site is adjacent to the Butano Creek floodplain restoration site, a recently completed RCD habitat enhancement project that reconnected 100 acres of historic flood plain to the Butano Creek channel.

Project Location

Butano Farms Habitat Pond Project

Land Owner: Peninsula Open Space Trust (POST)



Legend

- Pescadero-Butano Watershed
- Creeks
- Streets
- Project Site
- Towns



**SAN MATEO COUNTY
RESOURCE
CONSERVATION
DISTRICT**

Created by: Naftali Moed
Created on: 10/26/2017

Figure 1. Project location

Site Map

Butano Farms Habitat Pond Project

Land Owner: Peninsula Open Space Trust (POST)



0 300 600 1,200 Feet
1:8,000

Created by: Joe Issel
Created on: 3/7/2018

Figure 2. Site map



Figure 3. Existing pond looking south from north bank



Figure 4. Riparian Forest and upland area surrounding pond looking south from ridge towards pond



Figure 5. Upland habitat looking north towards gully draining into pond



Figure 6. Gully looking south towards pond

Habitat Enhancement Areas Map

Butano Farms Habitat Pond Project

Land Owner: Peninsula Open Space Trust (POST)



Legend

Drainage	Aquatic Habitat Created
SymbolID	ButanoCreek
Upland restoration area (65 acres)	Current Pond
Sediment Management Features	Butano Farms Pond Riparian Area
Pond Enhancement	

Created by: Joe Issel

Created on: 3/7/2018



Figure 7: Habitat Enhancement Area

ECOLOGICAL MANAGEMENT GOALS

The following ecological objectives provide the basis for long term management of the Butano Farms pond:

- (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
- (2) Maintain at least 25% cover of open water habitat in the pond
- (3) Maintain a 25-75% cover of emergent vegetation (i.e. tules, cattails, juncus, etc) around pond margins
- (4) Protect pond water quality (sediment, nutrients and pathogens) to the greatest extent practicable
- (5) Control and eradicate invasive species, especially bullfrogs
- (6) Establish and maintain appropriate upland habitat in the 61 acre area around the pond to provide upland forage and basking habitat and minimize erosion

1. Maintain and/or Create Shallow Open “Bench” Habitat

Shallow “bench” habitat is defined for the purposes of this plan as submerged habitat, typically around a pond margin, with a low gradient (<10:1 slope) and a ponding depth of 10-20 inches.

Bench width may vary from 2 to 10 feet or more. In natural ponds, or ponds within drainage

networks, this habitat is a common feature at the pond inlet which is often created by alluvial deposits. This feature is often absent or muted in man-made pond that are heavily managed due to steep banks and periodic dredging. Shallow “bench” habitat is a key habitat component for both CRLF and Sierra treefrog tadpole and juvenile rearing and for SFGS foraging. This habitat is generally devoid of dense, tall stands of emergent vegetation and therefore maintains a warm and shallow aquatic environment but does have a cover of low emergent marsh or submergent marsh plants with intermittent unvegetated open water patches. Lack of active management of bench habitats will often lead to excessive clogging and shading by tall, dense emergent vegetation such as cattails and tules unless the particular seasonal hydrology of the ponds inhibits its establishment.

Management Prescriptions for Maintaining/Creating Shallow Open Bench Habitat (SB)

The project calls for the creation of substantial area of new bench habitat. The creation of shallow bench habitat has the added benefit of not only providing basking, frog breeding and foraging habitat but also providing pond access and egress locations for target species and other native wildlife. Managed livestock access and pond design is expected to control vegetation. Sediment basis will be designed to fill in over time and in combination with upslope grazing and soil health management, ongoing sedimentation management is not

anticipated to be required. In areas where bench habitat already exists and will be designed to maintain appropriate water levels to insure appropriate ponding depth during the period of tadpole and juvenile development (March-August), and facilitating water drawdown later in the season (September-December) to prevent encroachment of tall emergent vegetation into the bench habitat.

2. Maintain at least 25% Open Water Habitat (OW)

For the purposes of this plan, open water is defined as areas lacking tall, dense stands of emergent vegetation such as tules or cattails. 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 CRLF and foraging habitat for SFGS is paramount. Although it is unclear exactly how much open water habitat is required for CRLF and SFGS, it is clear that maintenance of at least some open water habitat is preferable for both species. It is also not clear from the literature how important depth of open water is for the target species, however it is unlikely that either species would regularly use water to depths greater than 5-7 feet due to temperature issues. USFWS (2002) indicates that deep water habitat for the CRLF should be at least 2 feet deep. In order to reduce the frequency of pond management for open water, some open water section should be maintained at greater than 3 feet deep to provide appropriate habitat and slow vegetative encroachment and pond filling. Literature suggests that emergent vegetation generally won't establish on areas that maintain depths more than 3 feet deep.

