

REQUEST FOR BIDS

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION PROJECT

Sponsored by the
SAN MATEO RESOURCE CONSERVATION DISTRICT

February 14, 2020

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EXHIBIT A: Project Plans and Specifications

EXHIBIT B: Cost Proposal

EXHIBIT C: Sample Contract

EXHIBIT D: San Mateo RCD Insurance Requirements

EXHIBIT E: Labor Compliance Program

EXHIBIT F: Certificate of Compliance

EXHIBIT G: Billing Instructions for Contractors

EXHIBIT H: San Bruno Mountain Lower West Peak Restoration and Monitoring Plan

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San Mateo RCD Board of Directors

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Bid Completion Checklist
SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION PROJECT

1. Introduction

The San Bruno Mountain Lower West Peak Restoration Project (project) will restore butterfly habitat on the lower west peak of San Bruno Mountain State and County Park (San Bruno Mountain). The project is five acres and is a mitigation credit area for mission blue butterfly under Pacific Gas and Electric's (PG&E) Bay Area Habitat Conservation Plan (BAHCP). San Bruno Mountain is a 2,416-acre public park managed by the County of San Mateo Parks Department (County Parks). San Bruno Mountain currently operates under a Habitat Conservation Plan (HCP) (TRA 1983) for federally listed butterfly species including the endangered mission blue butterfly (*Icaricia icarioides missionensis*) and the Callippe silverspot (*Speyeria callippe callippe*). The west peak of San Bruno Mountain in San Mateo County historically was a native grassland habitat that was home to a healthy population of native lupines (*Lupinus* spp.), which hosted the endangered mission blue butterfly (San Mateo County Parks 2016b). The purpose of this project is to restore the 5-acre Lower West Peak restoration site as a functional habitat for the mission blue butterfly through invasive weed control, scrub removal, and plantings; and complete maintenance activities on the 5-acre site, as well as a 2-acre site where initial treatment has already been completed.

Restoration objectives for the Lower West Peak restoration project are:

1. Control the spread of primary target invasive plants;
2. Reduce scrub cover from undesirable woody species in the grassland habitat;
3. Augment existing and/or establish lupine populations (host plant: *Lupinus albifrons* subsp. *collinus*, *L. formosus* subsp. *formosus*, and *L. variicolor*); and
4. Increase cover and species richness of nectar plants for mission blue butterfly.

Several documents guide the management of San Bruno Mountain for federally-listed butterfly species which include: the San Bruno Mountain Area Habitat Conservation Plan (PG&E 2019), the San Bruno Mountain Habitat Management Plan (HMP; TRA 2008), the Assessment of the Past 30 Years of Habitat Management and Covered Species Monitoring Efforts Associated with the San Bruno Mountain Habitat Conservation Plan (Creeside Science 2015), and the Annual activities reports submitted by the County to the U.S. Fish and Wildlife Service.

The San Mateo Resource Conservation District (RCD) seeks qualified contractors (Contractor) to implement a 5-acre restoration project at San Bruno Mountain Lower West Peak and maintain restoration thresholds at this site and an adjacent 2-acre site for five years following implementation. This work will integrate invasive species removal, scrub removal, supplemental seeding and planting, and erosion control in grassland habitat.

Contracting Entity: The RCD is the contracting entity and project manager. 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 Lower West Peak restoration area is located on the West Peak of San Bruno Mountain. It is on a steep south-facing slope located downslope from the old West Peak ranger station and upslope from Royce Way in Daly City. The northern edge is delineated by dense scrub vegetation.

and an unnamed trail at the northeast edge. The southern edge is delineated by dense scrub vegetation. A transmission tower is in the eastern portion of the restoration area. See Figure 1 Project Location and Figure 2 Location of Restoration Areas.

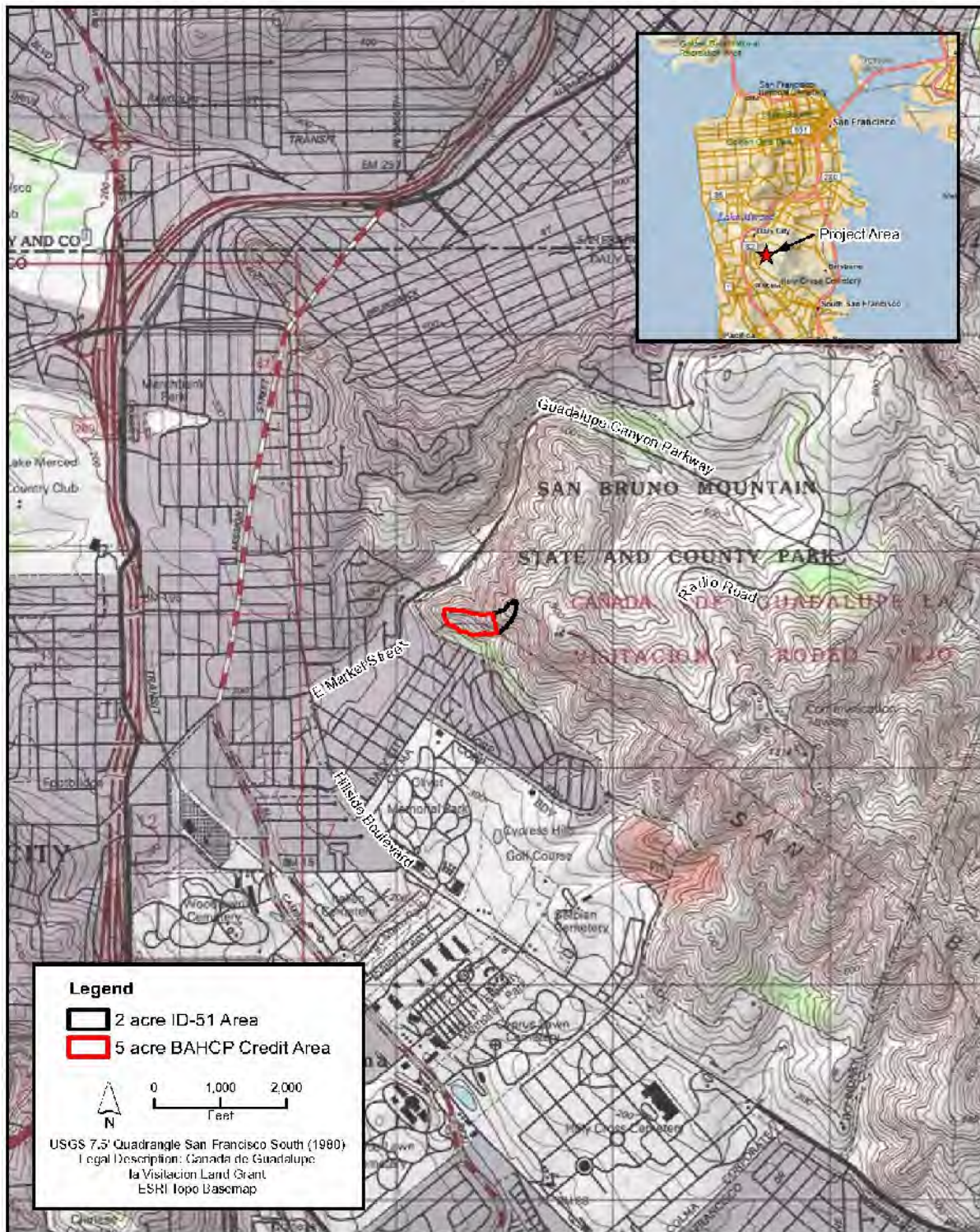


Figure 1.
Project Location
West Peak Restoration Project

San Mateo County, CA
July 2018



Source: USA Topo NGS (2013); Ganda GIS 2018



Figure 2.
Location of the Restoration Areas
West Peak Restoration Project

San Mateo County, CA
July 2018



Source: USA Topo NGS (2013); Ganda GIS 2018

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; and
- C. Thoroughly examined and understand the bid documents, exhibits, plans, specifications, and reports

4. Scope of Work

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

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

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

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

5. Project Cost and Funding

Funding for the project is through grants from PG&E Corporation.

The cost estimate for the project is between \$60,000-95,000.

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 E: Labor Compliance Program

EXHIBIT F: Certificate of Compliance

EXHIBIT G: Billing Instructions for Contractors

EXHIBIT H: San Bruno Mountain Lower West Peak Restoration and Monitoring 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	2/14/2020
RSVP Bid Tour (mandatory)	2/28/2020 (via amy@sanmateorcd.org)
Bid Tour (mandatory)	3/2/2020
Questions/Inquiries Accepted	3/2/2020 – 3/10/2020 at 5:00 pm
Deadline for proposal submissions	3/11/2020 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	3/20/2020
Anticipated Contract Date	4/3/2020
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	5/11/2020
Work Completion Date	10/15/2025

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 always be kept at the job site.

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

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION PROJECT

SUMMARY

The San Bruno Mountain Lower West Peak Restoration Project (project) will restore habitat on the Lower West Peak of San Bruno Mountain State and County Park (San Bruno Mountain) for the benefit of mission blue butterfly (*Icaricia icarioides missionensis*). The project will restore and enhance five acres of habitat for mission blue butterfly through invasive weed control, scrub removal, and plantings. Funding for this project is provided by Pacific Gas & Electric (PG&E) as part of compensatory mitigation for potential impacts to the mission blue butterfly and their habitat.

San Bruno Mountain is a 2,326-acre park located in northern San Mateo County and managed by the County of San Mateo Parks Department (County Parks). The Lower West Peak site is located on the West Peak of San Bruno Mountain, on a steep south-facing slope located downslope from the old West Peak ranger station and upslope from Royce Way in Daly City. The predominant habitat types are dense northern coastal scrub and non-native grassland.

The actions for this project come directly from the San Bruno Mountain Lower West Peak Restoration and Monitoring Plan (Nomad 2019, Exhibit H) which is guided by the San Bruno Mountain Habitat Management Plan (TRA 2008), the Assessment of the Past 30 Years of Habitat Management and Covered Species Monitoring Efforts Associated with the San Bruno Mountain Habitat Conservation Plan (Creekside Science 2015), and the Annual activities reports submitted by the County to the U.S. Fish and Wildlife Service.

GOALS AND OBJECTIVES

The goal of this project is to enhance and restore habitat for the mission blue butterfly. This project will 1. Control the spread of primary and secondary target invasive plants, 2. reduce scrub cover from undesirable woody species in the historic grassland habitat, 3. augment existing and establish lupine populations (host plant: *Lupinus albifrons* subsp. *collinus*, *L. formosus* subsp. *formosus*, and *L. variicolor*), and 4. increase cover of host and nectar plants and species richness of nectar plants for mission blue butterfly.

The RCD seeks contractors to provide a bid for the work in this Project Plan and Specification, including a technical approach to each objective based on the criteria provided here and in the Restoration and Monitoring Plan (Exhibit H).

Restoration objectives and maintenance thresholds for the five-acre site are as follows:

1. Reduce absolute cover of primary invasive targets by 60% after 5 years as compared to cover prior to restoration implementation.
2. Reduce absolute cover of undesirable shrub species to no more than 5% in areas mapped as non-native grassland in the restoration area in the first two years. Maintain shrubs at less than 5% absolute cover in areas mapped as non-native grassland ongoing through the duration of the project (5 years).
3. Plant a minimum average of 100 container plantings per acre of lupine host plants (*Lupinus albifrons* subsp. *Collinus*, *L. formosus* subsp. *Formosus*, and *L. variicolor*). There will be a minimum 75% survival rate of the minimum 100 plants per acre of host plant plantings. There

will be a minimum increase of 10 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the whole restoration project, and not per acre. This target value assumes all three species of lupine will be available for planting.

4. Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the planting islands.

The project will include supplementary action at the 5-acre site and an adjacent 2-acre site implemented in 2018 to maintain restoration thresholds. Actions may include invasive reduction, shrub removal, and plantings on an as-needed basis.

See Table 1 for a summary of maintenance thresholds.

Table 1. Maintenance Thresholds for the Lower West Peak Restoration Area

SPECIES CATEGORY	ATTRIBUTE	TARGET VALUE AFTER MONITORING YEAR 2	TARGET VALUE AFTER MONITORING YEAR 5	REMEDIAL ACTIVITY BASED ON THRESHOLD
Invasive Plant Species (Primary Target Species) Control	Cover	Reduce cover of primary invasive targets by 60% compared to cover prior to restoration implementation.	Reduce cover of primary invasive targets by 90% compared to cover prior to restoration implementation.	Control primary invasive plant species targets. Should management goals not be met at Year 5, one additional targeted weed control event shall be scheduled.
Scrub Control	Cover	Reduce absolute cover of undesirable woody species in areas mapped as non-native grassland to no more than 5% in the restoration area.	Maintain less than 5% absolute cover of undesirable woody species in areas mapped as non-native grassland in the restoration area.	Remove and control undesirable woody species. Should management goals not be met at Year 5, one additional targeted scrub control event shall be scheduled.
Total Number of Lupine Host Plants and Number of each Individual Species	Total Number and Number of each Individual Species	Increase the number of lupine host plants (<i>Lupinus albus</i> subsp. <i>collinus</i> , <i>L. formosus</i> subsp. <i>formosus</i> , and <i>L. variicolor</i>) in the restoration area by a minimum of 128 plants per acre. This is 75% survival of the minimum 171 plants per acre of host plant plantings. There will be a minimum increase of 17 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting.	Increase the number of lupine host plants (<i>Lupinus albus</i> subsp. <i>collinus</i> , <i>L. formosus</i> subsp. <i>formosus</i> , and <i>L. variicolor</i>) in the restoration area by a minimum of 128 plants per acre. This is 75% survival of the minimum 171 plants per acre of host plant plantings. There will be a minimum increase of 17 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting.	Plant additional container plants of lupine host species based on total number of lupine host plants and numbers of individual species. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.

SPECIES CATEGORY	ATTRIBUTE	TARGET VALUE AFTER MONITORING YEAR 2	TARGET VALUE AFTER MONITORING YEAR 5	REMEDIAL ACTIVITY BASED ON THRESHOLD
Cover of Host and Nectar Plants	Total Cover and Cover per Species	Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the habitat islands.	Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the habitat islands.	Additional planting of host and nectar containers based on total cover and cover of individual nectar plant species. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.
Species Richness	Species Richness	A minimum of 70% of the species planted will be present within the restoration site. For example, if 10 different species are planted, 7 of them will be present in the restoration site.	A minimum of 70% of the species planted will be present within the restoration site. For example, if 10 different species are planted, 7 of them will be present in the restoration site.	Additional planting of host and nectar containers to increase species richness. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.

SCHEDULE

Restoration activities include invasive weed removal, scrub removal, planting, seeding, and monitoring. Proposed timing for restoration activities is as follows:

- Baseline data collection (RCD): May 2020
- Initial invasive weed treatment (Contractor): May – September 2020
- Initial scrub removal treatment (Contractor): May – December 2020
- Planting container plants (Contractor): October – December 2020 & December 2021
- Invasive weed treatments, scrub treatments, and hand weeding planting sites as needed based on monitoring results (Contractor): March – September 2021, 2022, 2023, 2024, 2025
- Monitoring (RCD): May and August/September 2021, 2022, 2023, 2024, 2025

INVASIVE WEED TREATMENT

Primary target invasive species in the restoration area include Italian thistle, Portuguese broom, blue gum, pride of Madeira, fennel, Bermuda buttercup, and Monterey pine. Yellow star-thistle was not observed in the restoration area but it was included in case it is detected or becomes established after restoration implementation. A summary of control methods available for each of these species is below and also in the Restoration and Monitoring Plan (see Exhibit H). Italian thistle and fennel are very widespread on site and manual/mechanical control is not feasible, herbicide treatments are recommended for control. Portuguese broom is less widespread and manual/mechanical control would be feasible. Blue gum and Bermuda buttercup are less widespread, however manual/mechanical control is not effective for these species and we recommend herbicide treatment.

Weeding of the restoration area will be a regular part of annual maintenance and will be necessary to allow seeded and planted species to establish, to increase cover of native species, and to keep invasive cover below the target values. Throughout the first season of establishment (January to July), the planting sites will be hand weeded every six weeks to control all primary and secondary target invasive plants and undesirable shrub species. Additional hand weeding will occur as necessary to meet Year 2 and 5 target values. See Exhibit H, Figure 3 for map of vegetation communities.

Italian Thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*)*Manual/Mechanical Control*

Manual or mechanical methods can be utilized when this species is small (DiTomaso et al. 2013). To control by cutting, use a sharpened shovel at the top of the root crown. Grubbing hoes must cut the plants 2 to 4 inches below ground level to prevent re-sprouting from dormant axillary buds. Mowing plant during flowering can greatly reduce seed production, though a single mowing is seldom sufficient due to the wide differences in the maturity of plants in a natural population. For mowing, it is best to wait until plants bolt and are about to flower (May to July) (DiTomaso et al. 2013). This may require repeated visits at weekly intervals over the 4 to 7-week blooming period, because not all plants bloom simultaneously. Plants will regrow if mowed before they are fully bolted. Plants cut 4 days after the first flowers open can produce viable seed (DiTomaso et al. 2013).

Herbicide Treatments

Per the HMP, foliar spraying of Garlon 4 Ultra® (triclopyr) 2 percent concentration, is used to treat Italian thistle in the HCP area (TRA 2008).

Portuguese Broom (*Cytisus striatus*)*Manual/Mechanical Control*

Individuals or small patches will be removed by hand where feasible (Forbert and Naumovich 2016). Hand removal will entail pulling up the entire above-ground plant and at least the upper 4 inches of roots. Hand removal will occur in February to March, prior to seed set, ideally when soils are moist which facilitates complete removal. All inflorescences will be bagged and removed from site. In areas where dense stands once stood and where large seed banks may be present, seeds will be flushed in the first year by disturbing soils with a fine tined rake or similar. Raking should not occur in high quality habitat areas. Flaming may occur in dense seedling patches the following year (Forbert and Naumovich 2016).

Herbicide Treatments

Per the HMP, Portuguese broom is controlled with a 2% Garlon 4 Ultra® (triclopyr) herbicide. The plants are treated by foliar spraying year-round (TRA 2008).

Blue Gum (*Eucalyptus globulus*)*Manual/Mechanical Control*

Hand pulling can remove seedlings and small saplings. Cutting a tree at ground level before it flowers will reduce seed production and deplete the plant's energy reserves. Resprouts are common after treatment. Cutting back regrowth when shoots reach 6-7 feet tall for 4 years or more can eventually kill the tree. Covering cut stumps with black plastic and sealing the edges to exclude sunlight also gives good control, but plastic must be kept in place for at least one year (DiTomaso et al. 2013). Cutting can be combined with herbicide application.

Herbicide Treatments

Per the HMP, after trees are cut, stumps are cut as low to the ground as practical and sprayed with 25% Garlon 4 (triclopyr) herbicide (TRA 2008).

Pride of Madeira (*Echium candicans*)*Manual/Mechanical Control*

Per the HMP, pride of Madeira are cut and the stumps are allowed to decay. Treatment is done in the summer, prior to flowering when the plants are more visible (TRA 2008).

Fennel (*Foeniculum vulgare*)*Manual/Mechanical Control*

The use of a mattock to remove the plant can be successful but is very labor intensive. Digging out individual plants is also possible, but also labor intensive. The HMP suggests mechanical treatment of mature fennel stands in spring through fall prior to herbicide application in spring (Forbert and Naumovich 2016). Therefore, mechanical removal of the above ground plant material using brushcutters and loppers will be conducted spring through fall.

Herbicide Treatments

Per the HMP, basal foliar spraying of 2% Garlon 4 Ultra® (triclopyr) herbicide should be used to treat fennel in the HCP area. Cutting fennel and treating resprouts has also been successful on SBM. Herbicide treatment should occur in February to May prior to seed formation (TRA 2008).

Monterey pine (*Pinus radiata*)*Manual/Mechanical Control*

Per the HMP, Monterey pine trees are cut at the base with a chain saw. Herbicide is not needed to kill the stump. Resprouts are easily removed by hand (TRA 2008).

Herbicide Treatments

Herbicide treatment will not be used to control Monterey pine as West Peak since there are only a couple of individuals present and they can be controlled manually.

Bermuda Buttercup (*Oxalis pes-caprae*)*Manual/Mechanical Control*

Hand weeding is used extensively to reduce infestations, but because it is exceedingly difficult to remove all of the bulbs, new plants usually appear (DiTomaso et al. 2013). Care must be taken to remove the entire plant, including underground rhizome and bulbs (DiTomaso et al. 2013).

Herbicide Treatments

Per the HMP, Bermuda buttercup is controlled with a foliar application of 2% Garlon 4/Roundup Pro mixture when a monoculture is present and 2% Garlon 4 Ultra® herbicide (triclopyr) when the infestation is intermixed with perennial grasses (TRA 2008). Treatment window on SBM is early December – January annually throughout the project area for best results but can be treated later if necessary.

Yellow Starthistle (*Centaurea solstitialis*)*Manual/Mechanical Control*

Manual removal of yellow starthistle is most effective with small patches or where plants are sporadically located in the grassland system. To ensure that plants do not recover it is important to detach all above-ground material. The best time for manual removal is after plants have bolted but before they produce viable seed. Mowing is most effective when 2 to 5% of the total population of inflorescences is in bloom. Mowing too early can result in higher seed production. Plants should be cut below the height of the lower branches. Mowing will need to be continued for multiple years to be successful (DiTomaso et al. 2013).

Herbicide Treatments

The HMP does not discuss treatment of yellow starthistle. Garlon 4 Ultra® (triclopyr) herbicide can be used from postemergence from seedling to bolting stage (DiTomaso et al. 2013). Roundup® (glyphosate)

herbicide can be used from postemergence from bolting to beginning of flowering and must be applied to rapidly growing yellow starthistle plants for it to be effective (DiTomaso et al. 2013).

Secondary Target Species and Annual Grasses

Secondary target species include bitter lettuce and milk thistle. Annual grasses including wild oats, ripgut brome, and soft chess (*Bromus hordeaceus*) are tertiary target species.

Manual/Mechanical Control

Secondary target species and annual grasses will be controlled as needed in the vicinity of native plants and around new plantings to reduce competition while new plants are establishing in the site. Manual control will consist of hand pulling and mowing. Mowing using a weed whip in early spring to reduce competition with desirable species and in late spring prior to seed set can control annual grasses.

Herbicide Treatments

Secondary species will be controlled with glyphosate and triclopyr following the HMP. A grass-selective herbicide may be used to control annual grasses in the vicinity of plantings. Use of a grass-selective herbicide must be approved by County Parks as it is not specified for use in the HMP.

SCRUB REDUCTION

Manual, mechanical, and chemical methods can be used to remove scrub and seedlings of undesirable woody species within the restoration area. These species include coyote brush, California sagebrush, and coffeeberry, among others deemed appropriate by the restoration biologist. See Exhibit H, Figure 3 for map of vegetation communities.

Scrub removal in the restoration area will be documented and notes recorded including date, area treated (recorded using a GPS unit to collect data), and treatment method including herbicide, application rate, and application method, if applicable). If maintenance threshold target values for scrub cover are not met, additional scrub removal will occur following methods detailed in the project plan and modified based on prior year's results.

Scrub removal can occur during the dry season. If it's conducted during the non-nesting season (September 1-January 31), impacts to nesting birds will be avoided; as the nesting bird season is February 1 to August 31. Scrub removal can occur during the nesting season if surveys for nesting birds are completed, as spring is an effective treatment window for scrub (Arechiga, pers. comm. 2018). Scrub removal should be completed in the dry season so the site is accessible.

Manual/Mechanical Control

Per the Year 2015 Activities Report, during handwork, seedlings and saplings are pulled from the crown upward to reduce soil disturbance. During mechanical control, a brush cutter with a metal triple blade or a chainsaw is used to cut through plants with woody stem tissue. The blade is used to gain access the root crown and is often followed by an herbicide application if the species is known to sprout. Chainsaws can be used to cut material and remove it from site (San Mateo County Parks 2016a).

SUPPLEMENTAL SEEDING AND PLANTING

A minimum average of 100 container plantings shall be planted per acre of lupine host plants (*Lupinus albifrons* subsp. *collinus*, *L. formosus* subsp. *formosus*, and *L. variicolor*). There will be a minimum 75% survival rate of the minimum 100 plants per acre of host plant plantings. There will be a minimum

increase of 10 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting. RCD will provide container plants from Mission Blue Nursery.

Areas will be supplementally seeded and/or planted if Year 2 and Year 5 maintenance threshold target values for host and nectar plants are not met. Supplemental seeding and planting may occur only on portions of the site if other portions are meeting target values. Based on monitoring data and seed availability, the restoration biologist will determine what species should be used.

All supplemental seeding or planting will adhere to the guidelines presented in the project plan and will be coordinated with County Parks. Final approval of all seed mixes and other materials brought in from outside of San Bruno Mountain must be approved by the County Parks. A seed mix for coastal terrace prairie on West Peak is included in Table 2 in case seeding is necessary. The exact mix used will depend on the availability of seed. The seeding rate will be determined by seed availability and will average 10-25 seeds per square foot.

Table 2. West Peak Seed Mix

SCIENTIFIC NAME	COMMON NAME	LIFE FORM
<i>Achillea millefolium</i>	yarrow	perennial
<i>Elymus glaucus</i> subsp. <i>glaucus</i>	blue wildrye	perennial
<i>Festuca idahoensis</i>	Idaho fescue	perennial
<i>Stipa pulchra</i>	purple needlegrass	perennial

Reseeding with locally grown, native seed is the best ecological practice, but due to cost, it often cannot be used over broad areas. Instead, seeding is better suited for use in specific areas that have had intensive invasive species control work, have a high erosion potential and/or within habitat restoration islands. During the restoration project, invasive weed and brush removal will result in site disturbance.

Direct seeding of annual species will occur within invasive weed control areas and scrub removal areas, as necessary. Seeding will occur in other areas including around container plantings if sufficient seed is available. All sites will be hand seeded due to the limited availability of seed.

The planting palette for the West Peak restoration area is shown in Table 3. The planting palette includes butterfly host and nectar plants for mission blue butterfly.

Table 3. West Peak Container Planting Palette

SCIENTIFIC NAME	COMMON NAME	BUTTERFLY HOST OR NECTAR PLANT ¹
<i>Achillea millefolium</i>	yarrow	MB nectar plant
<i>Danthonia californica</i>	California oat grass	-
<i>Elymus glaucus</i> subsp. <i>glaucus</i>	blue wildrye	-
<i>Eriogonum latifolium</i>	coast buckwheat	MB nectar plant
<i>Heterotheca sessiliflora</i> subsp. <i>bolanderi</i>	Bolander's goldenaster	MB nectar plant
<i>Horkelia californica</i> var. <i>californica</i>	California horkelia	MB nectar plant
<i>Lupinus albifrons</i> var. <i>collinus</i>	silver bush lupine	MB larval food plant
<i>Lupinus formosus</i> var. <i>formosus</i>	summer lupine	MB larval food plant
<i>Lupinus variicolor</i>	varied color lupine	MB larval food plant
<i>Phacelia californica</i>	California phacelia	MB nectar plant
<i>Stipa pulchra</i>	purple needlegrass	-

¹ MB = MB butterfly

A total of 2,500 plants will be planted over the 5-acre site which is 500 plants/acre. A planting of 500 plants per acre is equal to approximately 10 foot spacing throughout the entire site, however plantings will be grouped into habitat islands which are discussed below. The first winter will include a planting of a minimum of 300 plants per acre (1,500 plants per 5 acres). Additional planting of a minimum of 200 plants per acre (1,000 plants per 5 acres) will occur the second winter. At least 20% of these plantings (100 plants per acre, 500 plants per 5 acres) will consist of butterfly host *Lupinus* spp. (*L. albifrons* var. *collinus*, *L. formosus* var. *formosus*, and *L. variicolor*). Plantings will be clustered into habitat islands which are detailed below. The number of containers of each of the other species on the planting pallet will be determined based on availability of nursery stock. A diversity of species will be planted.

EROSION CONTROL

Appropriate Best Management Practices (BMPs) will be installed as part of the project in areas where soil is disturbed or there is a risk of soil moving offsite. Appropriate BMPs will be determined during and after restoration implementation in coordination with the restoration biologist and the County.

ACCESS AND STAGING

Access to the Lower West Peak on San Bruno Mountain is limited. County Parks rangers must be notified of work schedules for all contractors. Contractors must adhere to County parks hours, which may vary. Contractors must wear identifying uniforms, such as t-shirts or safety vests (recommended) with company logo. Note cellphone service is not guaranteed throughout the site. Please plan accordingly for ranger notification or emergency situations. Contractor will be given combo lock number for gates.

AVOIDANCE AND MINIMIZATION MEASURES

Potential habitat is available on San Bruno Mountain for the federally listed mission blue butterfly, callippe silverspot butterfly, San Bruno elfin butterfly, bay checkerspot butterfly, as well as several special status plant species. These species cannot be handled or harassed at any time.

The following Avoidance and Minimization Measures must be adhered at all times.

General Protections for Projects within Conserved Habitat

1. Biological Monitoring. An approved Qualified Biologist shall monitor and is required to be on site for most projects undertaken in Conserved Habitat. No work, laydown, or staging may occur without a biologist on site. The biologist on site will have the authority to temporarily halt work

when safe to do so in coordination with the Project Lead/ Manager to avoid impacts to listed species or sensitive habitat.

2. An approved Qualified Biologist will conduct visual surveys of the Project Area before implementation of Project activities to determine: a. the presence or absence of Federally listed species b. suitable habitat for Federal listed species c. other sensitive resources and species of concern
3. An approved Qualified Biologist will flag all sensitive biological resources for avoidance.
4. Special Status Wildlife: If a special status species is observed in the work area, work shall stop immediately and the individual(s) shall be allowed to leave on its own. No special status wildlife or plant species shall be touched, picked up, and/or removed from the site.
5. An approved Qualified Biologist will deliver Environmental Awareness Training.
 - i. Prior to starting any work all Project participants must receive training on environmental and cultural conditions and requirements applicable to the project.
 - ii. If additional crewmembers arrive later in the job, they must go through the training prior to beginning work.
 - iii. Training will include a discussion of all of the avoidance measures that must be implemented during work.
 - iv. Training will include information on the federal and state Endangered Species Acts and the consequences of noncompliance with these acts. Workers will be informed about the presence, life history, and habitat requirements of all special-status species, including nesting birds that have the potential to occur near or within the Project Area.
 - v. Training will also include information on state and federal laws protecting nesting birds, mission blue butterfly, callippe silverspot butterfly, San Bruno elfin butterfly, bay checkerspot butterfly, all butterfly specific host plants, as well as several special status plant species.,
 - vi. If applicable, training concerning pre-construction vegetation removal requirements, limits of work space and areas avoided by design, top soil salvage requirements, vehicle wash measures, parking limitations, wetlands and other water resources.
 - vii. Provide an educational brochure that will include color photos of sensitive species and a discussion of avoidance and minimization measures that must be implemented.
 - viii. Provide documentation to the Habitat Management Supervisor the methodology to verify that Project Participants have taken the training.
6. Clean Vehicles: All vehicles used for the Project shall be cleaned and free of weeds when brought into the Project area to prevent the spread and/or introduction of invasive plant species and sudden oak-death disease. All vehicles and equipment must be washed/ power washed prior to entering the site.
7. Clean Personnel and Equipment: All personnel and their field gear must be free from any vegetation, soil, mud, and seeds in order to minimize the spread of noxious weeds, diseases, and pests.
8. Invasive plants in the Project Area shall be removed. Methods of removal may involve hand work or regulated use of herbicides. Treatment of Invasive weeds is required annually for up to a five-year period post vegetation clearance. Buffer areas immediately adjacent to Conserved Habitat require on-going maintenance to control invasive species and coastal scrub, consistent with the goals of the San Bruno Mountain Habitat Management Plan.
9. Disturbed areas must not pose a risk for erosion or sediment discharge into streams or water bodies. 10. Disturbed areas that are to be revegetated will be replanted with habitat appropriate native plants in accordance with the San Bruno Mountain Habitat Conservation Plan and approved by the Habitat Manager prior to installation.

10. No petroleum products, chemical, silt, fine soil, or any substance or material deleterious to sensitive species shall be allowed within Conserved Habitat.
11. The number and size of the staging areas and access routes and the footprint of work activities shall be limited to the minimum number and amount possible. All boundaries and routes shall be clearly marked and situated outside of all HCP conservation areas, wetland and riparian areas. a. No access, excavation, parking, laydown, or staging may occur outside of the approved Project Area as shown in Project Maps or Construction drawings. Only approved access and roads as shown on the maps/drawings may be used. No alternative access routes, off-road vehicle access, or turning around is allowed anywhere not identified on the maps/drawings.
12. All staging areas and fueling or maintenance of vehicles and equipment shall occur outside of Conserved Habitat and at least 65 feet from any water body, drainages (including storm drains) or riparian habitat. a. No petroleum products, chemical, silt, fine soil, or any substance or material deleterious to sensitive species shall be allowed to pass into or be placed where it could enter a stream channel. Any spills of hazardous materials shall be cleaned up and/or removed immediately. Any such spills shall be reported to San Mateo County Parks. b. Major vehicle maintenance, repairs, and washing shall be done off-site. c. Vehicular and equipment refueling is prohibited.
13. All trash, debris, fencing, and flagging removed from the Project area shall be disposed of at an approved disposal site.
14. Prohibited activities. Trash dumping, firearms, open fires (such as barbecues), hunting, and pets are prohibited at all work locations and access roads. No smoking in or near the worksite, except in Environmental Inspector and Safety Inspector designated areas outside of San Bruno Mountain Park. Smoking is prohibited within the Park.
15. Spilled dry materials shall be swept up immediately.
16. No monofilament plastic will be used for erosion control (e.g. matting, fiber roll, wattles, silt fencing backing or sod) in Project Area. Appropriate materials are burlap, coconut fiber, or appropriate alternative. All wattles must be certified weed free and sterile.
17. Open pits that may entrap wildlife shall be covered at night. Open pipes should be inspected prior to blocking off to ensure wildlife are not entrapped within them.

Nesting Bird Protections (February 1 – September 1)

1. Nest surveys are required for all vegetation work within bird nesting season:
 - i. If any nests are detected within a project area, a no activity buffer zone will be delineated around the nest (CDFG typically recommends a 50-foot radius buffer zone around active songbird nests and a 250-foot buffer zone around active raptor nests).
 - ii. No habitat management activities can be performed within the buffer zones during the bird nesting season (February 1 to September 1), or until the nest is determined to be no longer active.
2. Herbicide and Hand Control Projects for Invasive Plants that are conducted year-round: The habitat management supervisor (or an approved biologist by the habitat management supervisor) should conduct pre-project surveys for nesting birds and other wildlife prior to commencing herbicide and/or hand control work. The habitat management supervisor or qualified biologist must be competent in identifying signs of wildlife usage (nests, dens, etc.).
3. For projects near drainages, work should be scheduled for the dry season (June to August) to the greatest extent possible, to minimize any potential impact to aquatic areas. A 20-foot buffer zone on both sides of drainages is currently required for non-aquatic approved herbicides (Forbert, pers. comm). c. Invasive species control work targeting species utilized as nectar plants by the mission blue, callippe silverspot butterflies, and/or San Bruno elfin butterflies should be

treated prior to the flowering time of the invasive species to prevent impacts to nectaring butterflies.