Management Prescriptions for Maintaining Open Water (OW)

One of the most challenging aspects of managing ponds with sensitive species for open water is overcoming the regulatory hurdles associated with the potential "take" of listed species associated with pond draining, vegetation removal, and dredging. Although dredging a pond with heavy machinery may be the easiest and most effective way to maintain open water and increase pond depth, it may not always be necessary to implement such a high intensity prescription. Instead of proposing recurring pond dredging, this plan proposes controlling pond sedimentation through construction of sediment control basis and implementing practices in upland areas to improve soil health and reduce erosion. Sediment catchment basis 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.

3. Maintain 25-75% Cover of Pond Margin Emergent Vegetation (EV)

Emergent vegetation such as tules, cattails, bur-reed, or spikerush are essential habitat components for CRLF and Sierra tree frogs, as these species attaches egg masses to emergent vegetation. In addition, emergent vegetation also supports growth of periphyton

(algae and heterotrophic microbes) that forms the foundation of the aquatic food web and provides a diversity of foraging and cover areas for aquatic invertebrates. As such, emergent vegetation plays a critical role in supplying multiple food sources for tadpoles, juveniles, and adults. Dense stands of emergent vegetation can also be used for both foraging and cover by SFGS.

Although emergent vegetation is an important habitat component for target species, 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 target species as well as other native amphibians and reptiles 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% to 50% of the entire pond area.

Management Prescriptions for Controlling Emergent Vegetation (EV)

Anecdotal information gathered in an assessment of stock ponds at the neighboring Cloverdale ranch suggests that controlling dense stands of emergent vegetation on pond margins can be accomplished through the use of seasonally and spatially explicit livestock grazing. It is generally agreed that allowing cattle unrestricted access to ponds can result in degraded aquatic and wetland habitat for CRLF and SFGS due to excess vegetation removal and trampling. That said, well designed livestock grazing is known to be compatible frog success in ponds. 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% vegetation cover in the entire pond.

4. Protect Pond Water Quality

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 should 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 amphibian egg and tadpole mortality through asphyxiation and can disrupt CRLF and SFGS 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 and can be a problem in for amphibians and other native species.

Management Prescriptions for Maintaining Water Quality (WQ)

Although there are a number 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/mitigated for 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 activity of the gullies that drain into ponds, and the completion of regular road maintenance.

5. Control and/or Eradicate Invasive Species

The issue of invasive species can be divided into two separate components; control/eradication of invasive species that predate on our target species and control/eradication of weeds that occur in high densities in upland area around the pond. With regards to predators, bullfrogs and non-native present a major obstacle to recovery of CRLF and SFGS. Bullfrogs have both a direct and indirect impact on SFGS populations. Adult bullfrogs directly impact SFGS populations via predation on small or juvenile SFGS (USFWS 1985). In addition, bullfrogs have an indirect impact by decimating CRLF, a key prey item for SFGS.

With regards upland weeds, pampas grass is the only plant that currently appears to be causing significant negative impacts in the vicinity of ponds. Pampas grass is considered an A-1 (highest priority) wildland weed. It is an aggressive colonizer that it known to displace native species occurring in coastal scrub, coastal dunes, and other coastal habitats. Pampas grass typically invades eroded or disturbed soils.

Management Prescriptions for Controlling/Eradicating Invasive Species

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 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.

ECOLOGICAL MANAGEMENT OBJECTIVES AND SUCCESS CRITEIRA

Approximate acreage of aquatic and upland habitat enhancement and creation areas:

- A. There is 1 acre of existing pond habitat and an additional 0.25 acres will be created (figure 3)

- A.1. 0.25 acres of aquatic habitat will be created by transitioning riparian forest to shallow water pond habitat
- A.2. 0.25 acres of the existing pond habitat will be enhanced
- A.3. 0.75 acres of the existing pond habitat will be protected as-is.
- B. There are 3 acres of existing riparian habitat around the pond and in its lower unnamed drainage area (does not include adjacent riparian area along Butano Creek, see figure 2)
 - B.1. Approximately 0.5 acres of riparian forest habitat will be transitioned to grassland dominated habitat (figure 7)
 - B.2. As described in area above, 0.25 acres of this riparian area will be transitioned to shallow water pond habitat (figure 3)
 - B.3. Approximately 2.25 acres of the riparian area will remain relatively intact, however sediment management structures will be installed in this area which will involve removing some riparian trees (mostly willows).
 - B.4. Livestock Fencing will be installed to exclude/control livestock from a portion of the pond and in the upland area to manage grazing.
- C. The upland restoration area surrounding the pond and encompassing the pond's entire drainage area is approximately 65 acres (figure 4)
 - C.1. 61 acres of upland habitat has been selected for brush removal, grassland restoration and soil rehabilitation to enhance basking habitat and minimize erosion