Vegetation Clearance Projects

1. Vegetation removal will be minimized to the extent feasible to complete work.
2. Care will be taken during vegetation removal to avoid any special-status plant species and flagged resources shall be avoided by at least a 3-foot buffer.
3. Invasive plants in the Project Area shall be removed. Methods of removal may involve hand work, mechanical, or regulated use of herbicides.
4. Treatment of invasive weeds is required annually for up to a five-year period post vegetation clearance.
5. Buffer areas immediately adjacent to Conserved Habitat require on-going maintenance to control invasive species and coastal scrub spread into Conserved Habitat, consistent with the goals of the San Bruno Mountain Habitat Management Plan.
6. Brush and Tree Clearing Projects (using mechanical methods, goat grazing, prescribed burning or other methods)
7. Shall be limited to the fall and/or winter months (September 1 to February 1), unless:
 - i. Pre-project surveys for nesting birds are conducted and impacts to nesting birds are determined to be insignificant.
 - ii. Tree and woodland removal projects should have pre-project assessments for roosting bat species.
 - iii. Project activities should not be conducted within a 100-foot buffer zone on both sides of drainages unless these activities are deemed necessary to remove an invasive species protect a listed species, and/or have soil and slope aspects that provide suitable conditions for grassland restoration within the buffer zone. Appropriate erosion control measures will be implemented for these exceptions. This will provide additional protection to species that nest near drainages and minimize the potential for erosion and sedimentation pollution.

Invasive Species Introduction into Project Area

1. An approved Qualified Biologist shall verify that the spread of invasive exotic plant species is being avoided to the maximum extent possible through the inspection of personnel, equipment, and vehicles.
2. All equipment, work and personal trucks/ cars arriving onsite must be clean and free of soils and plant material. In order to do so, prior to arrival on site, vehicles and equipment that have been driven off road (grass/dirt) shall be washed either at a car wash or other approved area. This requirement for washing tires and the undersides of the body of the vehicle applies to all vehicles and equipment arriving onsite that have been driven off road prior to arrival on the project. Vehicles that have been washed and then only driven on pavement do not need to repeat the washing.
3. The approved Qualified Biologist will document inspections have occurred on daily monitoring forms and has the authority to request that personnel, equipment, and/or vehicles be turned around and cleaned and/or washed prior to entering the work site.

SITE PHOTOS



Non-native grassland in the restoration area with scattered shrubs.



Non-native grassland in the foreground and northern coastal scrub in the distance in the restoration area.



Portuguese broom and fennel in the restoration area.



Fennel in the restoration area and scattered shrubs.



Senescent Italian thistle in the foreground and Pride of Madera in the distance to the right in the restoration area.



Senescent Italian thistle in the foreground and young Monterey Pine in the distance in the restoration area.

EXHIBIT B

Cost Proposal

Error! Reference source not found.SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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. If subcontractors will be used at a later date, they will need to be approved in writing by the RCD.

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 _____, 2020 is by and between the **SAN MATEO RESOURCE CONSERVATION DISTRICT**, a political subdivision of the State of California, hereinafter referred to as "**RCD**," and **CONTRACTOR**, hereinafter referred to as "**CONTRACTOR**."

WITNESSETH:

WHEREAS, 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: _____
Kellyx Nelson, Executive Director
San Mateo Resource Conservation District

EXHIBIT A
**SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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 journey person, 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 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
SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION PROJECT

TO: SAN MATEO RESOURCE CONSERVATION DISTRICT

PROJECT: SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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

SAN BRUNO MOUNTAIN LOWER WEST PEAK RESTORATION 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

San Bruno Mountain Lower West Peak Restoration and Monitoring Plan

**SAN BRUNO MOUNTAIN
LOWER WEST PEAK
RESTORATION AND MONITORING PLAN**



Prepared for:
Pacific Gas and Electric Company

Prepared by:



822 MAIN STREET
MARTINEZ, CALIFORNIA 94553
(925) 228-1027

**OCTOBER 2019
REVISED JANUARY 2020**

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Section 1. INTRODUCTION

1.1. PURPOSE OF RESTORATION PLAN

This Restoration and Monitoring Plan (Restoration Plan) details restoration and monitoring activities for the 5-acre Lower West Peak restoration project which is a credit area for mission blue butterfly under PG&E's Bay Area HCP (BAHCP). The Lower West Peak Restoration site is downslope of the 2-acre ID-51 Mitigation Area, which was planted in winter 2018/2019. A Restoration and Monitoring Plan for the ID-51 Mitigation Area was prepared in 2018 (Nomad Ecology 2018) and approved by the County and USFWS. monitoring and reporting requirements for the ID-51 site are detailed in that Plan.

San Bruno Mountain State and County Park (San Bruno Mountain) is a 2,416-acre public park managed by the County of San Mateo Parks Department (County Parks). San Bruno Mountain currently operates under a Habitat Conservation Plan (HCP) (TRA 1983) for federally-listed butterfly species including the endangered mission blue butterfly (*Icaricia icarioides missionensis*) and the Callippe silverspot (*Speyeria callippe callippe*). The West Peak of San Bruno Mountain in San Mateo County historically was a native grassland habitat that was home to a healthy population of native lupines (*Lupinus* spp.), which hosted the endangered mission blue butterfly (San Mateo County Parks 2016b). Over time, without grazing and fire which historically maintained this grassland, the area has become overgrown with woody scrub and invasive plants (San Mateo County Parks 2016b). This has reduced the quality of the habitat and limited the ability of the butterflies to occupy the area. The purpose of this plan is to restore the 5-acre Lower West Peak restoration site as a functional habitat for the mission blue butterfly through invasive weed control, scrub removal, and plantings.

Restoration objectives for the Lower West Peak restoration project are: 1) Control the spread of primary target invasive plants; 2) Reduce scrub cover from undesirable woody species in the grassland habitat; 3) Establish lupine populations [silver bush lupine (*Lupinus albifrons* var. *collinus*), summer lupine (*L. formosus* var. *formosus*), and varied lupine (*L. variicolor*)]; 4) Increase cover and species richness of nectar plants for mission blue butterfly. These objectives are detailed in Section 3.

This Restoration Plan discusses restoration planning and monitoring efforts including: a brief description of the restoration project area; goals and objectives of the restoration project; recommendations for site restoration, including invasive weed control, scrub removal, and planting; plant palettes including container plantings and seed mixes; planting and seeding methodology; and monitoring and reporting for the Lower West Peak restoration site. The duration of the project is five years.

1.2. SAN BRUNO MOUNTAIN FRAMEWORK

Several documents guide the management of San Bruno Mountain for federally-listed butterfly species. These include:

- *San Bruno Mountain Area Habitat Conservation Plan*
- *San Bruno Mountain Habitat Management Plan* (HMP; TRA 2008)
- *Assessment of the Past 30 Years of Habitat Management and Covered Species Monitoring Efforts Associated with the San Bruno Mountain Habitat Conservation Plan* (Creekside Science 2015),
- Annual activities reports submitted by the County to the U.S. Fish and Wildlife Service.

These documents are summarized below. This restoration plan is consistent with the existing management framework for San Bruno Mountain.

1.2.1 SAN BRUNO MOUNTAIN AREA HABITAT CONSERVATION PLAN

The purpose of the 1982 HCP (TRA 1983) is to preserve and enhance habitat for an endangered species, the mission blue butterfly, in conjunction with limited development on San Bruno Mountain. Three endangered species of butterfly are found on San Bruno Mountain – mission blue, callippe silverspot, and the San Bruno elfin (SBE; *Callophrys mossii bayensis*) butterflies. Butterfly distribution corresponds closely with distribution of their specific host plants: i.e. silver bush lupine, summer lupine, and varied lupine for the mission blue; johnny jump-up (*Viola pedunculata*) for the callippe silverspot; and Pacific stonecrop (*Sedum spathulifolium*) for the San Bruno elfin. The HCP includes a historical review of the area, the biological principles, and the institutional arrangement for the HCP operations. It also details a specific plan for each of the parcels of land on San Bruno Mountain.

This restoration project fits into the goals of the HCP by restoring functional habitat for the mission blue butterfly on the West Peak of San Bruno Mountain.

1.2.2 SAN BRUNO MOUNTAIN HABITAT MANAGEMENT PLAN

The purpose of the *San Bruno Mountain Habitat Management Plan* (HMP; TRA 2008) is to provide effective guidance for the management and monitoring of:

- a) the habitat of the mission blue, callippe silverspot, and San Bruno elfin butterflies; and
- b) the overall native ecosystem of San Bruno Mountain.

The HMP provides a strategic plan for implementation of the management and monitoring programs of the HCP. It includes biological goals and objectives for covered species and their habitat as well as provides an implementation and adaptive management program to meet the goals and objectives, consistent with US Fish and Wildlife Service's (USFWS) 5-Point Policy for Reviewing Habitat Conservation Plans. The HMP contains a detailed discussion of threats to butterfly habitat, rare plants, and native plant communities including native scrub encroachment and invasive weeds, as well as habitat management methods and prescriptions.

Per the HMP, butterfly habitat has been managed through the “habitat island” approach. Habitat islands are areas approximately 0.1 - 1.0 acre in size that can be managed more thoroughly using mowing, hand control, herbicide and replanting to establish and maintain butterfly host and nectar plants. This approach has been used as a method for creating or enhancing endangered butterfly habitat (primarily mission blue) through the planting of host and nectar plants in suitable locations.

This restoration project is consistent with the HMP and incorporates the habitat island approach to establishing habitat through planting endangered butterflies' host and nectar plants in suitable locations. In addition, this restoration project includes removal of shrubs and invasive plant species in grassland habitat which is consistent with the HMP.

1.2.3 30-YEAR ASSESSMENT

In February 2015, Creekside Center for Earth Observation (Creekside Science) completed the *Assessment of the Past 30 Years of Habitat Management and Covered Species Monitoring Efforts Associated with the San Bruno Mountain Habitat Conservation Plan*, here on referred to as “the 30-Year Assessment” (Creekside Science 2015).

The 30-Year Assessment includes recommendations for more focused vegetation management activities to further efforts to maintain and improve habitat for the covered species. The 30-Year Assessment (Creekside Science 2015) identified “Priority Grassland Management Areas” which are areas identified for management priority to maintain and improve butterfly habitat. Stewardship tools identified for the Priority Grassland Management Areas include scrub encroachment management and invasive weed

removal as well as prescribed burning and grazing. The Priority Grassland Management Areas are further divided into Priority 1 - Essential, Priority 2 – Valuable, and Priority 3 - Potential Habitat. Based on a GIS shapefile of the Grassland Management Areas provided by the County, the Lower West Peak restoration project area is a Priority 3 – Potential Habitat grassland management area. Priority 3 - Potential Habitat are lower quality priority grassland that may have historically supported Callippe silverspot or mission blue but currently are not considered butterfly habitat (Creekside Science 2015). These areas may now contain closed canopy shrublands, dense monoculture of invasive weeds, or have well-established non-native annual cover of plants that directly compete with butterfly host and nectar plants. These locations will need well-crafted restoration plans, and restoration will be expensive in these areas (Creekside Science 2015).

1.2.4 ANNUAL ACTIVITIES REPORT FOR COVERED SPECIES

Annual activities reports are prepared each year that summarize the monitoring and the status of species covered under the HCP, as well as discuss vegetation management activities carried out to support habitat improvements to benefit covered species. The reports are prepared for submission to the U.S. Fish and Wildlife Service.

According to the 2015 Annual Report (San Mateo County Parks 2016a), scrub encroachment is a serious threat to the quality of grasslands and prairie habitats that support mission blue butterfly populations scattered throughout the HCP area. Habitat management should include native scrub control, containment of noxious exotic plants, and continued treatment of invasive plant species that have the potential to impact covered species habitat. The 30-Year Assessment provided clarity on where to focus immediate efforts to secure and protect high priority grasslands (Priority Grassland Management Areas).

This restoration project is consistent with the strategy outlined in the 2015 Annual Report, as this restoration project includes removal of invasive weeds and native scrub that has encroached on the grassland in the restoration area, and planting in order to improve habitat for covered butterfly species.

Section 2. EXISTING CONDITIONS

2.1. RESTORATION AREA LOCATION

The Lower West Peak restoration area is located on the West Peak of San Bruno Mountain (Figures 1 and 2). It is on a steep south-facing slope located downslope from the old West Peak ranger station and upslope from Royce Way in Daly City. The northern edge is delineated by dense scrub vegetation and an unnamed trail at the northeast edge. The southern edge is delineated by dense scrub vegetation. A transmission tower is in the eastern portion of the restoration area. The 2-acre ID-51 restoration area is adjacent upslope to the east (Figures 1 and 2).

2.2. SITE VISIT

Nomad Ecology restoration ecologist Erin McDermott conducted a site visit of the Lower West Peak restoration area on August 30, 2019. During the site visit, the entire restoration area was walked and observations recorded on plant species present, invasive weeds present, locations of shrubs, access routes, and steepness. Vegetation communities and locations of fennel (*Foeniculum vulgare**) and Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus**) were mapped (Figure 3). An additional site visit was conducted on March 12, 2019.

During a site visit on May 21, 2018, Ms. McDermott surveyed areas of coastal terrace prairie on San Bruno Mountain mapped as Priority Grassland Management Areas (Priority 1) and recorded general notes about host and nectar plant and other native species composition. These areas include West Hogback, areas near Owl Canyon Owl Canyon, and under the PG&E Transmission lines near Army Road. In addition, a stand of silver bush lupine south of West Peak in scrub habitat was visited.

2.3. EXISTING VEGETATION COMMUNITIES

Based on the GIS shapefile provided by the County, vegetation communities within the restoration area include coastal scrub and logged eucalyptus forest. As observed on the August 2019 site visit, the 5-acre Lower West Peak restoration area is characterized by non-native grassland (4.2 acres) and northern coastal scrub (0.8 acres) (Figure 3). Non-native grassland and northern coastal scrub are described below.

2.3.1 NON-NATIVE GRASSLAND

As described in the HMP (TRA 2008), non-native grasslands are dominated by wild oat (*Avena barbata**), ripgut brome (*Bromus diandrus**), velvet grass (*Holcus lanatus**), and Italian ryegrass (*Festuca perennis**). Associated non-native forb species are a significant component of this community including mustards (*Brassica* spp.*, *Hirschfeldia incana**), wild radish (*Raphanus sativus**), filaree (*Erodium* spp.*), sow thistle (*Sonchus oleraceus*), hairy cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*) and Bermuda buttercup (*Oxalis pes-caprae**).

The existing grassland in the Lower West Peak restoration area is characterized as non-native grassland. There are scattered stands of purple needlegrass (*Stipa pulchra*) within the non-grassland matrix, particularly immediately adjacent to the trail in the western portion of the site. Plant species found in non-native grassland in the restoration area are listed in Table 1. Shrubs typical of northern coastal scrub were scattered throughout the non-native grassland (Table 1).

* Denotes a non-native species which is a species with an origin other than California.