Table 1: SFGS Habitat Enhancement and Protection Success Criteria

Criteria	Metric
A.1 Aquatic Habitat Created	0.25 acres of habitat created
A.2/B.2 Aquatic Habitat Enhanced	0.25 acres of habitat enhanced
A.3 Aquatic Habitat Protected	0.75 acres of habitat protected
B.1 Create grassland dominated area adjacent to pond	0.5 acres of habitat created
B.3 Protect riparian habitat and install sediment control structures	2.25 acres of riparian habitat protected and at least one sediment control structure installed
B.4 Install livestock fencing	Install adequate fencing to exclude livestock from sensitive pond areas and around upland area to manage grazing.
C.1 Enhance upland habitat	61 acres

A. Aquatic Habitat Work Summary: 1.25 acre footprint

This project will improve and expand existing aquatic habitat within and adjacent to the pond to enhance habitat for San Francisco Garter Snake and for food sources like Sierra tree frog and California red-legged frogs. Work within the existing 1-acre pond will include: A1) enhancing a 0.25 acre area of the pond to provide open water aquatic habitat; A2) expansion of the pond habitat on approximately 0.25 acres of riparian forest (mostly

willows) to create shallow water habitat for frogs (SFGS food source); and A3) 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.

A1) Aquatic Habitat Enhancement (0.25 acres)

A 0.25-acre area of the existing pond habitat in the northwest corner will be enhanced through removing sediment and reshaping the pond surface to provide a deep-water section which will increase storage capacity and maintain open water habitat. A portion of this deep-water section will be made accessible to cattle. The sensitive aquatic habitat can benefit from cattle grazing in conjunction with management guidelines which promote sustaining grasslands and preventing the growth of woody vegetation, tules and cattails.

A2) Aquatic Habitat Expansion (0.25 acres)

A 0.25 acre area of the riparian forest along the northwest section of the pond will be lowered to a depth of approximately 18" to provide shallow water habitat for CRLF and Sierra tree frogs, both food sources of SFGS. This component will involve removing the riparian tree species (mostly willows), removing sediment to achieve a water depth of 10"-20".

A3) Aquatic Habitat Protection (0.5 acres)

A 0.75 acre section of the pond will remain intact as-is.

B. Riparian Habitat Work Summary:

This project will transition 0.5 acres of riparian habitat adjacent to the pond feature to aquatic and grassland habitat to improve conditions for SFGS food source production and access to the aquatic habitat. Sediment control structures will be installed in the 1.5 acres riparian area to be protected. Some riparian trees (mostly willows) will need to be removed to install the structures.

B1) Pond Access Improvement (0.5 acres)

A 0.5 acre area of riparian area will be transitioned to grassland dominated habitat to improve access for SFGS. Riparian tree species will be removed around the west and northern areas of the pond and transitioned to grassland.

B2) Aquatic Habitat Expansion (0.25 acres – same as A2 above)

A 0.25 acre area of the riparian forest along the northwest section of the pond will be lowered to a depth of 10-20" to provide shallow water habitat for CRLF and Sierra tree frogs, both food sources of SFGS. This component will involve removing the riparian tree species (mostly willows), removing sediment to achieve desired water depth, and possibly utilizing the material removed in project component B3.

B3) Sediment Management (Approximately 1.5 acres)

Check dams or berms constructed from material removed from the pond will be placed in the willowed area to the north east 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.

B4) Livestock Fencing

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 CRLF and SFGS. Livestock fencing will also be installed in the upland areas in order to manage grazing.

C. Upland Habitat Enhancement

This 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 SFGS 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 2) during the design process.

C1) 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. Invasive trees and grasses will also be removed from these areas.

C2) The addition of compost to the upland areas treated in C1 above will help improve soil health, encourage revegetation of deep rooting native grasses and help minimize future erosion from these areas.

C3) The woody material removed in C1 above may be mulched and placed in the gullies to provide soil cover and help decrease erosion. Some revegetation and erosion control features may be undertaken in the gullies to further reduce sedimentation in the pond.