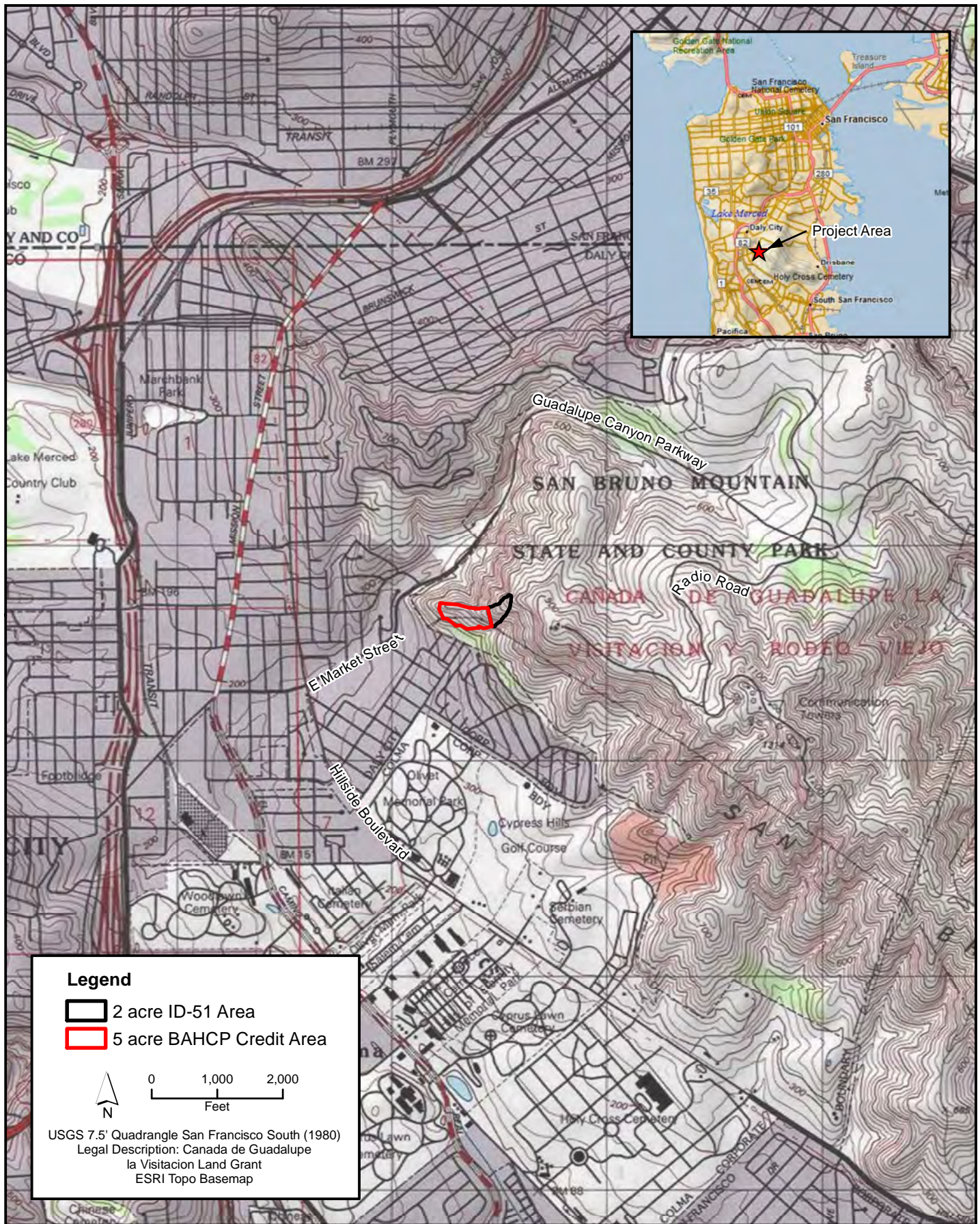


Figure 1.
Project Location
West Peak Restoration Project

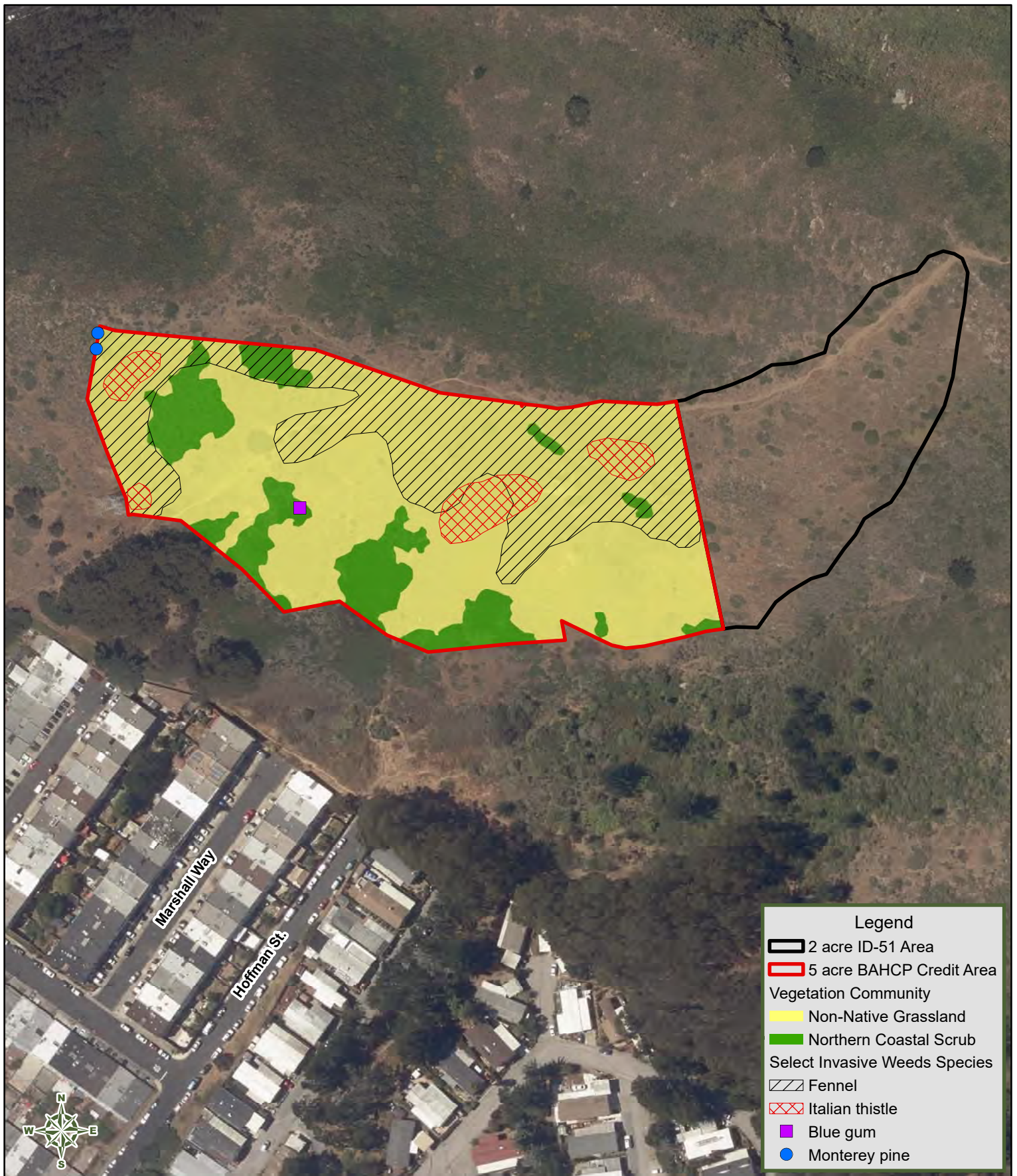
San Mateo County, CA
 July 2018





Figure 2.
Location of the Restoration Areas
West Peak Restoration Project

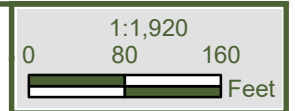




September 2019



Figure 3
Vegetation Communities and Fennel Locations
 Lower West Peak Restoration Project



Vegetation communities and select invasive weed locations were mapped in the field by Nomad Ecology on August 30, 2019.

Sources: San Mateo County Ortho-Imagery 2018.

San Bruno Mountain, San Mateo County, California

Table 1. Plant Species Observed in Non-Native Grassland in the Restoration Area

SCIENTIFIC NAME	COMMON NAME	LIFE FORM
<i>Acaena pinnatifida</i>	Argentinian bidy bidy	perennial
<i>Avena barbata</i> *	wild oats	annual
<i>Artemisia californica</i>	California sagebrush	shrub
<i>Baccharis pilularis</i>	coyotebrush	shrub
<i>Briza maxima</i> *	rattlesnake grass	annual
<i>Bromus diandrus</i> *	ripgut brome	annual
<i>Bromus hordeaceus</i> *	soft chess	annual
<i>Calystegia purpurata subsp. purpurata</i>	pacific false bindweed	perennial
<i>Carduus pycnocephalus subsp. pycnocephalus</i> *	Italian thistle	annual
<i>Convolvulus arvensis</i> *	field bindweed	perennial
<i>Cynosurus echinatus</i> *	dogtail grass	annual
<i>Epilobium brachycarpum</i>	willow herb	annual
<i>Erigeron canadensis</i>	Canadian horseweed	annual
<i>Eriogonum latifolium</i>	coast buckwheat	perennial
<i>Eschscholzia californica</i>	California poppy	annual, perennial
<i>Festuca perennis</i> *	Italian ryegrass	annual
<i>Foeniculum vulgare</i> *	fennel	perennial
<i>Frangula californica subsp. californica</i>	coffeeberry	shrub
<i>Gastridium ventricosum</i> *	nit grass	annual
<i>Geranium dissectum</i> *	cut-leaved geranium	annual
<i>Grindelia hirsutula</i>	hairy gumweed	perennial
<i>Hypochaeris radicata</i> *	hairy cat's ear	perennial
<i>Lactuca virosa</i> *	bitter lettuce	perennial
<i>Lysimachia arvensis</i> *	scarlet pimpernil	annual
<i>Oxalis pes-caprae</i> *	Bermuda buttercup	perennial
<i>Plantago lanceolata</i> *	English plantain	perennial
<i>Rumex acetosella</i> *	sheep sorrel	annual
<i>Salvia spathacea</i>	hummingbird sage	perennial
<i>Silybum marianum</i> *	milk thistle	annual
<i>Sonchus oleraceus</i> *	sow thistle	annual
<i>Stipa pulchra</i>	purple needlegrass	perennial
<i>Toxicodendron diversilobum</i>	poison oak	shrub

* denotes a non-native species.



Non-native grassland in the restoration area with scattered shrubs.

2.3.2 NORTHERN COASTAL SCRUB

Per the HMP (TRA 2008), northern coastal scrub on San Bruno Mountain is dominated by coyotebrush and California sagebrush (*Artemisia californica*). Sticky monkeyflower (*Diplacus aurantiacus* var. *aurantiacus*) and poison oak are subdominants. Associated species include pearly everlasting (*Anaphallis margaritacea*), hazelnut (*Corylus cornuta* subsp. *californica*), oceanspray (*Holodiscus discolor* var. *discolor*), seaside woolly sunflower (*Eriophyllum staechadifolium*), and California blackberry (*Rubus ursinus*).

Within the Lower West Peak restoration area, northern coastal scrub is present on the southeastern edge of the restoration area and in scattered patches throughout (Figure 3). Coyote brush is the most abundant plant with the highest cover, followed by California sagebrush and coffeeberry. Characteristic plant species in northern coastal scrub in the restoration area are listed in Table 2.

Table 2. Plant Species Observed in Northern Coastal Scrub in the Restoration Area

SCIENTIFIC NAME	COMMON NAME	LIFE FORM
<i>Anaphallis margaritacea</i>	pearly everlasting	perennial
<i>Artemisia californica</i>	California sagebrush	shrub
<i>Baccharis pilularis</i> subsp. <i>consanguinea</i>	coyotebrush	shrub
<i>Echium candicans</i> *	pride of Madeira	annual
<i>Eriophyllum staechadifolium</i>	seaside woolly sunflower	shrub
<i>Foeniculum vulgare</i> *	fennel	perennial
<i>Frangula californica</i> subsp. <i>californica</i>	coffeeberry	shrub
<i>Heracleum maximum</i>	cow parsnip	perennial
<i>Heteromeles arbutifolia</i>	toyon	shrub

SCIENTIFIC NAME	COMMON NAME	LIFE FORM
<i>Diplacus aurantiacus</i> var. <i>aurantiacus</i>	sticky monkeyflower	shrub
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern	fern
<i>Rubus ursinus</i>	California blackberry	shrub
<i>Toxicodendron diversilobum</i>	poison oak	shrub

* denotes a non-native species.



Non-native grassland in the foreground and northern coastal scrub in the distance in the restoration area.

2.4. INVASIVE WEEDS

During the March and August 2019 site visits, 16 invasive weed species were observed in the restoration area (Table 3). A total of 54 invasive weed species are included in the Invasive Priority Plant List in the HMP (TRA 2008) which is included in Appendix A. The Restoration Outline (San Mateo County Parks 2016b) identified three of these species as “primary targets”: fennel (*Foeniculum vulgare**), Italian thistle*, and broom (*Cytisus striatus* and other broom species) and County Parks identified an additional two species as primary targets in 2019: pride of Madeira (*Echium candicans**) and Monterey pine (*Pinus radiata**). A preliminary target value was assigned to the remaining species observed in the restoration site (Table 3) based on each species priority listed in the HMP Invasive Priority Plant List (TRA 2008). Species with an HMP priority of “A” were assigned to be primary targets, species with an HMP priority of “B” were assigned to be secondary targets, and species with an HMP priority of “C” were assigned to be tertiary targets (Table 3).

+ Denotes a species of native origin to California but not indigenous to the site.

Several primary target species were observed in the restoration area including Italian thistle*, Portuguese broom (*Cytisus striatus*)*, pride of Madeira*, blue gum (*Eucalyptus globulus**), fennel*, Bermuda buttercup (*Oxalis pes-caprae* *), and Monterey pine⁺. Of the primary target species, fennel* is the most well-established on site and occupied 2.2 acres (Figure 3). Italian thistle* was also widespread and occupied 0.31 acre. There is likely a substantial seed bank of fennel present and the seed remains viable in the soil for several years (San Mateo County Parks 2015). Control of invasive weed species is discussed in Section 4.3. Control of secondary and tertiary target species will occur if it is determined by the restoration biologist that they are negatively impacting the restoration site.

Table 3. Invasive Species Observed in the Restoration Area in August 2019

SPECIES NAME	COMMON NAME	TARGET LEVEL ¹	SBM HMP PRIORITY ²	CAL-IPC RATING ³	CDFA RATING ⁴
<i>Avena barbata</i>	wild oats	Tertiary Target	B	Moderate	---
<i>Bromus diandrus</i>	ripgut brome	Tertiary Target	B	Moderate	---
<i>Bromus hordeaceus</i>	soft chess	Tertiary Target	C	Limited	---
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian thistle	Primary Target	A	Moderate	Listed
<i>Cytisus striatus</i>	Portuguese broom	Primary Target	A	Moderate	---
<i>Echium candicans</i>	pride of Madeira	Primary Target	C	Limited	---
<i>Erodium botrys</i>	broadleaf filaree	Tertiary Target	---	---	---
<i>Erodium cicutarium</i>	red-stemmed filaree	Tertiary Target	---	Limited	---
<i>Eucalyptus globulus</i>	blue gum	Primary Target	A	Limited	
<i>Foeniculum vulgare</i>	fennel	Primary Target	A	High	---
<i>Lactuca veirosa</i>	bitter lettuce	Secondary Target	C	---	---
<i>Oxalis pes-caprae</i>	bermuda buttercup	Primary Target	A	Moderate	---
<i>Pinus radiata</i>	Monterey pine	Primary Target	B	---	---
<i>Rumex acetosella</i>	sheep sorrel	Tertiary Target	C	Moderate	---
<i>Silybum marianum</i>	milk thistle	Secondary Target	C	Limited	---

¹ Target ranking as identified in West Peak Restoration Outline (San Mateo County Parks 2016b) and updated in 2019 by County Parks staff.

² San Bruno Mountain Habitat Management Plan Priority Ranking (TRA 2008):

A: Severe

B: Moderate

C: Limited

³ California Invasive Plant Council rating as listed in the California Invasive Plant Inventory Database (Cal-IPC 2019). This is a state-wide ranking and can be used as a reference for context only.

⁴ Species considered a noxious weed by California Department of Food and Agriculture are listed on the California Noxious Weed List (CDFA 2019).



Portuguese broom* and fennel* in the restoration area.



Fennel* in the restoration area with scattered shrubs.



Senescent Italian thistle* in the foreground and Pride of Madera* in the distance to the right in the restoration area.



Senescent Italian thistle* in the foreground, coyote brush in the center, and young Monterey Pine⁺ in the distance in the restoration area.

2.5. SOILS

Soils on site directly affect water availability, drainage, and potential for erosion. Two soil types are mapped within the restoration area: Barnabe-Candlestick complex, 30 to 75 percent slopes and Barnabe-Rock outcrop complex, 15 to 75 slopes (USDA 1991) (Figure 4).

The Barnabe-Candlestick complex, 30 to 75 percent slopes map unit is on coastal uplands of steep slopes (30 to 75 percent). This unit is 45 percent Barnabe very gravelly sandy loam and 35 percent Candlestick fine sandy loam. The Barnabe soil is mainly on or near ridgetops and on steeper side slopes and the Candlestick soil is mainly on side slopes and toe slopes. The two soils are intricately intermingled. The Barnabe soil is very shallow and is well drained. It is formed in material weathered from hard, fractured sandstone. The depth to bedrock ranges from 8 to 20 inches. The Candlestick soil is moderately deep and well drained. It is also formed in material weathered from hard, fractured sandstone. The depth to bedrock ranges from 20 to 40 inches (USDA 1991). Permeability is moderate in the Barnabe soil and moderately slow in the Candlestick soil. The available water capacity is very low in the Barnabe soil and low or moderate in the Candlestick soil. Effective rooting depth is 8 to 20 inches in the Barnabe soil and 20 to 40 inches in the Candlestick soil. Runoff is rapid or very rapid in both soils and the hazard of water erosion is high or very high (USDA 1991).

The Barnabe-Rock outcrop complex, 15 to 75 slopes map unit is on coastal uplands of 15 to 75 percent slopes. This unit is 40 percent Barnabe very gravelly sandy loam and 40 percent rock outcrop. The two soils are intricately intermingled. The properties of the Barnabe soil are described above. The rock outcrop consists mainly of exposures of hard, fractured sandstone a few feet in diameter. These areas have little if any soil material (USDA 1991). Runoff is rapid or very rapid in both soils and the hazard of water erosion is high or very high (USDA 1991).

2.6. TOPOGRAPHY

The Lower West Peak restoration site is on a steep south facing slope. Elevations range from 375 feet elevation at the bottom of the slope to 600 feet elevation at the top. Slopes range from 50-75%.

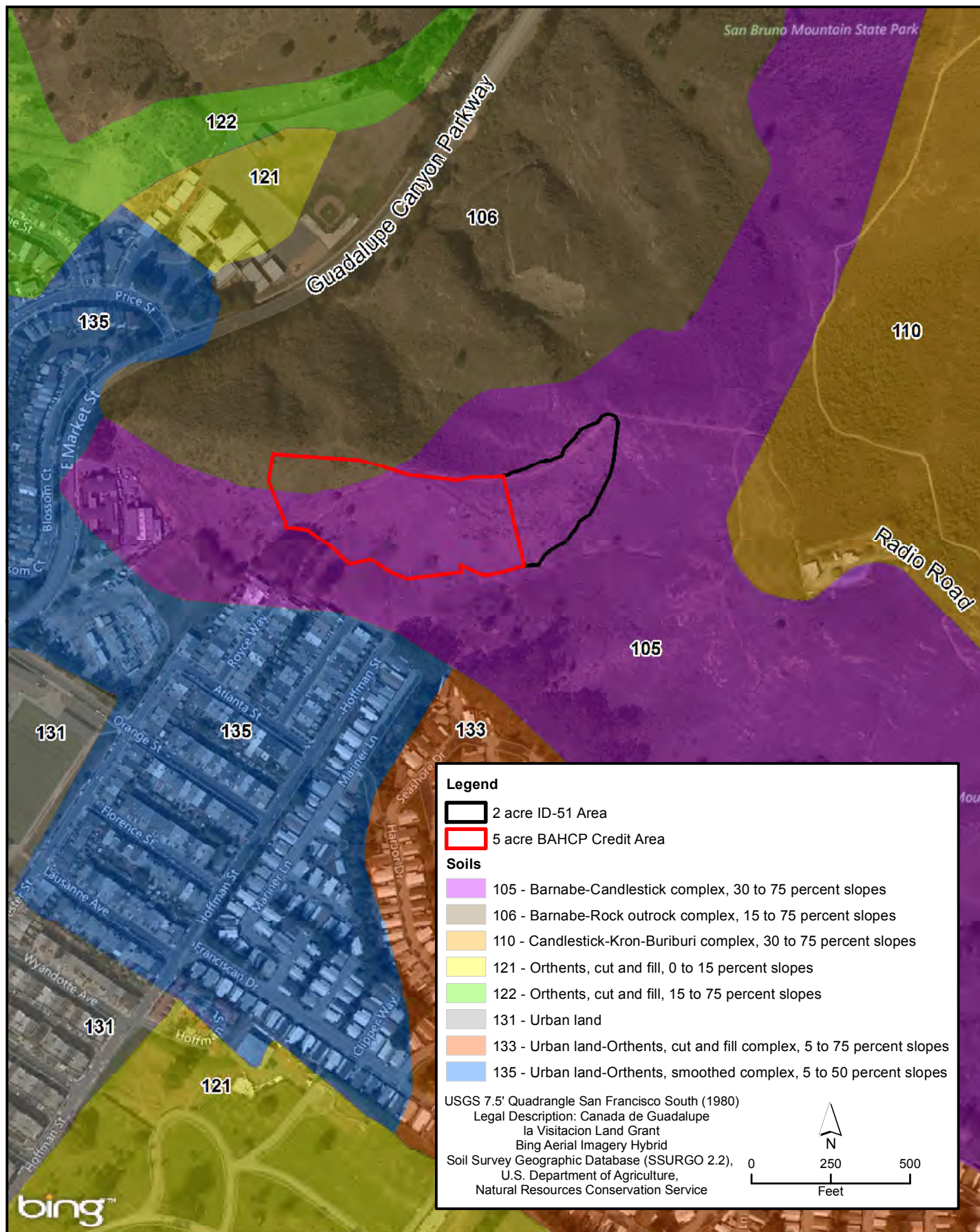


Figure 4.
Soils
West Peak Restoration Project

San Mateo County, CA
 July 2018

Section 3. RESTORATION OBJECTIVES AND GOALS

3.1. RESTORATION OBJECTIVES

Restoration objectives for the Lower West Peak restoration project are:

- 1) Control the spread of primary and secondary target invasive plants,
- 2) Reduce scrub cover from undesirable woody species in the historic grassland habitat,
- 3) Augment existing and establish lupine populations (host plant: *Lupinus albifrons* subsp. *collinus*, *L. formosus* subsp. *formosus*, and *L. variicolor*),
- 4) Increase cover of host and nectar plants and species richness of nectar plants for mission blue butterfly.

3.2. RESTORATION GOALS AND MAINTENANCE THRESHOLDS

Restoration goals are summarized below and in Table 4. Maintenance thresholds for the restoration project will be used to determine when remedial actions should occur to keep the project on track to meet restoration goals. Maintenance thresholds are detailed in Table 4.

- 1) Reduce absolute cover of primary invasive targets by 60% after 2 years and by 90% after 5 years, compared to cover prior to restoration implementation.
- 2) Reduce absolute cover of undesirable shrub species to no more than 5% in areas mapped as non-native grassland in the restoration area in the first 2 years. Maintain shrubs at less than 5% absolute cover in areas mapped as non-native grassland ongoing through the duration of the project (5 years).
- 3) Plant a minimum average of 171 container plantings per acre of lupine host plants (*Lupinus albifrons* subsp. *collinus*, *L. formosus* subsp. *formosus*, and *L. variicolor*). There will be a minimum 75% survival rate of the minimum 171 plants per acre of host plant plantings. There will be a minimum increase of 17 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting.
- 4) Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the habitat islands.

The site will be monitored and maintained for 5 years following completion of restoration work. Monitoring methodology is detailed in Section 5.1. Table 4 includes target values for Years 2 and 5, and also includes thresholds for remedial activity. Remedial activities are discussed in Section 5.2. A list of weeds and their target rating as used in Table 4 are provided in Table 3. If maintenance thresholds are not met at Year 5, necessary remedial actions will be identified by the implementing entity and an additional year of monitoring and maintenance will occur.

Table 4. Maintenance Thresholds for the Lower West Peak Restoration Area

SPECIES CATEGORY	ATTRIBUTE	TARGET VALUE AFTER IN MONITORING YEAR 2	TARGET VALUE AFTER IN MONITORING YEAR 5	REMEDIAL ACTIVITY BASED ON THRESHOLD
Invasive Plant Species (Primary Target Species) Control	Cover	Reduce cover of primary invasive targets by 60% compared to cover prior to restoration implementation.	Reduce cover of primary invasive targets by 90% compared to cover prior to restoration implementation.	Control primary invasive plant species targets. Should management goals not be met at Year 5, one additional targeted weed control event shall be scheduled.
Scrub Control	Cover	Reduce absolute cover of undesirable woody species in areas mapped as non-native grassland to no more than 5% in the restoration area.	Maintain less than 5% absolute cover of undesirable woody species in areas mapped as non-native grassland in the restoration area.	Remove and control undesirable woody species. Should management goals not be met at Year 5, one additional targeted scrub control event shall be scheduled.
Total Number of Lupine Host Plants and Number of each Individual Species	Total Number and Number of each Individual Species	Increase the number of lupine host plants (<i>Lupinus albifrons</i> subsp. <i>collinus</i> , <i>L. formosus</i> subsp. <i>formosus</i> , and <i>L. variicolor</i>) in the restoration area by a minimum of 128 plants per acre. This is 75% survival of the minimum 171 plants per acre of host plant plantings. There will be a minimum increase of 17 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting.	Increase the number of lupine host plants (<i>Lupinus albifrons</i> subsp. <i>collinus</i> , <i>L. formosus</i> subsp. <i>formosus</i> , and <i>L. variicolor</i>) in the restoration area by a minimum of 128 plants per acre. This is 75% survival of the minimum 171 plants per acre of host plant plantings. There will be a minimum increase of 17 plants per acre (10% of the total plantings) of each of the three host plant species. Plants will be counted over the restoration project as a whole, and not per acre. This target value assumes all three species of lupine will be available for planting.	Plant additional container plants of lupine host species based on total number of lupine host plants and numbers of individual species. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.
Cover of Host and Nectar Plants	Total Cover and Cover per Species	Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the habitat islands.	Increase host and nectar plant cover and species richness in the restoration area. Cover of host and nectar plants will be 10% absolute cover in the habitat islands.	Additional planting of host and nectar containers based on total cover and cover of individual nectar plant species. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.

SPECIES CATEGORY	ATTRIBUTE	TARGET VALUE AFTER IN MONITORING YEAR 2	TARGET VALUE AFTER IN MONITORING YEAR 5	REMEDIAL ACTIVITY BASED ON THRESHOLD
Species Richness	Species Richness	A minimum of 70% of the species planted will be present within the restoration site. For example if 10 different species are planted, 7 of them will be present in the restoration site.	A minimum of 70% of the species planted will be present within the restoration site. For example if 10 different species are planted, 7 of them will be present in the restoration site.	Additional planting of host and nectar containers to increase species richness. Should management goals not be met at Year 5, one additional planting event shall be scheduled where non-surviving plants will be replaced at 1:1.

Section 4. RESTORATION IMPLEMENTATION

4.1. RESTORATION IMPLEMENTATION TIMING

Restoration activities include invasive weed removal, scrub removal, planting, seeding, and monitoring (Table 5). Proposed timing for restoration activities is shown in Table 5. The timing can be adjusted as necessary based on field conditions.

Invasive weed removal may occur year round. The control methodology based on the HMP is included in Section 4.3. Scrub removal can occur during the dry season. If it conducted during the non-nesting season (September 1-January 31), impacts to nesting birds will be avoided; as the nesting bird season is February 1 to August 31. Scrub removal can occur during the nesting season if surveys for nesting birds are completed, as spring is an effective treatment window for scrub (Arechiga, pers. comm. 2018). Scrub removal should be completed in the dry season so the site is accessible.

Planting of native plants will occur during the late fall and winter months in sync with the rainy season and appropriate soil moisture for plant establishment. Proposed timing for restoration activities is shown in Table 5. The timing can be adjusted as necessary based on field conditions.

All restoration activities will follow the *Guidelines to Minimize Phytophthora Contamination in Restoration Projects* as specified by the Working Group for *Phytophthora* in Native Habitats (2016b; Appendix B) and the *Standard San Bruno Mountain Habitat Conservation Plan Avoidance and Minimization Measures* (Appendix C).

4.2. BASELINE DATA COLLECTION

Baseline vegetation data (plant species cover and composition) will be collected in the restoration area before the start of restoration activities. Baseline data will be used to show pre-restoration conditions of the restoration area from which to measure progress toward meeting the restoration goals. During annual monitoring, after restoration is complete, the restored project site will be compared to baseline data to determine if relevant maintenance thresholds are met or if remedial actions are triggered. During baseline data collection, the following activities will occur: plant cover data collection, invasive weed mapping, and photo monitoring. Methodology for plant cover data collection, invasive weed mapping, and photo monitoring will follow Monitoring Methodology detailed in Section 5.2. Baseline data collection will occur at the same time of year as annual monitoring to facilitate annual comparison.

4.3. INVASIVE WEED TREATMENT

Manual, mechanical, and chemical methods will be used to control primary target invasive species in the restoration area. Secondary target species will be controlled as needed around new planting to reduce competition while new plants are establishing in the site and in the vicinity of high cover of native plants. Other invasive species may be controlled as necessary to meet performance criteria. Target invasive species detected in the restoration area during the March 2017 site visit are shown in Table 3.

4.3.1 MANUAL TREATMENTS

Per the HMP, manual/mechanical control of invasive plants is an effective method for eliminating clusters of plants, especially seedlings and plants whose root structure is not prohibitively deep or large. Hand removal is done with a maddox, weed-wrench, or by hand pulling. Removing the whole plant including roots is essential for control of most invasive plants. Handwork is most effective in the winter and spring when soils are moist (TRA 2008).

Table 5. Potential Timing of Restoration Activities for the Lower West Peak Restoration Project

RESTORATION ACTION	IMPLEMENTATION YEAR 2020				MONITORING YEAR 1							MONITORING YEARS 2-5						
	MAY	JUN-JUL	AUG-SEP	OCT-DEC	JAN-FEB	MAR-APR	MAY	JUN-JUL	AUG-SEP	OCT-NOV	DEC	JAN-FEB	MAR-APR	MAY	JUN-JUL	AUG-SEP	OCT-NOV	DEC
1) Collect baseline data (1 event at start of project)																		
2) Invasive weed treatments and hand weeding planting sites as necessary (one event per year, exact timing TBD based on target weed and phenology)																		
3) Scrub removal treatments (1 event during implementation year, exact timing TBD)																		
4) Plant container plants (2 events total)																		
5) Collect annual monitoring data (twice per year)																		
6) Prepare Annual Monitoring Report (one report per year)																		

4.3.2 HERBICIDE TREATMENTS

Per the HMP, herbicide control is typically used on mature, dense stands of invasive weeds that are more cost effective to spray than to pull by hand. In addition, utilizing herbicide control (instead of mechanical removal of plants) decreases soil disturbance. Per *Year 2015 Activities Report*, the two herbicides applied for shrub control are Garlon 4 Ultra® (triclopyr) and Aquamaster® (glyphosate) (San Mateo County Parks 2016a). These herbicides are used due to their high effectiveness, low toxicity rating, and short half-life in the soil (San Mateo County Parks 2016a). Garlon 4 Ultra® herbicide is the preferred chemical for broadleaf weeds and has little effect on monocots (grasses). Aquamaster is an aquatic herbicide applied to plants adjacent to creeks or in areas subject to seasonal runoff.

Three application treatments (foliar, cut-stump, and thin-line) are used within HCP area (San Mateo County Parks 2016a). Foliar treatment is when the whole of the plant's canopy and leaf area are targeted using backpack sprayers and cone/jet tips. Foliar application is effective on secondary growth of smaller plants (<2 in DBH). The spray tips are designed to adjust and allow target specific applications. Cut-stump treatments are when the trunk is cut 1-2 inches above soil surface and treated with a 25% mixed solution with an Aquamaster® and vegetable oil. Cut stump treatment is effective at the base of larger (> 2 inch DBH) stumps removed by chainsaws. Thin-line treatments are considered a low volume application and is used primarily on trees and shrubs less than six inches in diameter. A thin stream of undiluted or highly concentrated herbicide is applied in a horizontal line around each stem. Only spot treatment applications will occur and no broadcast application will be conducted (TRA 2008).

Herbicide recommendations for invasive weed control is included in the Chapter 5 of the HMP (TRA 2008). All control methodology for individual species will follow the HMP. All herbicide control conducted on San Bruno Mountain will be conducted by Certified Pesticide Applicators and in accordance with EPA approved label directions (TRA 2008). All *Standard San Bruno Mountain Habitat Conservation Plan Avoidance and Minimization Measures* (Appendix C) will be followed. Invasive weed treatment in the restoration area will be documented using the *San Mateo County Parks Department SBM HCP Work Performed Form*.

4.3.3 PRIMARY TARGET SPECIES CONTROL

Primary target invasive species observed in the restoration area during site visits include Italian thistle*, Portuguese broom*, pride of Madeira*, blue gum*, fennel*, Bermuda buttercup*, and Monterey pine⁺. Yellow starthistle* was not observed in the restoration area but it was included in case it is detected or becomes established after restoration implementation. A summary of control methods for each of these species is discussed below. Italian thistle* and fennel* are very widespread on site and manual/mechanical control is not feasible, so we recommend herbicide treatments for control. Portuguese broom*, pride of Madeira*, and Monterey pine⁺ are less widespread and manual/mechanical control would be feasible. Blue gum* and Bermuda buttercup* are less widespread, however manual/mechanical control is not generally effective for these species and we recommend herbicide treatment.

Italian Thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*)

Manual/Mechanical Control

Manual or mechanical methods can be utilized when this species is small (DiTomaso et al. 2013). To control by cutting, use a sharpened shovel at the top of the root crown. Grubbing hoes must cut the plants 2 to 4 inches below ground level to prevent resprouting from dormant axillary buds. Mowing plant during flowering can greatly reduce seed production, though a single mowing is seldom sufficient due to the wide differences in the maturity of plants in a natural population. For mowing, it is best to wait until plants bolt and are about to flower (May to July) (DiTomaso et al. 2013). This may require repeated visits

at weekly intervals over the 4 to 7 week blooming period, because not all plants bloom simultaneously. Plants will regrow if mowed before they are fully bolted. Plants cut 4 days after the first flowers open can produce viable seed (DiTomaso et al. 2013).

Herbicide Treatments

Per the HMP, foliar spraying of Garlon 4 Ultra® (triclopyr) 2 percent concentration is used to treat Italian thistle in the HCP area (TRA 2008).

Portuguese Broom (*Cytisus striatus*)

Manual/Mechanical Control

Individuals or small patches will be removed by hand where feasible (Forbert and Naumovich 2016). Hand removal will entail pulling up the entire above-ground plant and at least the upper 4 inches of roots. Hand removal will occur in February to March, prior to seed set, ideally when soils are moist which facilitates complete removal. All inflorescences will be bagged and removed from site. In areas where dense stands once stood and where large seed banks may be present, seeds will be flushed in the first year by disturbing soils with a fine tined rake or similar. Raking should not occur in high quality habitat areas. Flaming may occur in dense seedling patches the following year (Forbert and Naumovich 2016).

Herbicide Treatments

Per the HMP, Portuguese broom* is controlled with a 2% Garlon 4 Ultra® (triclopyr) herbicide. The plants are treated by foliar spraying year round (TRA 2008).

Pride of Madeira (*Echium candicans*)

Manual/Mechanical Control

Per the HMP, pride of Madeira are cut and the stumps are allowed to decay. Treatment is done in the summer, prior to flowering when the plants are more visible (TRA 2008).

Herbicide Treatments

No information on herbicide treatment of pride of Madiera was found.

Blue Gum (*Eucalyptus globulus*)

Manual/Mechanical Control

Hand pulling can remove seedlings and small saplings. Cutting a tree at ground level before it flowers will reduce seed production and deplete the plant's energy reserves. Resprouts are common after treatment. Cutting back regrowth when shoots reach 6-7 feet tall for 4 years or more can eventually kill the tree. Covering cut stumps with black plastic and sealing the edges to exclude sunlight also gives good control, but plastic must be kept in place for at least one year (DiTomaso et al. 2013). Cutting can be combined with herbicide application.

Herbicide Treatments

Per the HMP, after trees are cut, stumps are cut as low to the ground as practical and sprayed with 25% Garlon 4 (triclopyr) herbicide (TRA 2008).

Fennel (*Foeniculum vulgare*)

Manual/Mechanical Control

The use of a mattock to remove the plant can be successful, but is very labor intensive. Digging out individual plants is also possible, but also labor intensive. The HMP suggests mechanical treatment of mature fennel* stands in spring through fall prior to herbicide application in spring (Forbert and Naumovich 2016). Therefore mechanical removal of the above ground plant material using brushcutters and loppers will be conducted spring through fall.

Herbicide Treatments

Per the HMP, basal foliar spraying of 2% Garlon 4 Ultra® (triclopyr) herbicide should be used to treat fennel* in the HCP area. Cutting fennel and treating resprouts has also been successful on SBM. Herbicide treatment should occur in February to May prior to seed formation (TRA 2008).