C4) Sediment Management Actions

All feasible steps will be taken to reduce potential for erosion in the upland areas treated that surround the gullies. This 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.

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, bi-annual monitoring will be conducted in the spring and fall and the attached photo monitoring and rapid assessment sheets (Exhibits A & B). 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.

Tasks Descriptions:

Task 1 Project Management:

Work included under this task will be carried out by the RCD and will cover administrative work such as contracting, invoicing, reporting, and proposal development.

Task 2 Planning:

Work included under this task will be carried out by the RCD, Alnus Ecological and TBD consultants and construction firms. The RCD will coordinate with agencies on technical review. Planning is expected to take place though April 2019 or April 2020, depending on availability of qualified consultants and contractors which will be hired by the RCD (see Exhibit C Timeline).

- a) Design-build RFP: RCD will coordinate a request for qualification process to identify and contract with a team of consultants and contractors to design, implement and monitor the project.
- b) 35% designs and cost estimate: This sub task will produce 35% designs for aquatic habitat and upland enhancement. 35% designs will be circulated with USFWS, PG&E, landowner and other appropriate agencies and stakeholders for review.
- c) 65% design, cost estimate, updated maintenance and monitoring plan: This sub task will incorporate feedback from reviewers of the 35% designs and produce 65% designs or 90% designs if it is determined a 65% level design review is not necessary; the cost estimate will be updated as needed; and a project maintenance and monitoring plan will be produced which will expand upon the management recommendations outlined in this document above.
- d) Permit application development: With the production of the 65% designs (or 90% if 65% are not created), the RCD will develop and submit necessary permit/agreement applications.
- e) 90% or 100% designs: This sub task will produce 90% or 100% designs which have incorporated feedback from comments to the 65% or 90% designs as applicable.

Task 3 Implementation:

Work included under this task will be carried out by the RCD, Alnus Ecological and TBD construction and design firms. Implementation is expected to occur from May through October of 2019 or 2020 depending on when planning is completed (see Exhibit C Timeline).

- a) Aquatic Enhancement (Objective A)
- b) Riparian Enhancement (Objective B)
- c) Upland Enhancement (Objective C)
- d) Revegetation work occurring in the following winter and spring .
- e) Construction management will occur through initial enhancement, revegetation and maintenance activities.
- f) Biological monitoring will occur during initial enhancement activities.

Task 4 Maintenance and Monitoring:

Work under this task will be carried out by the RCD, Alnus Ecological and TBD design and construction firms. An endowment managed by the RCD will be used to fund this work. Maintenance and monitoring will start in April following the year of initial enhancement activities.

- a) Sediment levels in the pond and forebay will be monitored seasonally for the first two years after initial enhancement activities and every 5 years after that.
- b) Sediment may be removed to ensure longevity of the project.
- c) Revegetation maintenance may be necessary to minimize erosion and enhance habitat
- d) Invasive species, aquatic and woody vegetation removal may be necessary to maintain vegetation cover objectives in aquatic and upland areas.

BUDGET ESTIMATES

The initial habitat enhancement budget is estimated at \$1,000,000 and is based on past RCD projects and discussions with contractors and planners. Any necessary updates to the project budget, scope and boundaries will be established through a design review process that works to meet PG&E's mitigation requirements. This process will be led by project team staff from the RCD, Alnus Ecological and a restoration design firm that will be selected in a competitive bid process. The project team will also work in partnership with the landowner to ensure the proposed area can be feasibly maintained and will deliver maximum benefits to the enhancement of the available riparian and upland areas. An associated endowment, or the like, will be established and used to fund on-going follow-up sediment management in the pond, efforts to minimize encroachment of woody vegetation, weed eradication and monitoring over a 30 year period.

EXHIBIT B



Rapid Assessment Data Form for Ponds

Date _____ Time _____
Observers: _____
Pond ID _____ (cross reference with map) Watershed _____
**Before approaching pond, please attempt to scan with binoculars from 50-200 ft away to survey for wildlife.
Was this done? Yes No Wildlife observed _____
**Representative photographs taken to document features A, C, and D? Yes No