Bermuda Buttercup (*Oxalis pes-caprae*)*Manual/Mechanical Control*

Hand weeding is used extensively to reduce infestations, but because it is exceedingly difficult to remove all of the bulbs, new plants usually appear (DiTomaso et al. 2013). Care must be taken to remove the entire plant, including underground rhizome and bulbs (DiTomaso et al. 2013).

Herbicide Treatments

Per the HMP, Bermuda buttercup* is controlled with a foliar application of 2% Garlon 4/Roundup Pro mixture when a monoculture is present and 2% Garlon 4 Ultra® herbicide (triclopyr) when the infestation is intermixed with perennial grasses (TRA 2008). Treatment window on SBM is early December – January annually throughout the project area for best results, but can be treated later if necessary.

Monterey pine (*Pinus radiata*)*Manual/Mechanical Control*

Per the HMP, Monterey pine trees are cut at the base with a chain saw. Herbicide is not needed to kill the stump. Resprouts are easily removed by hand (TRA 2008).

Herbicide Treatments

Herbicide treatment will not be used to control Monterey pine as West Peak since there are only a couple of individuals present and they can be controlled manually.

Yellow Starthistle (*Centaurea solstitialis*)*Manual/Mechanical Control*

Manual removal of yellow starthistle is most effective with small patches or where plants are sporadically located in the grassland system. To ensure that plants do not recover it is important to detach all above-ground material. The best time for manual removal is after plants have bolted but before they produce viable seed. Mowing is most effective when 2 to 5% of the total population of inflorescences is in bloom. Mowing too early can result in higher seed production. Plants should be cut below the height of the lowest branches. Mowing will need to be continued for multiple years to be successful (DiTomaso et al. 2013).

Herbicide Treatments

The HMP does not discuss herbicide treatment of yellow starthistle. Garlon 4 Ultra® (triclopyr) herbicide can be used from postemergence from seedling to bolting stage (DiTomaso et al. 2013). Roundup® (glyphosate) herbicide can be used from postemergence from bolting to beginning of flowering and must be applied to rapidly growing yellow starthistle plants for it to be effective (DiTomaso et al. 2013).

4.3.4 SECONDARY TARGET SPECIES AND ANNUAL GRASS CONTROL

Secondary target species include bitter lettuce* and milk thistle*. Annual grasses including wild oats*, ripgut brome*, and soft chess (*Bromus hordeaceus**) are tertiary target species.

Manual/Mechanical Control

Secondary target species and annual grasses will be controlled as needed in the vicinity of native plants and around new plantings to reduce competition while new plants are establishing in the site. Manual

control will consist of hand pulling and mowing. Mowing using a weed whip in early spring to reduce competition with desirable species and in late spring prior to seed set can control annual grasses.

Herbicide Treatments

Secondary species will be controlled with glyphosate and triclopyr following the HMP. A grass-selective herbicide may be used to control annual grasses in the vicinity of plantings. Use of a grass-selective herbicide must be approved by County Parks as it is not specified for use in the HMP.

4.4. SCRUB REMOVAL

Manual, mechanical and chemical methods will be used to remove scrub and seedlings of undesirable woody species within the restoration area. These species include coyotebrush, California sagebrush, and coffeeberry, among others deemed appropriate by the restoration biologist.

Scrub removal in the restoration area will be documented and notes recorded including date, area treated (recorded using a GPS unit to collect data), and treatment method (including herbicide, application rate, and application method, if applicable).

Priority for Control

Within the restoration area, the highest priority for brush removal are the shrubs that are scattered throughout non-native grassland on site. This is to prevent scrub from expanding and further encroaching on the grassland in the restoration area.

The larger continuous patches of scrub are lower priority for control as they are part of a larger stand and will require more resources to control. The boundary of this scrub stand has been mapped in Figure 3. It should be monitored annually using GPS and it should not be allowed to spread outside of the area it currently occupies.

Timing

Scrub removal can occur during the dry season. If it conducted during the non-nesting season (September 1-January 31), impacts to nesting birds will be avoided; as the nesting bird season is February 1 to August 31. Scrub removal can occur during the nesting season if surveys for nesting birds are completed, as spring is an effective treatment window for scrub (Arechiga, pers. comm. 2018). Scrub removal should be completed in the dry season so the site is accessible.

Manual/Mechanical Control

Per the *Year 2015 Activities Report*, during handwork, seedlings and saplings are pulled from the crown upward to reduce soil disturbance. During mechanical control, a brush cutter with a metal triple blade or a chainsaw is used to cut through plants with woody stem tissue. The blade is used to gain access to the root crown and is often followed by an herbicide application if the species is known to sprout. Chainsaws can be used to cut material and remove it from site (San Mateo County Parks 2016a).

4.5. PLANTING AND SEEDING

4.5.1 SEED AND CONTAINER PLANT PROCUREMENT

All container plants will be grown from seed and cuttings collected from San Bruno Mountain. This is to maintain the unique and specific genetics of San Bruno Mountain and to prevent hybridization with similar, yet genetically distinct, stock. Allotting sufficient time for the collection of seed and propagation (6 months to one year) must be considered.

Container stock will only be purchased from nurseries that implement the *Guidelines to Minimize Phytophthora Pathogens in Restoration Nurseries* as specified by the Working Group for *Phytophthora* in

Native Habitats (2016a). A percentage of all container stock will be tested for *Phytophthora* using pear baiting (Swiecki and Bernhardt 2015) or other testing method within 2-3 weeks prior to planting.

4.5.2 SEED MIXES AND SEEDING METHODOLOGY

Seed Mix

A seed mix for coastal terrace prairie on West Peak is included in Table 6 in case seeding is necessary. The exact mix used will depend on the availability of seed. The seeding rate will be determined by seed availability and will average 10-25 seeds per square foot.

Table 6. West Peak Seed Mix

SCIENTIFIC NAME	COMMON NAME	LIFE FORM
<i>Achillea millefolium</i>	yarrow	perennial
<i>Elymus glaucus</i> subsp. <i>glaucus</i>	blue wildrye	perennial
<i>Festuca idahoensis</i>	Idaho fescue	perennial
<i>Stipa pulchra</i>	purple needlegrass	perennial

Seeding Methodology

As detailed in the HMP, reseeding in areas that have been disturbed is desirable for the establishment of native vegetation, particularly grasses. Reseeding with locally grown, native seed is the best ecological practice, but due to cost, it often cannot be used over broad areas. Instead, seeding is better suited for use in specific areas that have had intensive invasive species control work, have a high erosion potential and/or within habitat restoration islands. During the restoration project, invasive weed and brush removal may result in site disturbance.

Direct seeding may occur within invasive weed control areas and scrub removal areas, as necessary. Seeding may occur in other areas including around container plantings if sufficient seed is available. All sites will be hand seeded due to the limited availability of seed. Prior to hand seeding, the site will be prepared to limit competing vegetation and weeds. Site preparation may include hand weeding to remove competing plants, using herbicide to spray weeds, or tarping the area.

After weed control, the site will be scarified with a metal rake to roughen the soil surface, seeded, rolled-in or tamped-down to facilitate soil contact, and then covered with a thin layer of soil to protect the seeds from desiccation and predation and to provide good seed/soil contact. The seeding rate will be determined by seed availability and will average 10-25 seeds per square foot. A layer of weed free straw mulch will be added to seeded areas as a protective mulch to conserve moisture, reduce soil erosion, and increase germination.

4.5.3 CONTAINER PLANT PALETTES AND PLANTING METHODOLOGY

Container Plant Palettes

The planting palette for the West Peak restoration area is shown in Table 7. The planting palette includes host and nectar plants for mission blue butterfly and native grasses.

Table 7. West Peak Container Planting Palette

SCIENTIFIC NAME	COMMON NAME	BUTTERFLY HOST OR NECTAR PLANT ¹
<i>Achillea millefolium</i>	yarrow	MB nectar plant
<i>Danthonia californica</i>	California oat grass	-
<i>Elymus glaucus</i> subsp. <i>glaucus</i>	blue wildrye	-
<i>Eriogonum latifolium</i>	coast buckwheat	MB nectar plant
<i>Heterotheca sessiliflora</i> subsp. <i>bolanderi</i>	Bolander's goldenaster	MB nectar plant
<i>Horkelia californica</i> var. <i>californica</i>	California horkelia	MB nectar plant
<i>Lupinus albifrons</i> var. <i>collinus</i>	silver bush lupine	MB larval food plant
<i>Lupinus formosus</i> var. <i>formosus</i>	summer lupine	MB larval food plant
<i>Lupinus variicolor</i>	varied color lupine	MB larval food plant
<i>Phacelia californica</i>	California phacelia	MB nectar plant
<i>Stipa pulchra</i>	purple needlegrass	-

¹ MB = MB butterfly

Container Planting Methodology

A total of 2,500 plants will be planted over the 5-acre site which is 500 plants/acre. A planting of 500 plants per acre is equal to approximately 10 foot spacing throughout the entire site, however plantings will be grouped into habitat islands which are discussed below. The first fall/winter will include a planting of a minimum of 1,500 plants per 5 acres (300 plants per acre). Additional planting of a minimum of 1,000 plants per 5 acres (200 plants per acre) will occur the second fall/winter. At least 34% of these plantings (855 plants per 5 acres, 171 plants per acre) will consist of butterfly host plants (*L. albifrons* var. *collinus*, *L. formosus* var. *formosus*, and *L. variicolor*). Plantings will be clustered into habitat islands which are detailed below. The number of containers of each of the other species on the planting palette will be determined based on availability of nursery stock. A diversity of species will be planted.

Per the HMP, replanting is successful when areas have been properly selected and thorough follow-up work has been done to protect plantings (TRA 2008). Smaller habitat islands, approximately 0.1-0.25 acre in size), can be planted and more easily managed (using mowing, hand control, herbicides, and replanting) to provide habitat for the endangered species once host and nectar plants have become established (Kobernus 2003). This process takes approximately two years. Several habitat islands for the mission blue butterfly have been created within HCP conserved areas using this approach.

Container plantings will be planted in groups using the habitat island approach. Habitat islands will be 0.01-0.4 acres in size. Container plants will be cluster-planted at approximately 1-2 foot spacing in the habitat islands. Habitat islands will contain a mix of species and will include host and nectar plants. The location of habitat islands will be determined in the field based on plantable locations and will be sited away from invasive weeds and scrub which will require long term management and control.

Container planting sites will be selected to find areas of deeper soil in the restoration site, as much of the site has very thin rocky soils. Before planting seeds or containers, grasses and other low vegetation will be scraped. This is to reduce thatch and weed competition in the immediate planting areas. In order to protect container plantings from herbivore predation (snails, brush rabbits, mice), some plantings will be protected by a small cage. An 8-inch-diameter tube constructed of half-inch wire mesh will be sunk 6 inches into the ground around the container plantings and will extend above the ground at least 12-inches.

The cage will be held in place using rebar and zip ties. Alternatively shrubs shelters or other herbivory protection can be used.

After the seeds and protective cages are installed, water will be applied slowly to the planting site that same day (unless precipitation is forecast), so that all water percolates and no runoff occurs. Additional watering may be needed if rainfall is lower than average. During the annual dry season (May-October) within the first year of planting, container plantings may need to be hand watered every 6-8 weeks depending on soil moisture conditions and air temperatures.

Throughout the first season of establishment (January to July), the planting sites will be hand weeded as needed to control primary and secondary target invasive plants and undesirable shrub species. Mulch may also be used.

4.6. EROSION CONTROL

Appropriate Best Management Practices (BMPs) will be installed as part of the project in areas where soil is disturbed or there is a risk of soil moving offsite. Appropriate BMPs will be determined during and after restoration implementation in coordination with the restoration biologist and the County.

4.7. AS-BUILT SUMMARY

Following restoration, a brief as-built report will be prepared to document the completion of restoration activities. The as-built report will include a summary of the restoration actions completed including a map showing the locations of invasive weed control, shrub removal, and plantings. The as-built report will include the final seed mix, quantity of native plant seed broadcast, application method, locations of habitat islands, locations of container plants, species planted, number of each species, and photographs documenting the restoration. Any changes to the restoration plan (approved by County Parks) will be noted and discussed in the as-built report. Actions to be undertaken in the following year, including any additional seed collection or procurement may also be included in the as-built report.

Section 5. MONITORING AND REPORTING

5.1. MONITORING

5.1.1 MONITORING SCHEDULE

Restoration areas will be monitored twice per year for 5 years. Surveys will likely occur in April/May, and September however the exact timing will be based on the phenology of target weed species and desirable plant species.

5.1.2 MONITORING METHODOLOGY

Plant Survivorship Counts

Plant survival will be measured for all of the planted lupines to determine if the minimum number of lupines are present with a minimum number of each of the three species as detailed in the maintenance thresholds for the project (Table 2). Once per year in the spring or summer, all planted lupines will be counted and a condition rating assigned (good, fair, or poor) to determine if the maintenance threshold is being met. The condition ratings will be useful to track health of the plantings and determine which species are doing well on site.

A subset of container plantings of other species will be monitored and tracked to determine success of plantings per species and to determine if the species richness target value is being met. There is no maintenance threshold for survival of other species; they are captured in the plant cover monitoring data. However, survival data will be surveyed to determine which species are doing well and help direct any replacement planting efforts.

Plant Cover Monitoring Via Quadrats

Data on species composition and cover will be recorded in the restoration area annually in late April or early May. Plant species composition and absolute cover data will be collected using randomly located quadrats (1 meter by 1 meter) within the restoration area. Cover estimation in quadrats was chosen as the sampling method in order to provide cover data and capture species richness. GPS coordinates for quadrats will be generated in the office using a random number generator in ArcGIS. The random GPS coordinates will be loaded onto a handheld GPS unit capable of submeter accuracy. In the field, the biologist will navigate to the GPS point to place the quadrats at the sampling location. The total number of quadrats is estimated to be 7-10 per acre and will be based on the number required to sufficiently capture variability in the restoration area. Sampling for invasive weeds and scrub will be throughout the entire restoration site. Sampling for host plant cover will focus on the planted habitat islands.

Within each quadrat, absolute cover of plants will be visually estimated and recorded for the quadrat as a whole and for each individual plant species using the CNPS method for estimating cover values (CNPS, 2019). The CNPS method for estimating cover values uses a “bird’s eye view” looking from above and estimating cover for the living plants only (CNPS 2019). Litter/duff will not be included in these estimates and the porosity of the vegetation will be taken into consideration when estimating percent cover (CNPS 2019). Percent cover diagrams will be used to facilitate cover estimates.

Cover data will be input by hand into excel for analysis. Maps showing the location of the sampling quadrats will be included in the annual monitoring report.

Data will be entered in Excel and the percent cover will be calculated for the following categories:

- invasive species (primary and secondary targets),

- shrub species (as a whole and by species),
- butterfly host and nectar plant species (as a whole and by species),

The quadrat sampling data will be used to determine if percent cover of invasive species, percent cover of shrubs, and cover of host and nectar plants are meeting maintenance thresholds defined in Table 4, or if remedial activities are triggered. Percent cover data will be compared with baseline data captured before start of restoration implementation to determine if invasive species cover has decreased sufficiently compared to baseline conditions. Species recorded in quadrats will be used along with survival monitoring data to determine if the species richness target value is being met.

Invasive Weed Monitoring and Mapping

Invasive plant cover for the restoration site will be calculated using the quadrat sampling data. In addition, the locations of primary target weed species will be monitored and mapped in the restoration area. Primary target weeds will be mapped as points or polygons and attribute data will be estimated and recorded including number of individuals, density, percent cover, and phenology.

Photo Monitoring

Multiple permanent photo monitoring points will be established to document restoration site progress, invasive plant control, scrub control, and grassland plantings. Photos will be taken from the established location prior to the start of the project and at least two times a year after that. These sites will be photographed after scrub and invasive weed control, after planting and in spring during annual monitoring.

Erosion Monitoring

The restoration area will be walked and visually surveyed for any evidence of erosion during the monitoring period. Any erosion features will be described, photos taken, and the location recorded with a GPS unit. Based on soils mapped on site (USDA 1991), the potential for erosion is high.

5.2. MAINTENANCE AND REMEDIAL MEASURES

Maintenance and remedial efforts will include weeding and may include reseeding, replanting, or erosion control. Remedial measures will be implemented if the Year 2 target values are not met based on the maintenance thresholds identified in Table 4. Remedial measures may be implemented even if Year 2 targets are being met but there are issues that may prevent the site from meeting Year 5 targets. All monitoring visits will include an evaluation of the need for remedial measures if necessary.

5.2.1 NON-NATIVE INVASIVE SPECIES REMOVAL

Weeding of the restoration area will be a regular part of annual maintenance and will be necessary to allow seeded and planted species to establish, to increase cover of native species, and to keep invasive cover below the target values. Invasive weeds within the restoration site will be controlled as detailed in Section 4.3. Control will focus on the primary target species with other species being controlled as necessary.

5.2.2 SCRUB REMOVAL

If maintenance threshold target values for scrub cover are not met, additional scrub removal will occur following methods detailed in Section 4.4 and modified based on prior year's results.

5.2.3 SUPPLEMENTAL SEEDING AND PLANTING

As shown in Table 4, areas will be supplementally seeded and/or planted if Year 2 and Year 5 maintenance threshold target values for host and nectar plants are not met. Supplemental seeding and planting may occur only on portions of the site if other portions are meeting target values. Based on

monitoring data and seed availability, the restoration biologist will determine what species should be used.

All supplemental seeding or planting will have to adhere to the guidelines presented in this plan and will need to be coordinated with County Parks. Final approval of all seed mixes and other materials brought in from outside of San Bruno Mountain must be approved by the County Parks.

5.2.4 EROSION CONTROL

If evidence of erosion is observed on site, BMPs will be implemented in coordination with County Parks.

5.3. MONITORING REPORTING

After each monitoring site visit, or implementation of a remedial measure, a brief summary will be prepared that includes the date of the site visit, goal for the activity, what activities took place, observations, and photos. This summary will be provided to County Parks.

All data including raw data in the form of spreadsheets, maps and shapefiles, photos for all monitoring, and site assessment field visit reports will be provided to County Parks.

At the end of each monitoring year, an annual report will be prepared that includes methods used, results of monitoring, photo monitoring photographs, representative photographs, an analysis and summary of reference and restoration area data, an assessment of progress toward meeting target values, recommendations, and implemented actions. Annual monitoring reports will be completed by January 31 of the year following the monitoring year. Annual monitoring reports will be submitted to County Parks and will include all raw data (spreadsheets, maps and shapefiles) as an appendix or provided digitally.

Section 6. REFERENCES

- California Department of Food and Agriculture (CDFA). 2019. *Pest Ratings of Noxious Weed Species and Noxious Weed Seed*. Available: http://www.cdfa.ca.gov/phpps/ipc/weedinfo/wininfo_list-pestrating.htm.
- California Invasive Plant Council (Cal-IPC). 2019. *California Invasive Plant Inventory*. Cal-IPC Publication. California Invasive Plant Council: Berkeley, CA.
- California Native Plant Society (CNPS). 2019. *CDFW-CNPS Protocol for Combined Vegetation Rapid Assessment and Relevé Sampling Field Form*.
- Creekside Science. 2015. *Assessment of the Past 30 Years of Habitat Management and Covered Species Monitoring Efforts Associated with the San Bruno Mountain Habitat Conservation Plan*. Prepared for the San Mateo County Parks Department.
- DiTomaso J.M., Kyser G.B., Oneto S.R., Wilson R.G., Orloff S.B., Anderson L.W., Wright S.D., Roncoroni J.A., Miller T.L., Prather T.S., Ransom C., Beck K.G., Duncan C.A., Wilson K.A., Mann J. J. (2013). *Weed Control in Natural Areas in the Western United States*. Berkeley, CA: Weed Research and Information Center, University of California. pp. 544.
- Forbert, M. and L. Naumovich. 2016. *Restoration and Invasives Management Plan for the Dedication of McKesson Properties Parcels One, Two, and Three to the San Bruno Mountain Habitat Conservation Plan*. June 9.
- McClintock, E. M., Reeberg, P., & Knight, W. 1990. *Flora of the San Bruno Mountains, San Mateo County, California*.
- Naumovich, L. and C. Niederer. 2016. *2015 Rare, Threatened, and Endangered Plant Survey: San Bruno Mountain*. Report for the San Mateo County Parks Department. Creekside Science. Menlo Park, CA
- Nomad Ecology. 2018. *San Bruno Mountain West Peak Restoration and Monitoring Plan*. Prepared for PG&E. July.
- _____. 2019. *Technical Memorandum: Restoration Completion and As-Built Report for the Pacific Gas & Electric San Bruno Mountain West Peak Restoration Project in San Mateo County, California*. Prepared for PG&E. May.
- San Mateo County Parks. 2016a. *San Bruno Mountain Habitat Conservation Plan: Year 2015 Activities Report for Federally Listed Species and Habitat Management – Endangered Species Permit PRT-2-9818*. Prepared for the US Fish and Wildlife Service.
- _____. 2016b. *San Bruno Mountain West Peak Restoration Outline*. Original version dated March 2008, revised September 2016.
- Swiecki, T.J. and Bernhardt, E.A. 2015. *Using Green Pears to Bait for Phytophthora*. Phytosphere Research. Vacaville, CA.
- Thomas Reid Associates (TRA). 1983. *San Bruno Mountain Habitat Conservation Plan, Volumes I and II*. San Bruno Mountain Habitat Conservation Plan Steering Committee. Prepared for San Mateo County.
- TRA Environmental Sciences (TRA). 2008. *San Bruno Mountain Area Habitat Management Plan 2007*. Prepared in support of the San Bruno Mountain Habitat Conservation Plan for the San Mateo County Parks Department; original version dated September 2007, revised March 2008.

U.S. Department of Agriculture, Soil Conservation Service (USDA). 1991. Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California.

West Coast Wildlands. 2016. *Restoration and Invasives Management Plan for the Dedication of McKesson Properties Parcels One, Two, and Three to the San Bruno Mountain Habitat Conservation Plan*. Prepared for the San Mateo County Parks Department.

Working Group for *Phytophthora* in Native Habitats. 2016b. *Guidelines to Minimize Phytophthora Pathogens in Restoration Nurseries*. www.suddenoakdeath.org. Accessed March 24, 2017.

_____. 2016b. *Guidelines to Minimize Phytophthora Contamination in Restoration Projects*. www.suddenoakdeath.org. Accessed March 24, 2017.

Personal Communications

Arechiga, Ramona. 2018. Communication with Erin McDermott during restoration plan review.

Appendix A SAN BRUNO MOUNTAIN INVASIVE SPECIES PRIORITY LIST

SPECIES NAME	COMMON NAME	SBM PRIORITY ¹	CAL-IPC RATING ²	CDFA RATING ³
<i>Avena</i> sp.	wild oats	B	Moderate	---
<i>Briza maxima</i>	rattlesnake grass	B	Limited	---
<i>Bromus diandrus</i>	ripgut brome	B	Moderate	---
<i>Bromus hordeaceus</i>	soft chess	C	Limited	---
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian thistle	A	Moderate	Listed
<i>Carprobrotus edulis</i>	iceplant	B	High	---
<i>Centaurea calcitrapa</i>	purple star thistle	A	Moderate	Listed
<i>Centaurea melitensis</i>	tocalote	A	Moderate	Listed
<i>Centaurea solstitialis</i>	yellow star thistle	A	High	Listed
<i>Centranthus ruber</i>	red valerian	A	---	---
<i>Chenopodium album</i>	lambsquarters	B	---	---
<i>Cirsium vulgare</i>	bull thistle	B	Moderate	Listed
<i>Conium maculatum</i>	hemlock	B	Moderate	---
<i>Cortaderia jubata</i>	jubata grass	A	High	---
<i>Cotoneaster</i> sp.	---	B	Moderate	---
<i>Cytisus striatus</i>	Portuguese broom	A	Moderate	---
<i>Delairea odorata</i>	cape ivy	A	High	Listed
<i>Digitalis</i> sp.	fox glove	C	Limited	---
<i>Echium candicans</i>	pride of Madera	C	Limited	---
<i>Ehrharta erecta</i>	panic veldt grass	A	Moderate	---
<i>Eucalyptus globulus</i>	blue gum	A	Limited	---
<i>Euphorbia lathyris</i>	compass plant	B	---	---
<i>Festuca perennis</i>	Italian rye grass	B	Moderate	---
<i>Foeniculum vulgare</i>	fennel	A	High	---
<i>Genista monspessulana</i>	French broom	A	High	Listed
<i>Hedera helix</i>	English ivy	A	High	---
<i>Helichrysum petiolare</i>	licorice plant	C	Limited	---
<i>Helminthotheca echioides</i>	bristly ox-tongue	A	Limited	---

SPECIES NAME	COMMON NAME	SBM PRIORITY ¹	CAL-IPC RATING ²	CDFA RATING ³
<i>Hesperocyparis macrocarpa</i>	Monterey cypress	B	---	---
<i>Hirschfeldia incana</i>	field mustard	B	Moderate	---
<i>Holcus lanatus</i>	velvet grass	A	Moderate	---
<i>Hypochaeris radicata</i>	hairy cats ear	C	Moderate	---
<i>Lactuca serriola</i>	prickly lettuce	C	---	---
<i>Lactuca virosa</i>	bitter lettuce	C	---	---
<i>Leucanthemum vulgare</i>	oxeye daisy	A	Moderate	---
<i>Lobularia maritima</i>	sweet alyssum	B	Limited	---
<i>Lythrum salicaria</i>	loosestrife	A	High	Listed
<i>Myoporum laetum</i>	lollypop tree	B	Moderate	---
<i>Oxalis pes-caprae</i>	bermuda buttercup	A	Moderate	---
<i>Phalaris aquatica</i>	harding grass	B	Moderate	---
<i>Pinus radiata</i>	Monterey pine	B	---	---
<i>Pyracantha crenulate</i>	Nepalese firethorn	C	Limited	---
<i>Raphanus sativus</i>	jointed charlock	A	Limited	---
<i>Rubus armeniacus</i>	Himalayan blackberry	A	High	---
<i>Rumex acetosella</i>	sheep sorrel	C	Moderate	---
<i>Scabiosa altropurpurea</i>	pincushions	A	---	---
<i>Senecio glomeratus</i>	cutleaf burnweed	C	Moderate	---
<i>Silybum marianum</i>	milk thistle	C	Limited	---
<i>Solanum</i> sp.	---	C	---	---
<i>Ulex europaeus</i>	gorse	A	High	---
<i>Vinca major</i>	periwinkle	C	Moderate	---
<i>Zantedeschia aethiopica</i>	cala lily	C	Limited	---

List compiled from SBM HMP (TRA 2008).

¹ San Bruno Mountain Priority Ranking:

- A: Severe
- B: Moderate
- C: Limited

² California Invasive Plant Council rating as listed in the California Invasive Plant Inventory Database (Cal-IPC 2017).

³ Species considered a noxious weed by California Department of Food and Agriculture are listed on the California Noxious Weed List (CDFA 2017).

Appendix B GUIDELINES TO MINIMIZE *PHYTOPHTHORA* CONTAMINATION IN RESTORATION PROJECTS

Guidelines to Minimize *Phytophthora* Contamination in Restoration Projects

These guidelines aim to avoid contamination of restoration sites with exotic pathogenic *Phytophthora* species or other plant pathogens during planting and related activities.

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A. Procedures for sanitizing tools, surfaces, and footwear.....	5
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Definitions:

- **Holding facility or nursery:** A facility where nursery stock is maintained for a short to extended period of time prior to planting. Plant maintenance activities may include irrigation, fertilization or light pruning, as necessary. Nurseries involved in most other activities, including propagation or repotting are considered production nurseries.
- **Job site:** The job site includes areas for planting, soil stockpiling, parking, and access roads within and leading to the site.
- **Nursery stock:** All types of nursery grown plants.
- **Planting area:** Area being planted for habitat restoration, erosion control, or other purposes.
- **Planting site:** An individual planting basin or other spot, typically no larger than one square yard, where an individual plant or several grouped plants will be installed.
- **Sanitize:** Clean and treat with a sanitizing agent or via a lethal heat exposure to kill plant pathogens present as external contamination.
- **Sanitizing agent:** Materials such as bleach (sodium hypochlorite solutions), alcohol, quaternary ammonium compounds, and peroxides that can directly kill exposed propagules of *Phytophthora* or other plant pathogens when used properly. Most sanitizing agents can also kill a wide variety of bacteria and deactivate many viruses. Note that most materials referred to as fungicides are applied to plants to suppress disease but may not kill the pathogens and are not sanitizing agents.

I. Construction projects

In an effort to minimize the spread of plant pathogens the exterior and interior of all equipment and tools must be clean and free of debris, soil and mud (including tires, treads, wheel wells and undercarriage) prior to arrival at a new job site.

General guidance – suggested standard operating procedures:

- a. Vehicles need to stay on established roads unless infeasible.
- b. In general, vehicles and equipment need to be maintained clean – interior and exterior free of mud, debris and soil especially during the wet season.
- c. In general, work shoes need to be kept clean- inspect shoe soles and knock mud, debris and soil off treads before moving to a new job site.
- d. To minimize the potential for spreading potentially contaminated soil and time required for decontamination, if possible, avoid vehicle traffic and field work when soils are wet enough to stick readily to shoes, tools, equipment and tires.

II. Planting at Field Sites

Overview: Three general routes for the spread of *Phytophthora* and other soilborne plant pathogens are addressed in these guidelines. These routes are (1) contamination of planting material, including clean nursery stock, and other materials installed at the site, (2) inadvertent introduction of pathogens to a job site from other outside sources (e.g., via contaminated equipment), and (3) potential movement of undetected contamination within the planting area.

These guidelines assume that all nursery stock was originally grown under phytosanitary conditions and tested as remaining free from disease in the nursery (refer to nursery guidelines). These guidelines address how to protect the planting area from subsequent contamination during the delivery, storage onsite, and installation of planting stock and materials.

1. Prevent contamination of clean nursery stock or other clean plant materials

Planting stock shall be protected from potential contamination from the point that it leaves the production nursery or collection site until planting. Note that nursery stock has a high risk of infection by *Phytophthora* species if exposed to these pathogens. Excluding these pathogens provides the only viable option for maintaining outplanted nursery stock free of *Phytophthora*.

1.1. Maintaining nursery stock in a holding facility

When holding stock for an extended period (after delivery from production nursery and before planting), the following practices need to be followed to prevent contamination of the nursery stock with *Phytophthora*.

- 1.1.1. Delivered nursery plants that will be held before planting shall be transferred to cleaned and sanitized raised benches and maintained as described in “Guidelines to Minimize *Phytophthora* Pathogens for holding (non-production) nurseries at restoration sites, Section 3.”

1.2. Handling and transporting nursery plants at the job site

- 1.2.1. Nursery plants shall be transported on or in vehicles or equipment that have been cleaned before loading the stock. Truck beds, racks, or other surfaces need to be swept, blown with compressed air and/or power washed as needed so they are visibly free of soil and plant detritus. More information on sanitizing surfaces are described in the Appendix.
- 1.2.2. Keep plants in sanitized vehicles or on sanitized carts, trailers, etc. until delivered to their planting sites. (More information may be found in sections 1.3.3. and 1.3.4.)
- 1.2.3. At the job site, plants shall be handled to prevent contamination until delivered to each planting site. Nursery stock shall not be placed on the soil or other potentially contaminated surfaces until they are placed at their specific planting sites.
- 1.2.4. If it is necessary to offload plants at the job site, plants may be placed on clean waterproof plastic tarps or other clean, sanitized surfaces. If tarps are used for holding plants, one surface needs to be dedicated for contact with nursery stock and will be cleaned and sanitized to maintain phytosanitary conditions.

1.3. Other planting site inputs

- 1.3.1. Washing, soaking, or irrigation of plant material shall be conducted using clean water sources as specified in the Appendix below. Untreated surface waters should not be used for these purposes.
- 1.3.2. On-site or off-site collection of plant materials, including seed and cuttings for direct planting, shall be conducted in a phytosanitary manner (see guidelines for collection practices at www.calphytos.org).
- 1.3.3. Prior to delivery to the planting areas, mulch, compost, soil amendments, inoculants, and other organic products need to be examined and determined to be low-risk for pathogen introduction. Acceptable materials are those that are free of contamination by plant pathogens based on their composition or manufacturing conditions, or that have been exposed to an effective heat treatment to eliminate pathogens. Such materials must be handled and stored in a manner that prevents contamination. At the job site, delivered materials shall be handled to prevent contamination until delivered to each planting site in the same manner specified for nursery stock in section 1.2 above.
- 1.3.4. All other materials to be installed at the site shall be of new or sanitized material that has not been stored in contact with soil, untreated surface waters, or other potentially contaminated materials. This includes irrigation supplies (such as pipe, fittings, valves, drip line, emitters, etc.), erosion control fabrics, fencing, stakes, posts, and other planting site inputs.

2. Cleaning and sanitation required before entering planting area to prevent introducing contamination from other locations

Phytophthora contamination can be present in agricultural and landscaped areas, in commercial nursery stock, and in some infested native or restored habitat areas. Contamination can be spread via soil, plant material and debris, and water from infested areas. Arriving at the site with clean vehicles, equipment, tools, footwear, and clothing helps prevent unintentional contamination of the planting site from outside sources.

2.1. Vehicles, equipment, and tools

- 2.1.1. Equipment, vehicles and large tools must be free of soil and debris on tires, wheel wells, vehicle undercarriages, and other surfaces before arriving at the planting area. A high pressure washer and/or compressed air may be used to ensure that soil and debris are completely removed. Vehicles that only travel and park on paved roads do not require external cleaning.
- 2.1.2. The interior of equipment (cabs, etc.) should be free of mud, soil, gravel and other potentially contaminated material. Interiors should be vacuumed, washed, and/or treated with sanitizing agents as needed to eliminate pathogen propagules that could be transferred to the planting area.
- 2.1.3. Small tools and other small equipment (including hoses, quick couplers, hose nozzles, and irrigation wands) need to be washed to be free of soil or other contamination and sanitized (see Appendix).
- 2.1.4. Hoses shall be new or previously used only for clean water sources (see Appendix).

2.2. Footwear and clothing

- 2.2.1. Soles and uppers of footwear need to be visibly free of debris and soil before arriving at the planting area. (See the Appendix for more details.)
- 2.2.2. At the start of work at each new job site, worker clothing shall be free of all mud, soil or detritus. If clothing is not freshly laundered, all debris and adhered soil should be removed by brushing with a stiff brush.
- 2.2.3. Gloves and non-porous knee pads must be new (if disposable) or laundered/sanitized at the start of each work day, and/or clean coveralls must be worn. Non-disposable gloves should be made of or coated with material, such as nitrile, that can be sanitized.

3. Prevent potential spread of contamination within planting areas

Phytophthora can also be spread within plantings areas if some portions of the site are contaminated. However, it is not possible to identify every portion of a planting area that may contain *Phytophthora*. Because *Phytophthora* contamination is not visible, working practices should minimize the movement of soil within the planting area to reduce the likelihood of pathogen spread.

Note that areas with higher risk of *Phytophthora* infestation include areas adjacent to planted landscaping, areas previously planted with *Phytophthora*-infected stock, areas with existing or recently removed woody vegetation, disturbed wetlands, and areas directly along watercourses. Areas with low risk of contamination typically include upland sites with only grassy vegetation or sites where surface soils have been removed.