A. Pond Characteristics

- Pond type (circle all that apply): Natural Stock Pond Hill Pond Off-Stream In-Stream Perennial Seasonal
- Water source (circle): Groundwater Stream Surface-Spring Other _____
- Water control structure present? No Yes Describe: _____
- Water present?*
- Approximate area of pond (in area sqft/acre or diameter in ft) _____
- Current % pond volume (% of total capacity, in 5% increments) _____
- Current maximum water depth (if possible): _____
- Elevation difference between current water level and high-water mark _____
- Water quality (circle one)? Turbid Clear Eutrophied (heavy algal mats)
- Pond footprint comprised of open water habitat (no emergent veg.) _____%. If pond is dry, amount unvegetated: _____%
- Emergent/margin vegetation present (circle all that apply): None Cattails Tules Willow Blackberry Other _____
 - Dominant type: _____
 - Total emergent vegetation cover (% of pond footprint): 0% >0-5% >5-10% >10-25% >25-50% >50-75% >75-100%
 - Distribution of total emergent vegetation (relative % of total, nearest 5%): Interior _____% Margin _____%
 - % of pond margin that is vegetated (nearest 5%) _____% Average width/height of vegetation strip along margin _____
 - % of pond margin with overhanging vegetation (nearest 5%) _____%
- Floating Vegetation present? _____ If so, % open water with floating vegetation _____%
- Submerged vegetation (circle): None Algae/Green Matter Rootballs Other _____
 - Total submerged vegetation cover (% of pond footprint): 0% >0-5% >5-10% >10-25% >25-50% >50-75% >75-100%
 - Distribution of total submerged vegetation (relative % of total, nearest 5%): Interior _____% Margin _____%
- Describe presence, type, and abundance of potential basking sites in pond or along margin (e.g., down trees/logs, exposed rocks, etc.):

- Describe presence, type, abundance, and distribution of potential amphibian refugia/aestivation sites along margin or in pond (if dry) (cracks, rodent burrows, down woody debris, thicket, undercut banks, etc.).

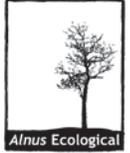
B. Wildlife Information

- *Field technique (circle)- bread in water dip net visual/aural observations
- Fish observed? Yes No ID _____
 - Bullfrogs observed? Yes No
 - Tree frogs observed? Yes No
 - Other frogs observed? Yes No ID _____
 - Pond turtles observed? Yes No
 - Snakes observed? Yes No ID _____
 - Salamander or Newt? Yes No
 - Tadpoles? Yes No ID _____
 - Tri-colored Blackbird Yes No
 - Other Birds Yes No ID _____

Notes on Pond Wildlife Abundance _____

C. Disturbance Or Management Priority (note any evidence of disturbance by livestock, heavy erosion, spillway condition, bank instability or other factors within or adjacent to pond):

EXHIBIT B



D. Adjacent Upland Habitat Characteristics (100 ft-radius around pond)

1. Vegetation types (e.g., grassland, woodland, etc.): _____
2. Abundance of potential amphibian refugia/aestivation/nesting sites observed:

Rodent burrows	Low	Moderate	High	None
Woody debris	Low	Moderate	High	None
Thicket/Duff	Low	Moderate	High	None
Other _____	Low	Moderate	High	None

3. Note any potential barriers or dangers (roads) to amphibian/reptile movement to/from pond (type, location, width, length):

4. Evidence of erosion or gullyng?

E. Notes (general impression of pond and upland habitat quality, continuity between aquatic/upland components, hydrologic characteristics, observed species use of habitat, general impression/thoughts about the pond and restoration potential of the site etc.):

NON-FIELD DATA: (a) How often does this pond dry out? (circle one): Seasonally Annually During Dry Years Only Never
(b) Use GIS to calculate distance to nearest water feature (pond, stream, etc) _____
(b) Other anecdotal or historical data (historic management, species occurrences, etc)-

Exhibit C: Timeline

PG&E Mitigation and Butano Restoration Timeline																																								
	2018												2019												2020												2021			
	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4		
Fish and Wildlife Service																																								
Approves Butano Farms as mitigation																																								
BO Amendment #1 ^[1]																																								
BO Amendment #2 ^[2]																																								
Mitigation approval for BA HCP																																								
Pacific Gas and Electric																																								
Provide Mitigation Proposal to FWS																																								
Enter into Agreement with RCD																																								
Release Funding for Project ^[3]																																								
San Mateo County RCD																																								
Provides Final Concept Design																																								
Provide management plan and effect analysis																																								
Task 1 Project Mangement																																								
Task 2 Planning																																								
Task 3 Implementation: Upland Enhancement																																								
Task 3 Implementation: Aquatic Enhancement																																								
Task 3 Implementation: Riparian Enhancement																																								
Construction Complete, begin monitoring and maintenance																																								

^[1] Amendment to revise Conservation Measure #29 in BO 08ESMF00-2013-F-0430

^[2] Amendment to include restoration project in BO #08ESMF00-2013-F-0430

^[3] Upon FWS approval and RCD agreement execution

^[4] Upon receipt of funding from PG&E