3.1. Worker training and site access

- 3.1.1. Before entering the job site, field workers need to receive training that includes information on *Phytophthora* pathogens and how to prevent the spread of these and other soilborne organisms by following approved phytosanitary procedures. Workers should also be informed about any site-specific phytosanitary practices before work commences.

- 3.1.2. Do not bring more vehicles into the planting area than necessary and keep vehicles on surfaced or graveled roads whenever possible to minimize potential for soil movement.
- 3.1.3. Travel off roads or on unsurfaced roads should be avoided when soil and road surfaces are wet enough that soil will stick to vehicle tires and undercarriages.
- 3.1.4. To allow for adequate decontamination of equipment, tools, gloves, and shoes, avoid planting under overly wet conditions or when soil is saturated.

3.2. Minimize unnecessary movement of soil and plant material within the planting area, especially from higher to lower risk areas

- 3.2.1 Brush off soil from tools and gloves when moving between successive planting sites to prevent repeated collection and deposition of soil across multiple sites.
- 3.2.2. Avoid contaminating clothing with soil during planting operations. Brush off soil accumulations before moving from one planting site to the next. Use nonporous knee pads that are cleaned between planting sites if kneeling is necessary.
- 3.2.3 When possible, plant nursery stock from a given block in the same local area rather than spreading it widely. If a problem is associated with a given block of plants, it will be easier to detect and deal with it if the plants are spatially grouped.
- 3.2.4. Phase work to minimize movement between areas with high and low risk of contamination. Where possible, complete work in low risk areas before moving to higher risk areas. Alternatively, assign personnel to working in either high or low risk areas exclusively to reduce the need for decontamination.
- 3.2.5. Clean soil and plant debris from large equipment and sanitize hand tools, buckets, gloves, and footwear when moving from higher risk to lower risk areas or when moving between widely separated portions of the planting area.
- 3.2.6. All non-plant materials to be installed at the site (irrigation equipment, erosion control fabric, fencing, etc.) shall be handled to prevent movement of soil within the site, especially movement from higher risk to lower risk areas. Materials should be kept free of soil contamination by maintaining them in clean vehicles or carts, trailers, etc., or stockpiling in elevated dry areas on clean tarps until used.

4. Clean water specifications

Objective: use only uncontaminated, appropriately-treated water for irrigation.

- 4.1.1. Water used for irrigating plants needs to be uncontaminated. See Appendix for specifications.

Appendix

A. Procedures for sanitizing tools, surfaces, and footwear

Surfaces and tools should be clean and sanitized before use. Tools and working surfaces (e.g., plant carts) should be smooth and nonporous to facilitate cleaning and sanitation. Wood handles on tools should be sealed with a waterproof coating to make them easier to sanitize.

Before sanitizing items, remove all soil and organic material (roots, sap, etc.) from their surfaces. If necessary, use a detergent solution and brush to scrub off surface contaminants. The sanitizing agent may also be used as a cleaning solution. Screwdrivers or similar implements may be needed to clean soil out of crevices or shoe treads. Brushes and other implements used to help remove soil must be visibly clean and sanitized after use.

After surface soil and contamination are removed, treat the surface with one of the following sanitizing agents, allowing the appropriate contact time before rinsing. If surfaces are clean and dry, wet surfaces thoroughly and allow for the appropriate contact time listed. If the sanitizer has been used to help clean the surface, use fresh sanitizer to rinse off any dirty solution and then allow the required contact time. If treated surfaces are wetted with water, the sanitizing solution will become diluted. Apply enough sanitizer to completely displace the water film and then allow the required contact time. Sanitizing agents may be applied with spray bottles to thoroughly wet the surface. Observe all appropriate safety precautions to prevent contact with eyes or skin when using these solutions.

- 70-90% ethyl or isopropyl alcohol - spray to thoroughly wet the surface and allow to air dry before use
- freshly diluted bleach solution (0.525% sodium hypochlorite, Table 1) for a minimum of 1 minute (due to corrosivity, not advised for steel or other materials damaged by bleach)
- quaternary ammonium disinfectant - use according to manufacturer recommendations, making sure that the label indicates that the product is suitable for your use situation and has activity against *Phytophthora* when used as directed. Solution should be freshly made or tested to ensure target concentration.

Table 1. Dilutions of commonly available bleach products needed to obtain approximately 0.525% sodium hypochlorite concentrations (5000 ppm available chlorine).

Percent sodium hypochlorite in bleach	Parts bleach	Parts water	Diluted bleach percent sodium hypochlorite
5.25%	1	9	0.525%
6.0%	1	10.4	0.526%
8.25%	1	14.6	0.529%
8.3%	1	14.8	0.525%

For example, adding 100 ml of 5.25% bleach to 900 ml of water will make 1000 ml of 0.525% NaOCl solution. If using 8.3% bleach, add 100 ml of bleach to 1480 ml of water to make 1580 ml of 0.525% NaOCl.

B. Clean water specifications

Surface waters, including untreated water from streams or ponds and nursery runoff, can be sources of *Phytophthora* contamination. Only uncontaminated water or water that has been effectively treated to remove or kill *Phytophthora* should be used for rinsing or irrigating plant material.

5.1. Water used for irrigation shall be from treated municipal water supplies or wells and delivered through intact pipes with backflow prevention devices. Tertiary-treated municipal recycled water is acceptable.

5.2. If well water is used, wellheads shall be protected from contamination by surface water sources.

5.3 Untreated surface waters and recycled nursery runoff shall not be used, and plants shall not be held where potential contamination from such sources is possible via splash, runoff, or inundation.

5.4. Irrigation equipment must be kept free of contamination that could be transferred to irrigation water or plants. All hoses, wands, and nozzles, and hand irrigation equipment must either be new or sanitized before use. Drip irrigation and other sprinkler parts should be new or sanitized. Hose ends, wands, or nozzles that become contaminated with soil or mud during use should be cleaned and sanitized before being used further.

Appendix C STANDARD SAN BRUNO MOUNTAIN HABITAT CONSERVATION PLAN AVOIDANCE AND MINIMIZATION MEASURES

Standard San Bruno Mountain Habitat Conservation Plan Avoidance and Minimization Measures

Potential habitat is available on San Bruno Mountain for the federally listed mission blue butterfly, callippe silverspot butterfly, San Bruno elfin butterfly, bay checkerspot butterfly, as well as several special status plant species. These species cannot be handled or harassed at any time.

General Protections for Projects within Conserved Habitat

1. Biological Monitoring. An approved Qualified Biologist shall monitor and is required to be on site for most projects undertaken in Conserved Habitat. No work, laydown, or staging may occur without a biologist on site. The biologist on site will have the authority to temporarily halt work when safe to do so in coordination with the Project Lead/ Manager to avoid impacts to listed species or sensitive habitat.
2. An approved Qualified Biologist will conduct visual surveys of the Project Area before implementation of Project activities to determine:
 - a. the presence or absence of Federally listed species
 - b. suitable habitat for Federal listed species
 - c. other sensitive resources and species of concern
3. An approved Qualified Biologist will flag all sensitive biological resources for avoidance.
4. Special Status Wildlife: If a special status species is observed in the work area, work shall stop immediately and the individual(s) shall be allowed to leave on its own. No special status wildlife or plant species shall be touched, picked up, and/or removed from the site.
5. An approved Qualified Biologist will deliver Environmental Awareness Training.
 - a. Prior to starting any work all Project participants must receive training on environmental and cultural conditions and requirements applicable to the project.
 - b. If additional crewmembers arrive later in the job, they must go through the training prior to beginning work.
 - c. Training will include a discussion of all of the avoidance measures that must be implemented during work.
 - d. Training will include information on the federal and state Endangered Species Acts and the consequences of noncompliance with these acts.
 - i. Workers will be informed about the presence, life history, and habitat requirements of all special-status species, including nesting birds that have the potential to occur near or within the Project Area.
 - ii. Training will also include information on state and federal laws protecting nesting birds, mission blue butterfly, callippe silverspot butterfly, San Bruno elfin butterfly, bay checkerspot butterfly, all butterfly specific host plants, as well as several special status plant species.,
 - e. If applicable, training concerning pre-construction vegetation removal requirements, limits of work space and areas avoided by design, top soil salvage requirements, vehicle wash measures, parking limitations, wetlands and other water resources.
 - f. Provide an educational brochure that will include color photos of sensitive species and a discussion of avoidance and minimization measures that must be implemented.

- g. Provide documentation to the Habitat Management Supervisor the methodology to verify that Project Participants have taken the training.
6. Clean Vehicles: All vehicles used for the Project shall be cleaned and free of weeds when brought into the Project area to prevent the spread and/or introduction of invasive plant species and sudden oak-death disease. All vehicles and equipment must be washed/ power washed prior to entering the site.
7. Clean Personnel and Equipment: All personnel and their field gear must be free from any vegetation, soil, mud, and seeds in order to minimize the spread of noxious weeds, diseases, and pests.
8. Invasive plants in the Project Area shall be removed. Methods of removal may involve hand work or regulated use of herbicides. Treatment of Invasive weeds is required annually for up to a five-year period post vegetation clearance. Buffer areas immediately adjacent to Conserved Habitat require on-going maintenance to control invasive species and coastal scrub, consistent with the goals of the San Bruno Mountain Habitat Management Plan.
9. Disturbed areas must not pose a risk for erosion or sediment discharge into streams or water bodies.
10. Disturbed areas that are to be revegetated will be replanted with habitat appropriate native plants in accordance with the San Bruno Mountain Habitat Conservation Plan and approved by the Habitat Manager prior to installation.
11. No petroleum products, chemical, silt, fine soil, or any substance or material deleterious to sensitive species shall be allowed within Conserved Habitat.
12. The number and size of the staging areas and access routes and the footprint of work activities shall be limited to the minimum number and amount possible. All boundaries and routes shall be clearly marked and situated outside of all HCP conservation areas, wetland and riparian areas.
 - a. No access, excavation, parking, laydown, or staging may occur outside of the approved Project Area as shown in Project Maps or Construction drawings. Only approved access and roads as shown on the maps/drawings may be used. No alternative access routes, off-road vehicle access, or turning around is allowed anywhere not identified on the maps/drawings.
13. All staging areas and fueling or maintenance of vehicles and equipment shall occur outside of Conserved Habitat and at least 65 feet from any water body, drainages (including storm drains) or riparian habitat.
 - a. No petroleum products, chemical, silt, fine soil, or any substance or material deleterious to sensitive species shall be allowed to pass into or be placed where it could enter a stream channel. Any spills of hazardous materials shall be cleaned up and/or removed immediately. Any such spills shall be reported to San Mateo County Parks.
 - b. Major vehicle maintenance, repairs, and washing shall be done off-site.
 - c. Vehicular and equipment refueling is prohibited.
14. All trash, debris, fencing, and flagging removed from the Project area shall be disposed of at an approved disposal site.
15. Prohibited activities. Trash dumping, firearms, open fires (such as barbecues), hunting, and pets are prohibited at all work locations and access roads. No smoking in or near the worksite, except in Environmental Inspector and Safety Inspector designated areas outside of San Bruno Mountain Park. Smoking is prohibited within the Park.
16. Spilled dry materials shall be swept up immediately.
17. No monofilament plastic will be used for erosion control (e.g. matting, fiber roll, wattles, silt fencing backing or sod) in Project Area. Appropriate materials are burlap, coconut fiber, or appropriate alternative. All wattles must be certified weed free and sterile.

18. Open pits that may entrap wildlife shall be covered at night. Open pipes should be inspected prior to blocking off to ensure wildlife are not entrapped within them.

Nesting Bird Protections (February 1 – September 1)

1. Nest surveys are required for all vegetation work within bird nesting season:
 - a. If any nests are detected within a project area, a no activity buffer zone will be delineated around the nest (CDFG typically recommends a 50-foot radius buffer zone around active songbird nests and a 250-foot buffer zone around active raptor nests).
 - b. No habitat management activities can be performed within the buffer zones during the bird nesting season (February 1 to September 1), or until the nest is determined to be no longer active.

Herbicide and Hand Control Projects for Invasive Plants

2. For herbicide and hand control projects that are conducted year-round:
 - a. The habitat management supervisor (or an approved biologist by the habitat management supervisor) should conduct pre-project surveys for nesting birds and other wildlife prior to commencing herbicide and/or hand control work. The habitat management supervisor or qualified biologist must be competent in identifying signs of wildlife usage (nests, dens, etc.).
 - b. For projects near drainages, work should be scheduled for the dry season (**June to August**) to the greatest extent possible, to minimize any potential impact to aquatic areas. A 20-foot buffer zone on both sides of drainages is currently required for non-aquatic approved herbicides (Forbert, pers. comm).
 - c. Invasive species control work targeting species utilized as nectar plants by the mission blue, callippe silverspot butterflies, and/or San Bruno elfin butterflies should be treated prior to the flowering time of the invasive species to prevent impacts to nectaring butterflies.

Vegetation Clearance Projects

3. Vegetation removal will be minimized to the extent feasible to complete work.
4. Care will be taken during vegetation removal to avoid any special-status plant species and flagged resources shall be avoided by at least a 3-foot buffer.
5. Invasive plants in the Project Area shall be removed. Methods of removal may involve hand work, mechanical, or regulated use of herbicides.
6. Treatment of invasive weeds is required annually for up to a five-year period post vegetation clearance.
7. Buffer areas immediately adjacent to Conserved Habitat require on-going maintenance to control invasive species and coastal scrub spread into Conserved Habitat, consistent with the goals of the San Bruno Mountain Habitat Management Plan.

Brush and Tree Clearing Projects (using mechanical methods, goat grazing, prescribed burning or other methods)

8. Shall be limited to the fall and/or winter months (September 1 to February 1), unless:
 - a. Pre-project surveys for nesting birds are conducted and impacts to nesting birds are determined to be insignificant.
 - b. Tree and woodland removal projects should have pre-project assessments for roosting bat species.
 - c. Project activities should not be conducted within a 100-foot buffer zone on both sides of drainages unless these activities are deemed necessary to remove an

invasive species, protect a listed species, and/or have soil and slope aspects that provide suitable conditions for grassland restoration within the buffer zone.

- i. Appropriate erosion control measures will be implemented for these exceptions. This will provide additional protection to species that nest near drainages, and minimize the potential for erosion and sedimentation pollution.

Invasive Species Introduction into Project Area

9. An approved Qualified Biologist shall verify that the spread of invasive exotic plant species is being avoided to the maximum extent possible through the inspection of personnel, equipment, and vehicles.
10. All equipment, work and personal trucks/ cars arriving onsite must be clean and free of soils and plant material. In order to do so, prior to arrival on site, vehicles and equipment that have been driven off road (grass/dirt) shall be washed either at a car wash or other approved area. This requirement for washing tires and the undersides of the body of the vehicle applies to all vehicles and equipment arriving onsite that have been driven off-road prior to arrival on the project. Vehicles that have been washed and then only driven on pavement do not need to repeat the washing.
11. The approved Qualified Biologist will document inspections have occurred on daily monitoring forms and has the authority to request that a personnel, equipment, and/or vehicles be turned around and cleaned and/or washed prior to entering the work site.

Appendix D SAN BRUNO MOUNTAIN HABITAT CONSERVATION PLAN WORK PERFORMED FORM

Date: ____ - ____ - ____

Staff Name: _____ - ____ hrs

Crew Name(s): _____ - ____ hrs

_____ - ____ hrs

_____ - ____ hrs

_____ - ____ hrs

_____ - ____ hrs

_____ - ____ hrs

Location: (check all that apply)

____ Brisbane Acres (BA-01)

____ Dairy & Wax Myrtle Ravines (DW-01)

____ Dairy & Wax Myrtle Ravines (DW-02)

____ Dairy & Wax Myrtle Ravines (DW-03)

____ Dairy & Wax Myrtle Ravines (DW-04)

____ Dairy & Wax Myrtle Ravines (DW-05)

____ Dairy & Wax Myrtle Ravines (DW-06)

____ Devil's Arroyo (DA-01)

____ Hillside/Juncus (HJ-01)

____ Owl & Buckeye Canyons (OB-01)

____ Owl & Buckeye Canyons (OB-02)

____ Owl & Buckeye Canyons (OB-03)

____ Owl & Buckeye Canyons (OB-04)

____ Owl & Buckeye Canyons (OB-05)

____ Owl & Buckeye Canyons (OB-06)

____ Ridge Trail (RT-01)

____ South Slope (SS-01)

____ Southeast Ridge (SR-01)

____ Southeast Ridge (SR-02)

____ Saddle (SA-01)

____ Saddle (SA-02)

____ Saddle (SA-03)

____ Saddle (SA-04)

____ Terrabay South Slope (TB-01)

____ Terrabay South Slope (TB-02)

____ Terrabay Southeast Ridge (TB-03)

____ Other: _____

Effort:

____ Monitoring

____ Herbicide

____ Handwork

____ Restoration

Weather:

Start - Temp ____°

____ Clear

____ Overcast: ____ % cloud cover

____ Wind: ____ mph

____ Vegetation: ____ dry ____ damp

Stop - Temp ____°

____ Clear

____ Overcast ____ % cloud cover

____ Wind ____ mph

Treatment: ____ Initial ____ Follow up

Priority Management Area:

____ Retreatment and Expansion

____ New Treatment

____ Terra Bay Treatment

____ Scrub Mgmt - 30yr Assessment

____ Historic Oxalis

____ Historic Fennel

Infestation:

Species	Area (acres)	Equipment & Tools	Density (L/M/H)*	Herbicide Mixture(s)				
				Herbicide(s)	%	oz	Additives	Total(gal)

*Density – N = Negligible < 5% canopy cover, L = Low < 25% canopy cover, M= 25-50% canopy cover, H= >50% canopy cover (visual estimate within the work area)

Observations:
