

DRAFT

**Initial Study and
Negative Declaration**

**Fort Ross State Historic Park
Kashia Loop Trail**

Lead Agency:



**California Department of Parks and
Recreation
One Capitol Mall, Suite 410
Sacramento, CA 95814**

February 2021



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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Prepared by:



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

**2525 Warren Drive
Rocklin, California 9567**

**DRAFT NEGATIVE DECLARATION
FORT ROSS STATE HISTORIC PARK KASHIA LOOP TRAIL**

Lead Agency:	California Department of Parks and Recreation
Project Proponent:	California State Parks
Project Location:	Fort Ross Historic Park, 19005 Coast Highway 1, Jenner, CA 95450

AVAILABILITY OF DOCUMENTS: The Initial Study for this Negative Declaration is available for review online at the State Parks Website at the following link: https://www.parks.ca.gov/?page_id=981

Project Description

The Fort Ross State Historic Park Kashia Loop Trail (Project) is a proposed Class I pedestrian interpretive trail route totaling approximately 1.66 miles. The project encompasses the integration of new trail construction (approximately 1.26 miles), and existing road and trail routes (approximately 0.4 mile). Together, the combined routes will link many existing park features with areas of interest previously unidentified to the general public.

Overall design will include interpretation at selected points to bring together stories from the indigenous Kashia Band of Pomo Indians; Alaska Natives; the Call Ranch Period; and others in the international community once associated with the Russian American Company's Ross Settlement. The project will create an interpretive multimedia experience encouraging park visitors to explore the deep and complex layered cultural landscape of the park.

Public Review Period:

A copy of the Initial Study is attached. Questions or comments regarding this Draft Initial Study/Negative Declaration should be submitted in writing to:

Brad Michalk, California State Parks, Northern Service Center
One Capitol Mall, Suite 410
Sacramento, CA 95814
E-mail Address: CEQA.NSC@parks.ca.gov.

Submission must be in writing and postmarked or received by mail or e-mail no later than **March 7, 2021**.

Pursuant to Section 21082.1 of the California Environmental Quality Act, the California Department of Parks and Recreation (DPR) has independently reviewed and analyzed the Initial Study and See comment above Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of DPR. DPR, as lead agency, also confirms that the project requirements detailed in these documents are feasible and will be implemented as stated in the Negative Declaration.

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Appendix B – Biological Resources Assessment, ECORP Consulting, Inc. 2020.
Appendix C – Botanical Survey Report, California State Parks (William Maslach) 2020.
Appendix D - Update to the Wetland Delineation and Botanical Survey Reports for the Fort Ross Cultural Trail Project, William Maslach, California State Parks
Appendix E – CONFIDENTIAL REPORT – Archaeological Survey and Site Boundary Testing for the Kashia Loop Trail, Fort Ross State Historic Park, Sonoma County, California, Far Western Anthropological Research Group, Inc. 2019.
Appendix F – Project Fuel Consumption, ECORP Consulting, Inc. 2020.
Appendix G – Emissions Modeling Outputs, ECORP Consulting, Inc. 2020.
Appendix H – Roadway Construction Noise Model, ECORP Consulting, Inc. 2020.

ACRONYMS AND ABBREVIATIONS

Term	Definition
°F	Degrees Fahrenheit
AB	Assembly Bill
ABA	Architectural Barriers Act of 1968
ACE	Areas of Conservation Emphasis
ADA	Americans with Disabilities Act

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Term	Definition
BA	biological assessment
BAAQMD	Bay Area Air Quality Management District
Basin Plan	2007 Water Quality Control Plan
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological opinion
BRA	Biological Resource Assessment
Cal EPA	California Environmental Protection Agency
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Sonoma County Regional Climate Action Plan - Climate Action 2020 and Beyond
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CCA	California Coastal Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CCT	California Coastal Trail
CDP	Coastal Development Permit
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California giant salamander
CH ₄	Methane
CHP	California Highway Patrol
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CRHR	California Register of Historic Places

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Term	Definition
CRLF	California red-legged frog
CUPA	Certified Unified Program Agency
CWA	California Water Act
dB	decibel
dba	A-weighted decibel(s)
DHPO	Department Historic Preservation Officer
DOC	Department of Conservation
DPM	diesel particulate matter
DPO	Departmental Preservation Officer
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EIR	Environmental Impact Report
EO	Executive Order
ESA	Environmentally sensitive area
ESHAs	Environmentally sensitive habitat areas
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIGR	Federated Indians of Graton Rancheria
FWARG	Far West Anthropological Research Group
FYLF	foothill yellow-legged frog
GHGs	Greenhouse Gases
HMMS	Harris Miller, Miller & Hanson Inc
IS	Initial Study
ITE	Institute of Transportation Engineers
LCP	Local Coastal Program
Ldn	day-night average sound level
Leq	equivalent noise level
LF	Linear-foot/feet
MBTA	Migratory Bird Treaty Act

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Term	Definition
MLD	Most Likely Descendent
MND	Mitigated Negative Declaration
MOA	Memorandum of Agreement
mph	Miles per hour
MSL	mean sea level
NAHC	Native American Heritage Commission
NPPA	Native Plant Protection Act
NPDES	National Pollutant Discharge Elimination System
N ₂ O	Nitrous Oxide
NIOSH	National Institute for Occupational Safety and Health
NO ₂	nitrogen dioxide
NoCAB	North Coast Air Basin
NO _x	Nitrogen Oxides
NRCS	Natural Resources Conservation Service
NSCAPCD	Northern Sonoma County Air Pollution Control District
O ₃	ozone
OHWM	Ordinary high-water mark
PM ₁₀ and PM _{2.5}	Particulate Matter
PPV	peak particle velocity
PRC	Public Resource Code
PRMD	Permit and Resource Management Department
PSR	Project-Specific Requirement
Proposed Project	Fort Ross State Historic Park Kashia Loop Trail Project
RAC	Russian-American Company
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SF	Square foot/feet
SRA	State Responsibility Area
SSC	Species of special concern
SWPPP	Storm Water Pollution Prevention Plan
TAC	toxic air contaminant

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Term	Definition
THPO	Tribal Historic Preservation Officer
SFBAAB	San Francisco Bay Area Air Basin
SHP	State Historic Park
SO2	sulfur dioxide
SPR	Standard Project Requirement
SR	State Route
SRA	Sensitive Receptor Area
SWPPP	Storm Water Pollution Prevention Plan
TCR	Tribal Cultural Resource
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Service
VMT	Vehicle miles traveled
WBWG	Western Bat Working Group
WEAL	Western Electro-Acoustic Laboratory, Inc.

SECTION 1.0 BACKGROUND

1.1 Summary

Project Title:	California Department of Parks and Recreation
Lead Agency Name and Address:	California Department of Parks and Recreation
Contact Person and Phone Number:	Brad Michalk (916) 445-8783
Project Location:	Fort Ross State Historic Park, 19005 Coast Highway 1 Jenner, CA 95450. The Park is located along Highway 1, approximately eight miles north of Jenner and 23 miles south of Gualala, Sonoma County.
General Plan Designation:	Public/Quasi-Public
Zoning:	PFCC/Public Facilities

1.2 Introduction and Regulatory Guidance

The California Department of Parks and Recreation (DPR) is the Lead Agency for the Fort Ross State Historic Park (FRSHP) Kashia Loop Trail Project (Proposed Project) in Sonoma County, California. This Initial Study/Negative Declaration (IS/ND) has been prepared by ECORP Consulting, Inc. to identify and assess the potential environmental impacts of the Proposed Project and has been arranged to satisfy requirements of the California Environmental Quality Act (CEQA) (Public Resource Code [PRC], Section 21000 et seq.) and State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. A CEQA IS is typically prepared to determine which CEQA document is appropriate for a Project (i.e., typically an IS leads to either a Negative Declaration, MND, or Environmental Impact Report [EIR]). If the Lead Agency determines that project plans or proposals made by or agreed to by DPR mitigate the potentially significant impacts to a less-than-significant level, a MND may be prepared instead of an EIR (CEQA Guidelines 15070(b)). This IS/ND is a written statement describing the reasons the Proposed Project would not have a significant effect on the environment, and therefore, why an EIR need not be prepared. This IS/ND also conforms to the content requirements under CEQA Guidelines 15071.

1.3 Lead Agency

The Lead Agency is the public agency with primary approval authority over the Proposed Project. In accordance with CEQA Guidelines 15051(b)(1), "the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with limited purpose." The Lead Agency for the Proposed Project is DPR. The contact person for the Lead Agency is:

Brad Michalk, Environmental Coordinator Supervisor
California Department of Parks and Recreation
One Capitol Mall, Suite 410
(916) 865-2391
CEQA.NSC@parks.ca.gov

Submission of questions or comments regarding this Initial Study/ Negative Declaration must be in writing and postmarked or received by email no later than **March 7, 2021**.

1.4 Document Purpose and Organization

The purpose of this document is to evaluate the potential environmental effects of the proposed Fort Ross State Historic Park (FRSHP) Kashia Loop Trail. Project Requirements have also been incorporated into the project to eliminate any potentially significant impacts to reduce them to a less-than-significant level.

This document is organized as follows:

Section 1 – Background: This chapter introduces the project and describes the purpose and organization of this document.

Section 2 – Project Description: This chapter describes the reasons for the project, scope of the project, objectives of the project, and the project requirements.

Section 3 – Environmental Factors Potentially Affected and Determination: This chapter identifies the overall significance of any potential impacts to natural and cultural resources, cumulative impacts, and impacts to humans, as identified in the IS.

Section 4 – Environmental Checklist and Discussion: This chapter identifies the significance of potential environmental impacts, describes the environmental setting for each environmental issue, and evaluates the potential impacts identified in the CEQA Environmental Checklist for Initial Studies. project requirements are incorporated, where appropriate, to reduce potentially significant impacts to a less-than-significant level.

Section 5 – Summary of Project Requirements: This chapter summarizes the conditions incorporated into the project as a result of the IS.

Section 6 – List of Preparers: This chapter provides a list of those involved in the preparation of this document.

Section 7 – References: This chapter identifies the references and sources used in the preparation of this IS/ND.

1.5 Summary of Findings

Section 4 of this document contains the IS Environmental Checklist, which identifies the potential environmental impacts and a brief discussion of each impact resulting from the implementation of the Proposed Project. Based on the IS and supporting environmental analysis provided in this document, the

proposed FRSHP Kashia Loop Trail would result in less than significant impacts for the following issues: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, tribal cultural resources, utilities and service systems, wildfires, and mandatory finding of significance.

In accordance with §15064(f) of the CEQA Guidelines, a ND shall be prepared if the proposed project will not have a significant effect on the environment. Based on the available project information and the environmental analysis presented in this document, there is no substantial evidence that the proposed project would have a significant effect on the environment.

SECTION 2.0 PROJECT DESCRIPTION

2.1 Introduction, Background, and Need

The proposed 1.66-mile Kashia Loop Trail is a Class I trail that will be a combination of new trail construction (1.26 miles) and trail use of existing Old Highway 1 (0.40 miles). Eleven interpretive stops are proposed to provide insight on how the Kashia Band of Pomo Indians thrived on the land by highlighting cultural practices and natural features important to the Kashia. The loop trail will provide park visitors with a deeper understanding and appreciation of indigenous peoples who still make this coastal region home. Additionally, other prominent historical points of interest from the ranching era will be identified and interpreted.

Fort Ross SHP is an internationally significant part of California's history, as well as a critical element of California's tribal cultural history. The site is recognized as a National Historic Landmark, National Register of Historic Places, and California Historical Landmark. The lands were acquired in 1906 and managed by the State Board of Control. The park was originally a State Historic Monument until its reclassification to a State Historic Park in 1963. Land was set aside for the public to preserve and interpret North America's southernmost Russian-American Company's (RAC's) international settlement (1812–1841). Now at 3,386 acres, Fort Ross SHP encompasses much undeveloped land extending beyond the developed core of the park.

The impression of vast undeveloped areas obscures the deep connections of California tribal peoples with the land for thousands of years prior to 1812. Also missing is the expansive cultural landscape associated with the RAC settlement and later supporting economies related to the ranching, farming, and lumber industries that once thrived on the Pacific maritime highway connecting the site to San Francisco and beyond.

The Kashia Loop Trail introduces park visitors from around the world to the deep history and multifaceted cultural heritage preserved across the Fort Ross SHP landscape. Fort Ross SHP's goal is to explore and communicate educational messages with park visitors through a variety of interpretive experiences. Visitors will gain a better sense of the various historical contexts by walking the land with the support of augmented and virtual reality experiences on their mobile devices that will help tell the stories and bring that history to life.

This project will also add approximately 1.25 miles to the California Coastal Trail system. Completion of the Coastal Trail has been a long-identified goal of various state agencies and non-profit groups. A proposed extension of the Coastal Trail through the park was identified in 2010. DPR prepared a Draft MND for the Coastal Trail Project in 2011. The Coastal Trail Project was never constructed due to lack of funding. The alignment of a portion of the proposed Kashia Loop Trail roughly follows a segment of the Coastal Trail proposed in 2011.

Additionally, in order to serve all members of the general public, new trail construction will be compliant with the Americans with Disabilities Act of 1990 (ADA) and the Architectural Barriers Act of 1968 (ABA). The requirements to ensure ADA compliance are discussed in Section 2.3 *Trail Siting and Design Standards*.

2.2 Project Location and Setting

Fort Ross SHP is located on the Sonoma County coast, 11 miles northwest of the town of Jenner on State Highway 1 (19005 Coast Highway 1, Jenner, California 95450). The Project Site is situated on the coastal bluff terrace bound by State Highway 1 to the northeast and the bluff edge to the south and west. Developed areas of the park are located to the south and east. The coastal terrace gently slopes from east to west toward the ocean. Elevations in the Project Area range from approximately 130 feet near State Highway 1 to around 60 feet at the bluff edge (see Figure 2-1. *Project Vicinity and Site Plan*).

The climate along the coast is heavily influenced by the Pacific Ocean, which brings summertime fog, low clouds, winter storms, and seasonally variable winds. Summer temperatures are mild (average 64 degrees Fahrenheit [°F]), with frequent low clouds and fog that provide important moisture to vegetation during the dry season. Prevailing summer winds are from the northwest, averaging 10 to 15 miles per hour (mph), with gusts as high as 50 to 60 mph. Winter storms often batter the coastline with strong, moisture-laden, southerly winds. These winter storms, from November through April, account for nearly all the average annual rainfall that varies between 30 and 38 inches. Winter temperatures are moderate, with averages ranging from highs in the 50s to lows in the 40s.

The Project Area is characterized as coastal prairie, interrupted by periodic stands of bishop pine (*Pinus muricata*) and rocky outcrops. The coastal prairie is some of the highest quality in Northern California and contains a relatively high percentage of native perennial grasses and forbs and provides brilliant displays of wildflowers in the spring and early summer. Bishop pines in the area have recently experienced a high rate of mortality within the project viewshed associated with pine pitch canker. Several unnamed perennial drainages originating in the coniferous forest to the east bisect the coastal terrace. Drainages support occasional outgrowth of riparian vegetation. Various ephemeral drainages are also present throughout. The area supports many diverse natural plant communities, including eleven identified as having special status. Recent surveys have identified seven individual special status plant species and many acres of wetlands within and immediately adjacent to the project footprint.

The diversity of habitat types found within the Project Area supports a wide range of common wildlife species as well as the potential for several special status species. Special status habitats present favor amphibians (including California red-legged frog [*Rana draytonii*], foothill yellow-legged frog [*Rana boylei*]), bird species (including burrowing owl [*Athene cunicularia*], northern harrier [*Circus cyaneus*]), invertebrates (including Behren's silverspot butterfly [*Speyeria callippe callippe*]), and mammals (including American badger [*Taxidea taxus*]), and a host of migratory bird species.

Cultural resources have a strong presence in the Project Area. Both prehistoric and historic sites are scattered throughout the landscape. The Fort Ross area has been home to the Kashia Band of Pomo Indians for thousands of years prior to Russian and European settlements. Many of these cultural resources and their locations serve as the foundation for proposed interpretive and educational programs that are a part of this project.

With the exception of developed park areas, the coastal terraces are grazed year-round. Livestock grazing has been ongoing at Fort Ross since Russian settlement in 1812. Without managed grazing, the terrace would become rapidly overgrown with coyote brush and other invasive species as shown in Figure 2-2 below. This photograph shows grazed areas in the foreground and non-grazed areas beyond the fence. Continued grazing in the Project Area has allowed special-status plants and habitats to flourish, although grazing has also caused accelerated erosion in some drainages. Typically, the site can have between 20-25 head of cattle on over 165 acres. The site also has numerous volunteer trails that have been created by both visitor use as well as cattle use. Currently, the site contains no controls or limitations as to where visitors can walk/hike.



Figure 2-2. Coyote Brush Onsite

2.3 Trail Siting and Design Standards

Development of public recreational trails projects undertaken by the DPR, follow the standards and guidelines outlined in the *Department of Parks and Recreation's Trails Manual* and *California State Parks Accessibility Guidelines*. These documents provide guidance in the design of access to developed and undeveloped areas of our parks. The purpose of this guidance is to enhance visitor experience and provide recreational opportunities in a sustainable manner while minimizing impacts to all resources.

DPR places trails into class categories to create a management system to objectively assign standards and priorities that are consistent with the primary function, environmental sensitivity, the relationship to developed facilities, and visitor use. The class categories are as follows:

- Class I includes accessible, equestrian and bike, interpretive, and hiking uses. Trails can include surfacing materials and various structures for improving ease of access, for resource protection, and visitor safety. The trail bed is 36–48 inches wide; trail clearing will be eight feet high and wide (four feet from trail center), brushing limits will be eight feet high, equestrian trail 10 feet high; trail structures will have a 48-inch tread width and a minimum 40-inch tread width between handrails and posts, equestrian bridges will have a 52-inch minimum tread width between handrails; 'all access' trail tread will be designed to accommodate wheelchairs and be a minimum of five feet wide, wide enough for two wheelchairs to pass one another.
- Class II - Includes hiking, equestrian, and bicycling trails providing access into regions away from developed visitor facilities. Native material is used from the trail tread; drainage structures such as turnpikes or puncheons are only installed over wetlands; trail bed is a minimum of 24 inches wide and trail tread will vary from 18–24 inches, depending on surrounding terrain. Trail clearing is the same as for Class I trails.
- Class III - Includes lightly used hiking trails; native materials used for trail tread; drainage structures are only installed as a mitigation measure; trail bed is a minimum of 18 inches wide and trail tread is 12–18 inches wide, depending on surrounding terrain. Trail clearing will be eight feet high by six feet wide.
- Class IV - Special use and access trails; tread bed and tread work are minimal to provide safe footing; designed to avoid all need for structures and drainage controls; trail clearing limits are minimal for passage.

All programs, services, and activities offered by a public entity must be accessible to persons with disabilities. Emerging trail design concepts are beginning to eliminate obstacles such as stairs and excessive linear grades that often prohibit users with disabilities from enjoying trails. On March 15, 2011, the U.S. Department of Justice revised federal guidelines that contain technical provisions for accessible trails allowing "other power-driven mobility devices" for use by "individuals with mobility disabilities." The State Parks Accessibility unit continually rehabilitates existing State Parks trails, campsites, and restrooms to be ADA-ABA compliant.

DPR has sited and designed the proposed trail as necessary to minimize impacts to environmental resources and comply with ADA-ABA standards. These standards are summarized in Table 2-1. *Summary of Accessibility Standards for Outdoor Developed Areas.*

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Table 2-1. Summary of Accessibility Standards for Outdoor Developed Areas		
Feature	Concrete, Asphalt, or Board Surfaced Trails	All Other Surface Types
Surface	Firm and Stable	Firm and Stable
A firm trail surface resists deformation by indentations. A stable trail surface is not permanently affected by expected weather conditions and can sustain normal wear and tear from the expected uses between planned maintenance.		
Clear Tread Minimum Width	36 inches	36 inches
If the trail is heavily used, a boardwalk, or otherwise not at the same elevation as the adjoining ground, consider providing either a minimum clear tread width of 60 inches, or, where the clear tread width is less than 60 inches, passing spaces at short intervals.		
Passing Space (required every 1,000 feet if tread width is less than 60 inches)		
Minimum Size	5 feet by 5 feet	5 feet by 5 feet
Maximum Grade	5%	5%
Maximum Cross Slope	2%	5%
Where the entire trail does not fully comply with these standards, a passing space that fully complies with the standards must be installed at the end of the trail segment to enable a person who uses a mobility device to turn around and return to the trailhead. The passing space shall be either a space a minimum of 60 inches by 60 inches OR in the intersection of two trails providing a T-shaped space, the base and the arms of which shall extend a minimum 48 inches beyond the intersection. Where the passing space is the intersection of two trails, the intersection must be as flat as possible so that all the wheels of a mobility device touch the ground when turning into and out of the passing space.		
Maximum Tread Obstacles	½ inch	2 inches
The vertical alignment of joints in concrete, asphalt, or board surfaces can be tread obstacles. Natural features such as tree roots and rocks within the trail thread can also be tread obstacles. Where possible, tread obstacles that cross the full width of the trail tread should be separated by a minimum distance of 48 inches. (Tread obstacles on trails, passing spaces, and resting intervals are measured vertically to the highest point.)		
Openings		
Parallel	½ inch	½ inch
Perpendicular	½ inch	½ inch
Elongated openings should be placed so that the long dimension is perpendicular, or as close to perpendicular as possible, to the dominant direction of travel.		
Maximum Linear Grade		
5% or less	Any Distance	Any Distance
5% to 8.33%	200 feet	200 feet
8.33% to 10%	30 feet	30 feet
10% to 12%	10 feet	10 feet

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Table 2-1. Summary of Accessibility Standards for Outdoor Developed Areas		
Feature	Concrete, Asphalt, or Board Surfaced Trails	All Other Surface Types
Not more than 30% of the total length of a trail shall have a linear grade steeper than 8.33%. The linear grade of any segment of a trail shall not be steeper than 12%. Where the linear grade of a segment of a trail is steeper than 5%, the maximum length of the segment shall be in accordance with the table above and a resting interval shall be provided at the top and bottom of each segment.		
Maximum Tread Cross Slope	2%	5%
Resting Interval Between Grades Greater Than 5%		
Linear Grade	2%	5%
Cross Slope	2%	5%
Where resting intervals are provided within the trail tread, they shall be at least as wide as the widest segment of trail leading to the resting interval. Where resting intervals are provided adjacent to the trail, the resting interval clear width shall be a minimum of 60 inches long and 36 inches wide. Where resting intervals are provided adjacent to the trail tread, a turning space shall be provided. Vertical alignment between the trail tread, turning space, and resting interval shall be level.		
Protruding Objects	Protruding objects on trails, passing space, and resting intervals can be hazardous for individuals who are blind or have low vision. Signs and other post-mounted objects are examples of constructed elements that can be protruding objects. The technical requirements for protruding objects do not apply to natural features, such as tree branches, rock formations, and trails that pass beneath rock ledges or through caves, because these are not constructed elements. Refer to the California Accessibility Guidelines Section 0.1, Accessibility Basics, VII Protruding Objects, for guidelines pertaining to constructed protruding objects.	

The ADA-ABA standards recognize the existence of constraints and limitations in the outdoor environment and allow for exceptions from specific provisions in the technical requirements where certain circumstances, referred to as “conditions for exceptions,” apply. When an entity determines that any of the conditions for exceptions do not permit full compliance with a specific provision in the technical requirements, compliance with that provision is required to the extent practicable. The conditions for exceptions should be used only after all other design options are thoroughly explored. Where a condition for exception applies to only part of a trail, the rest of the trail must comply with all the technical requirements. Some of these exceptions include the following:

- *Terrain*: Compliance is not practicable due to terrain. An example of terrain that is infeasible to meet accessibility guidelines is a coastal descent trail where the elevation difference from the start to end points and a limited land base for layout require the use of steeper grades or trail structures such as steps. These conditions also exist in areas where cliffs or steep terrain result in a substantial elevation difference between start and end points and a limited land base for layout. In these circumstances, substantial control points prohibit the linear trail grade needed to comply with the accessibility guidelines and may require the use of trail structures that will serve as barriers to accessibility.
- *Change to Function or Purpose*: Compliance will fundamentally alter the function or purpose of the facility or the setting. An example of altering the setting includes redesign and reconstruction of a

trail designed for a primitive outdoor experience, such as access into a wilderness area or natural preserve. These trails are often narrow, have minimal structures, and provide the user with close contact to the surrounding environment. Widening and improving the trail tread and building additional structures to comply with accessibility guidelines will substantially alter the user's experience.

- *Existing Laws:* Compliance is limited or precluded by law or by decisions or opinions issued or agreements executed pursuant to any of the following laws: federal Endangered Species Act (FESA); National Environmental Policy Act; National Historic Preservation Act; Wilderness Act; or other federal, state, or local law, the purpose of which is to preserve threatened or endangered species, the environment, or archaeological, cultural, historical, or other significant natural features. Examples of potential law violations include disturbance, removal, or alteration of pre-historic and historic cultural sites necessary to comply with accessibility standards. These sites include Native American middens, sacred sites, and ceremonial sites, and Euro-American buildings, structures, historic sites, and religious sites. Typically, these sites are listed or eligible for listing on national or state registers for historic places.

2.4 Project Objectives

The mission of DPR is to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality recreation.

DPR conceptualized this unique Project as a means to support all three aspects of its mission, by addressing existing serious sustainability issues with respect primarily to cultural as well as natural resource issues and accomplishing that by creating opportunities for high-quality recreation. This Project is intended to provide visitors with a means to explore the natural and cultural history of the area without destroying those very resources in the process,

By siting and constructing a sustainably designed trail, the Project will allow visitors to experience and learn about complex areas of biological diversity as well as appreciate commanding views up and down the coastline while bringing history to life through innovative multimedia and traditional interpretive methods. The proposed trail alignment will connect visitors with places and environments experienced by the Kashia and other cultures making history at Fort Ross.

More specific measures to help meet the goal of reduce the proliferation of unsustainable volunteer trails and providing enhanced interpretive elements for visitors include:

- In addition to traditional signing interpretive panels, provide a variety of high-quality multimedia methods for visitor engagement to provide an educational experience and information on the cultures and periods listed above in Section 1.0 *Background*.
- Planning new trail routes to maximize educational value while minimizing conflicts with sensitive natural and cultural resources.
- Improve pedestrian access for all ability levels by minimizing excessive grades, providing rest benches, and improving surface conditions.

2.5 Project Description

2.5.1 Trail Design

The proposed Kashia Loop Trail will expand sanctioned and sustainable visitor access to areas of the park currently crisscrossed by unsustainable volunteer trails to provide new interpretive and educational experiences that inform visitors about and celebrate the importance of the natural and cultural history of the site. Trail design and construction solutions follow standards and guidelines outlined in the *Department of Parks and Recreation's Trails Manual* and *California State Parks Accessibility Guidelines*. Sustainable design concepts have been incorporated to ensure non-disruptive and compatible relationships between new trail construction and land-based resources. Due to the presence and frequent occurrence of sensitive cultural and natural resources, design elements of the trail and related structures warrant solutions beyond accepted standards. Many proposed trail treatments are modified standards intended to meet low impact sustainable objectives. The following represent specific data and design elements that DPR utilized during trail planning to avoid sensitive resources and enhance the recreational experience.

2.5.2 Cultural Resources

- Extensive surface surveys and subsurface testing have been completed to help guide trail alignment locations.
- Site-specific construction techniques will be used to avoid excavations in proximity with sensitive resource areas.
- Supplemental low-impact barriers are proposed in key areas to discourage visitor use off the designated trail.
- Trailhead locations will include information about the importance of protecting resources and staying on the trail.

2.5.3 Natural Resources

- Extensive botanical surveys and wetland delineations have identified a variety of sensitive habitats.
- Working within the confines of physical geography, trail alignments have been located to minimize impacts to protected plant species and known habitats.
- In some wetland areas, boardwalks and bridges are proposed to avoid sensitive plants, protect wetlands, and maintain natural wetland hydrology.
- Trail and fencing design will facilitate continuation of the past grazing of the coastal terrace where it will ensure proliferation of special status plants and habitats.

2.5.4 Materials and Construction Techniques

- Utilize topography by performing side-hill trail construction and use of drain lens to facilitate uninterrupted surface hydrology.

- Where feasible, bridge wetlands, streams, and concentrated stormwater flows.
- Low impact boardwalk construction - no footing excavations, low profile.
- Match color and texture of imported materials to native materials.
- Construction materials will be stockpiled on existing asphalted section of Old Highway 1 and transported as needed to construction sites. Routes of travel for material transport will utilize the proposed trail alignment. Temporary routes to shorten material transport distances may be identified after consultations with resource specialists. Any temporary travel routes will be restored to pre-existing conditions upon completion of use.
- Obliterate volunteer trails and restore to natural conditions using as/where appropriate overburden/topsoil set aside during initial excavation and grading activities to inoculate seed sources.

2.5.5 Trail Layout

A detailed description of the trail segments included in the Proposed Project is provided below (see Figure 2-1).

2.5.5.1 Existing Parking/Picnic Area Path

This existing 858-linear-foot (LF) accessible concrete path connects the Fort Ross Visitor Center to the Russian Windmill. The route also provides access to the parking lot and six picnic sites along the path. No work is proposed here.

2.5.5.2 Connector Route (New)

This trail segment would connect the Russian Windmill to the proposed trailhead (A-1) for the Kashia Loop Trail. The Connector Route will consist of two segments, each with different construction materials.

The first segment (68-LF) would be a four-foot-wide concrete path linking the windmill to the existing park service road. Work would include six to eight inches of excavation for placement of concrete. This segment also includes the installation of two 12-inch smooth wall culverts in existing drainage swales. Cleaning of existing drainage swales will be required, but no excavation for culverts is planned.

The second segment (410 LF) would be a compacted aggregate path (single sided rock turnpike), five feet wide, constructed adjacent to the outside edge of the existing aggregate base service road. Construction would include removal of surface vegetation, 410 LF of excavation for rock edging (12 inches wide x six inches deep) and placement of aggregate base rock fill. Approximately 25, 0.25-ton boulders will be placed along the road/trail interface at 15-foot intervals for road demarcation. Each boulder placement will require an excavation area of 18-x-18-x-6-inch-deep (per boulder). The footprint of this segment would lay within the existing constructed roadway. Relocation of an existing signpost (6 x 6 inches) to behind the road curbing will require excavation of a 12-inch-diameter x 30-inch-deep hole.

A trailhead and interpretive stop (A-1) is proposed at the intersection of the second segment and Old Highway 1. Construction of the trailhead would include a rock-edged aggregate-base landing approximately 10 x 10 feet in size. Excavation for rock edging would require trenching 12-inch-wide x 6-

inches deep for approximately 40 LF. Typically, rock edging to define landings will protrude approximately 6 inches above the landing surface. Removal of surface vegetation would also be required. Installation of trailhead and interpretive signing will require excavation of three holes for signing, each measuring 12 inches in diameter and 30 inches deep.

2.5.5.3 Kashia Loop Trail (New and Existing)

The proposed 1.66-mile Kashia Loop Trail is a combination of new trail construction (1.26 mile) and trail use of existing Old Highway 1 (0.40 mile). Eleven proposed interpretive stops will provide insight on how the Kashia Pomo thrived on the land by highlighting cultural practices and natural features important to the Kashia. The loop trail will provide park visitors with a deeper understanding and appreciation of indigenous peoples who still make this coastal region home. Additionally, other prominent historical points of interest from the ranching era will be identified and interpreted.

The interpretive trail begins at the Trailhead/Stop A-1. From this point, visitors can take a short spur trail to Interpretive Stop A-11. Via a short connector to Interpretive Stop A-2, visitors will have the option to walk the loop in either direction. For purposes of the Project description, the sequence will be described in a clockwise manner.

Spur trail from Interpretive Stop A-1 to Interpretive Stop A, 2 and Interpretive Stop A-11 measures (198 LF)

This segment provides access to a key interpretive point in Kashia Culture. Access is along the existing edge of Old Highway 1. This segment of the old highway is an existing aggregate base surface. The trail route surface (4 feet wide) will require removal of soil material (12 inches wide x 8 inches deep x 150 LF) sluffing from the adjacent earthen bank. Approximately 150 LF of rock edging will be placed along the bank toe to prevent future sluffing. Timber edging (4 inches x 8 inches x 100 LF) will be installed on the outside edge of the trail to raise grade to pass a low section of road. Timber edging may require minimal excavation for leveling (approximately 2 inches). Excavation for a single directional sign (12 inches in diameter x 30 inches deep) will be required at the beginning of this segment.

The first segment from Trailhead A-1 (Figure 2-3) to Interpretive Stop A-2 (336 LF) (Figure 2-4) includes a segment of new construction (118 LF) from the trailhead to the existing road. The trail route surface (4 feet wide) will require excavation of soil material (averaging 6 feet wide x 12 inches deep x 50 LF). Excavated materials will remain onsite and be used in the construction of Trailhead A-1 and the adjacent connector trail. Approximately 50 LF of rock armoring will be placed along the cut bank to prevent future sluffing. Excavation for a single directional sign (12 inches in diameter x 30 inches deep) will be required at the road intersection. The remaining 218 LF of this segment will be located on Old Highway 1 through Interpretive Stop A-2.



Figure 2-3. View from Interpretive Stop A-1 (approximate location).

A trailhead landing (approximately 150 square feet (SF)) will require excavation of up to 8 inches for leveling and installation of rock edging (approximately 35 LF). A single boulder will be integrated with the landing to serve as the interpretive marker.

Stop A-2 (Figure 2-4) will be located on the west side of the road. A single hole measuring 12 inches in diameter x 30 inches deep will be excavated in the road shoulder for marker placement. Some clearing of common vegetation including coyote brush (*Baccharis pilularis*) may be necessary to open views of the coastal terrace. Additionally, a landing will be required of approximately 100 SF with six to eight inches of aggregate base fill to match existing road grade and meet ADA compliance. Perimeter containment of fill material will be constructed from approximately 30 LF of rock edging placed on original grade. Edging may require minimal excavation for leveling (approximately 2 inches). Excavations for interpretive signing will require three holes each measuring 12 inches in diameter x 30 inches in depth.



Figure 2-4. View from Interpretive Stop A-11 (approximate location).

The location of proposed Interpretive Stop A-11 (Figure 2-5) includes an existing bench. Construction at this stop will require a landing of approximately 150 SF with approximately six to eight inches of aggregate base fill to match existing road grade and meet ADA compliance. Perimeter containment of fill material will be constructed from approximately 50 LF of 4-x-8-inch timber edging placed on original grade. Timber edging may require minimal excavation for leveling (approximately two inches). Excavation for the interpretive marker will require one 12-inch-diameter x 30-inch-deep hole.



Figure 2-5. View from Interpretive Stop A-2 (approximate location).

New trail construction from Interpretive Stop A-2 to Interpretive Stop A-10 (440 LF)

This segment would be an aggregate base surface fill, varying in width from four to five feet. Actual construction footprint will be from six to seven feet. Typical trail construction for this segment includes a single- and double-sided non-structural rock retaining wall with compacted aggregate base fill. At approximately 52 LF from the beginning, the trail crosses an existing fence line. A pass-through will be constructed using bollard style posts configured to allow barrier-free access for pedestrians and keep livestock contained. Bollard posts will require the excavation of four 16-inch-diameter 30-inch-deep holes. For the remaining 180 LF of this segment, a symbolic fencing barrier will be installed on one side of the trail to discourage off-trail travel into sensitive resources. The symbolic fencing barrier consists of 0.5-in vinyl-coated wire rope supported approximately 32 inches above ground by vertical metal anchors (5/8-inch diameter). Anchors are placed at 15-foot intervals and driven into the ground approximately 36-inches.

Interpretive Stop A-10 (Figure 2-6) will be a landing approximately 8 x 10 feet. The landing will be four to six inches of aggregate base fill with non-structural rock edging for containment. Rock edging will protrude approximately six inches above the landing surface. This will be typical of all rock-edged landings throughout the Project. A single large boulder with identification plaque will be integrated into the landing to serve as the interpretive marker. No excavation is planned other than the fence pass-through bollards.



Figure 2-6. View from Interpretive Stop A-10 (approximate location).

Interpretive Stop A-10 to Interpretive Stop A-9

From Interpretive Stop A-10 to Interpretive Stop A-9, trail construction will include a variety of configurations for the next 2,164 LF. Trail width will remain at a minimum of four feet until approximately

1,305 LF into this segment. The segment footprint will be approximately seven to eight feet wide including non-structural retaining walls on one or both sides of the trail, depending on terrain slope.

The symbolic fencing (as noted above) will continue for the first 120 LF and approximately 387 LF from the beginning of the segment a new bench will be installed. A total of two holes, each 12 inches in diameter and 30 inches deep, will be excavated for bench installation. At approximately 522 LF from the segment beginning, the trail crosses a drainage swale. A rock drain lens (42 LF) will be constructed to facilitate a low-grade crossing without impeding seasonal flows. The trail and lens footprint will be approximately seven to eight feet wide. Beginning at the drain lens, symbolic fencing will be constructed along one side for approximately 741 LF. From the beginning of the segment to this point, no excavation will be required for trail construction, except for placement of the bench.

Approximately 1,305 LF into this segment, trail construction will change to a wall-less turnpike configuration. Trail width here will be approximately four to five feet wide with a construction footprint of five to six feet wide. Minor grading (up to six inches in depth) will be required to remove vegetation and prepare the surface for aggregate base fill. Excavations of up to 12 inches may be necessary for the length of the trail. Removed vegetation and soils will be stockpiled and reused onsite for restoration of disturbed areas (i.e., parking lot or old Highway 1). One drain lens measuring approximately 20 LF by seven feet wide, is planned as the trail crosses an isolated drainage swale. Drain lens configuration is noted in the above paragraph. No additional excavation will be required. This area may contain coastal wetlands (to be verified). If it is verified that wetlands do exist in this area, DPR will select the appropriate construction method to ensure compliance with necessary permitting.

Interpretive Stop A-9 (Figure 2-7) will require a landing approximately six feet by eight feet and will be edged in rock for clear boundary definition. Excavation for rock edging will require trenching approximately 12 inches wide x eight inches deep for 20 LF. Minor grading (up to six inches in depth) will be required for landing construction. A single large boulder with identification plaque will be integrated into the landing to serve as the interpretive marker.



Figure 2-7. View from Interpretive Stop A-9 (approximate location).

Trail construction from Interpretive Stop A-9 to A-8 (1,022 LF)

This segment will be a continuation of the wall-less turnpike configuration. This segment includes three bridges of 16, 12, and 28 feet long, respectively. Each bridge will be five feet wide, of wood construction, and span over existing drainages. Footings will be wood timber sills requiring excavation of two trenches (per bridge) 16 inches wide x 10 inches deep x 8 feet long. Each bridge will require an approach ramp on each end. Ramps will be double-sided rock retaining walls with aggregate base rock surface (five feet wide), approximately 10 feet long. Excavation for each ramp will require trenching approximately 12 inches wide x 8 inches deep x 20 feet in length. Excavated materials will be used onsite in the construction of approach ramps.

Interpretive Stop A-8 (Figure 2-8) is located adjacent to the south bank of Bridge #3. A landing of approximately 8 feet x 12 feet will support interpretive information and a bench. The landing will be edged in rock for clear boundary definition. Excavation for rock edging will require trenching approximately 12 inches wide x 8 inches deep for 32 LF. A total of four holes (each 12 inches in diameter x 30 inches deep) will be excavated for two interpretive displays and two benches.



Figure 2-8. View from Interpretive Stop A-8 (approximate location).

Trail construction from Interpretive Stop A-8 to Interpretive Stop A-7 (464-LF)

This segment is composed of a section of wall-less turnpike (179 LF) and a wood boardwalk section (232 LF), and a small segment of trail with single-side rock retaining wall (53 LF). The turnpike and retaining wall sections will be approximately four to five feet wide with a construction footprint of five to seven feet wide. Minor grading will be required to remove vegetation and prepare the surface for aggregate base fill. Excavations of up to 12 inches may be necessary. Vegetation and soils removed during construction will be stockpiled and reused onsite for restoration of disturbed areas.

The boardwalk section will be elevated above grade on pre-cast concrete piers anchored with one-inch pipe pins (four per pier) driven into the ground approximately 36 inches. Approximately one SF of vegetation will be removed for each pier placement (approximately 60 SF total). Leveling of piers may require excavation of up to three inches for each pier. Boardwalk will be five feet wide and built at an elevation of less than 30 inches above grade. No railing will be installed on the boardwalk. Approach ramps will be necessary on each end. Ramps will be double-sided rock retaining walls with aggregate base rock surface (five feet wide), approximately six feet long. Excavation for each ramp will require trenching approximately 12 inches wide x 8 inches deep x 12-feet long. The boardwalk will begin and end outside of the designated wetland boundary.

Interpretive Stop A-7 (Figure 2-9) will be integrated with a short section of trail constructed with the single-side rock (structural) retaining wall. An additional landing area approximately eight feet by four feet will accommodate interpretive information. The landing will be edged in rock for clear boundary definition. Minor grading (up to eight inches in depth) will be required to remove vegetation and prepare the surface for aggregate base fill. Excavation for rock retaining wall and edging will require trenching approximately 12 inches wide x 10 inches deep for 52 LF. A single hole (12 inches diameter x 30 inches deep) will be excavated for the interpretive displays.



Figure 2-9. View from Interpretive Stop A-7 (approximate location).

Trail construction from Interpretive Stop A-7 to Interpretive Stop A-6 (401-LF)

This segment includes wall-less turnpike, double- and single-sided rock retaining walls, and wood boardwalk (194 LF). The boardwalk for this segment is broken into two sections (71 and 123 LF respectively) with a section of double-wall turnpike between. Width of trail will be approximately four to five feet wide with a construction footprint six to seven wide. Construction details will be the same as identified in the previous segment.

With two independent sections of boardwalk, there will be a total of four approach ramps required. Each ramp will have double-sided rock retaining walls with aggregate base rock surface (five feet wide), approximately six-feet long. Excavation for each ramp (retaining walls) will require trenching approximately 12 inches wide x 8 inches deep x 12 feet long. Boardwalk construction will be as detailed in the previous section. Vegetation removal and ground disturbance will total approximately 46 SF.

Interpretive Stop A-6 (Figure 2-10) will include a bench and landing approximately eight by 12 feet. Rock edging will border the landing. Excavation for rock edging will require trenching 12 inches wide x 8 inches deep x 32 LF. Excavation for a single interpretive panel and a bench will require three holes 12 inches in diameter x 30 inches deep. Minor limbing of existing bishop pines will be required to facilitate coastline views for interpretive purposes.



Figure 2-10. View from Interpretive Stop A-6 (approximate location)

Trail construction from Interpretive Stop A-6 to A-5 (989 LF)

This segment includes a trail section that passes through a stand of bishop pines (approximately 553 LF). A majority of the trail will be constructed as wall-less turnpike. Width of trail will be approximately four to five feet wide with a construction footprint of five to seven feet wide unless noted. Minor grading (up to six inches in depth) will be required to remove vegetation and prepare the surface for aggregate base fill. Excavations of up to 12 inches deep may be necessary. Sections of trail through the bishop pine stand will require single-sided and multi-tier rock retaining walls for climbing turn and switchback construction. A total of approximately 145 LF of multi-tier structural rock wall will be required. Additionally, approximately 188 LF of single-sided non-structural rock wall will also be needed. Excavation for multi-tier wall construction will require trenching approximately 12 inches wide x 12 inches deep x 145 LF. Excavation for non-structural rock wall will require trenching approximately 12 inches wide x 6 inches deep x 188 LF. Symbolic fencing will also be included in this area both west and north of stop A-6 where the trail parallels the creek before entering the bishop pine stand. Symbolic fencing will also be included in this area both west and north of stop A-6 where the trail parallels the creek before entering the bishop pine stand.

Possible removal of up to four trees may be required for this segment; however, only dead or diseased trees will be removed. If necessary, the trail will be slightly realigned in this area to avoid any healthy trees. Sections of larger downed trees (up to 24-inch-diameter) will be removed to allow trail pass-through. Cut dead trees and other downed trees may be moved and strategically placed to discourage off-trail travel. All vegetation removed due to Project construction will remain onsite. Either vegetation will be used in construction or placed in existing park burn piles.

Interpretive Stop A-5 will be located adjacent to the trail requiring a landing of approximately six by eight feet with rock edging. Excavation for rock edging will require trenching approximately 12 inches wide x 8

inches deep for approximately 16 LF. A single hole, 12 inches in diameter and 30 inches deep will be required for the interpretive marker post.

From Interpretive Stop A-5 to A-4 (1,224-LF)

This segment of the trail continues in the bishop pine stand up to Old Highway 1 (580 LF), and along the existing road for 644 LF. Trail construction includes double-sided non-structural rock retaining walls, wood boardwalk (77 LF), and wall-less turnpike. Trail width will be approximately four to five feet wide with a construction footprint of five to seven feet. Trail footprint with retaining walls may be up to eight feet wide.

Excavation for non-structural rock wall will require trenching approximately 12 inches wide x 6 inches deep x 356 LF. A wood boardwalk (77 LF) will be required to span an area of seasonal wetlands. Two approach ramps (five feet wide and approximately five feet long) leading to the boardwalk will have double-sided rock retaining walls with aggregate base rock surface. Excavation for each ramp (retaining walls) will require trenching approximately 12 inches wide x 8 inches deep x 10 feet long. Vegetation removal and ground disturbance for this section of boardwalk totals approximately 18 SF.

A bench is proposed at the junction of an existing connector trail to a highway turnout along Old Highway 1. Bench installation will require excavation of two holes, each 12 inches in diameter x 30 inches deep. At this location, an existing volunteer trail will be obliterated and the area restored (300 LF).

At approximately 580 LF from Interpretive Stop A-5 (Figure 2-11), the trail meets Old Highway 1 and continues on the road for approximately 644 LF. Interpretive Stop A-4 will be located along the road edge at the end of this segment. Some asphalt cutting (approximately eight SF) will be required for installation of a single interpretive panel. Excavation for the panel will require two holes each, 12 inches in diameter by 30 inches deep.



Figure 2-11. View from Interpretive Stop A-5 (approximate location).

From Interpretive Stop A-4 to A-3 (265 LF)

This segment of the trail will follow the existing road alignment of Old Highway 1 (Figure 2-12). This segment is an asphalt surface, 17 feet wide. Interpretive Stop A-3 will require wood timber edging (approximately 12 LF) on the north side road shoulder to support ADA access to the proposed interpretive panel. Excavation for the panel will require holes, each 12 inches in diameter and 30 inches deep. Excavation for timber edging will require a 6-x-6-inch trench for approximately 12 feet.



Figure 2-12. View from Interpretive Stop A-4 (approximate location).

From Interpretive Stop A-3 to A-2, (776 LF)

This segment of the trail continues along the existing road alignment for approximately 595 feet. At this point the road surface changes from asphalt to compacted aggregate base (Figure 2-13). Interpretive Stop A-2 has been previously described in the Trailhead/Stop A-1 to Interpretive Stop A-2 Segment.

The loop trail and its related segments make use of the Old Highway 1 road alignment for a total of approximately 2,101 feet. Road maintenance such as removing accumulated debris from the surface and removing low hanging tree limbs will be required to bring this segment into ADA compliance. This Project will also restore drainage swales to properly channel runoff away from the road surface. Approximately 300 SF of vegetation will be removed from the roadside and a culvert inlet. Approximately 60 LF of drainage swales may need to be restored once vegetation is removed. Cleaning the culvert inlet may require removal of soil and debris to ensure the culvert is functioning as intended. Soil removal is estimated to be less than five cubic yards. Dense vegetation currently prevents an accurate assessment of drainage obstacles and conditions.



Figure 2-13. View from Interpretive Stop A-3 (approximate location).

2.5.5.4 Project Implementation

Construction of the Fort Ross SHP Kashia Loop Trail Project would take place by DPR Trail Crews and the California Conservation Corps (CCC) during the dry season beginning in spring/summer and ending in winter when wet conditions predominate. Both DPR and CCC workers typically camp and otherwise remain onsite (Archery camp) for the duration of construction, and as such, minimizes construction worker-related traffic.

Work in drainages and wetlands will be governed by regulatory permit work windows. Construction crews will work a 10-hour workday. Work schedule will be eight consecutive workdays on, and six consecutive workdays off. This will include working on some weekends. Construction will take place in areas away from public use areas and not conflict with public or operational uses. Construction crews will use hand tools and small power equipment for construction activities. In addition to hand tools, brush cutters and weed whips will be used to clear vegetation from the construction corridor. Toters and small rubber tire vehicles (mule or gator) will be used to assist in the transport of materials. A rubber-tire backhoe or mini excavator may be used to assist in placement of bridge stringers. All identified excavation will be done by hand with hand tools. Transportation to and from worksites will take place in the proposed trail alignment corridor. Old Highway 1 will be used as a transportation corridor and for the staging of materials and equipment.

Best Management Practices (BMPs) will be incorporated into the Project design and a construction Storm Water Pollution Prevention Plan (SWPPP) will be drafted to ensure that natural and cultural resources in and around the project site are adequately protected during and after construction activities (see Section 4.10 *Hydrology and Water Quality*). The BMPs discussed in this document and used in the implementation of the Project are obtained from the California Stormwater Quality Association (CASQA) *Stormwater Best Management Practices Handbook* (CASQA 2003). Temporary BMPs would be used to keep sediment onsite throughout the duration of the Project and would be checked daily, maintained, and modified as needed

during construction. In addition, permanent BMPs would be used after construction work to stabilize the site and minimize erosion. DPR has consistently referenced CASQA BMPs and has identified them as an acceptable standard for use in all units of the State Park System.

Upon completion of the Project construction, grazing will resume on the terrace to continue its important contributing role in enhancing habitat within the natural communities. However, rapid rotation grazing will likely replace cattle grazing around the Project in order to minimize trail damage as well as to correct the effects of accelerated erosion that inherently results from unrestricted cattle grazing in drainages.

2.6 Project Requirements

Under the CEQA guidelines, DPR is in a unique role as both the Lead Agency and a Trustee Agency. The Lead Agency is a public agency that has the primary responsibility for carrying out or approving a project and for implementing CEQA. A Trustee Agency is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. DPR takes this distinction with responsibility to ensure that its actions protect both cultural and natural resources on all projects.

However, DPR is also the Project Proponent. Because of its unique role as Lead Agency, Trustee Agency as well as the Project Proponent, DPR's resource professionals take a prominent and influential role during the Project conceptualization, design, and planning process consistent with Section 15004(b)(1) of CEQA. Their early involvement during the planning process enables environmental considerations to influence Project programming and design. This approach permits DPR under CEQA Section 15065(b)(1), to incorporate Project modifications prior to the start of the public review process of the environmental document, to avoid impacts to a point where clearly no significant effect on the environment would occur.

As part of its effort to avoid impacts, DPR also maintains a list of Standard Project Requirements (SPR) that are included in the project design to reduce impacts to resources. From this list, SPRs are assigned, as appropriate to all projects. For example, projects that include ground-disturbing activities such as trenching would always include SPRs addressing the inadvertent discovery of archaeological artifacts. However, for a project that replaces a roof on an historic structure, ground disturbance would not be necessary; therefore, SPRs for ground disturbance would not be applicable and DPR would not assign it to the project.

DPR also makes use of Project-Specific Requirements (PSRs). DPR develops these project requirements to address project impacts for projects that have unique issues but do not typically standardize these for projects statewide. As part of the IS review process, DPR has identified the following SPRs and PSRs that apply to the Project to ensure that impacts remain less than significant. The Project Requirements for Fort Ross SHP Kashia Loop Trail are provided in Table 2-2. *Project Requirements*.

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Table 2-2. Project Requirements	
Issue	Project Requirement
General	
SPR GEN -1	Prior to the start of onsite construction work, Construction Manager will consult with the Project Manager to identify all resources that must be protected.
Aesthetics	
SPR AES-1: Turnpike Construction	Materials used in turnpike construction will be native rock materials, with emphasis on aggregate material that blends with soils native to the respective turnpike locations.
Air Quality	
SPR AIR-1: Fugitive Dust and Ozone	<ul style="list-style-type: none"> • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. • All construction areas (dirt/gravel roads and surrounding dirt/gravel area) will be watered at least twice daily during dry, dusty conditions. • All trucks hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All construction-related equipment and engines will be maintained in proper tune (according to manufacturer's specifications), and in compliance with all State and federal requirements. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points. • Excavation and grading activities will be suspended if sustained winds exceed 25 miles mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads. • Earth or other material that has been transported onto paved roadways by trucks, construction equipment, erosion, or other project-related activity will be promptly removed.
SPR AIR-2: Fugitive Dust and Ozone	During dry, dusty conditions, all active construction areas will be lightly sprayed with water to reduce dust without causing runoff
SPR AIR-3: Fugitive Dust and Ozone	<ul style="list-style-type: none"> • All trucks or light equipment hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard. • All gasoline-powered equipment will be maintained according to manufacturer's specifications, and in compliance with all State and federal requirements
SPR AIR-4: Fugitive Dust and Ozone	Paved streets adjacent to the Park shall either be swept or washed at the end of each day, or as required, to remove excessive accumulations of silt and/or mud that could have resulted from project-related activities.

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Table 2-2. Project Requirements

Issue	Project Requirement
SPR AIR-5: Fugitive Dust and Ozone	Excavation and grading activities will be suspended when sustained winds exceed 20 miles per hour (mph), instantaneous gusts exceed 30 mph, or when dust occurs from remediation related activities where visible emissions (dust) cannot be controlled by watering or conventional dust abatement controls.
Biological Resources	
SPR BIO-1: Special-Status Plant Species	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> • Conduct pre-construction special-status plant surveys following agency protocols within the Project impact areas. • Establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones should be maintained until the completion of construction. • Clothing, vehicles, and equipment, including shoes and the undercarriage and tires/tracks, should be cleaned prior to entering the Project area to avoid the introduction and spread of invasive plant species. • Any materials used for the Project, such as fill dirt or erosion control materials, should be from weed-free locations or certified weed free. • Dust generation should be kept to a minimum near special-status plant occurrences
PSR BIO-2: Behren's Silverspot Butterfly	<ul style="list-style-type: none"> • A DPR-approved biologist will conduct surveys for the larval host plants (western dog violet) in areas that will be impacted by the Project. Surveys will be conducted prior to Project implementation and when the plants were in a phenological stage favorable for positive identification (i.e., during the species blooming period). • Locations of larval host plants located within areas of potential construction impacts will be flagged by a DPR-approved biologist and an exclusion zone with a radius of 10 feet around the plant(s) will be established prior to the start of construction activities. If avoidance of host plant habitat is not possible, construction in those areas will not be allowed from April 1 through July 31 in order to protect pupae or larvae during the primary feeding season.
PSR BIO-3: California Giant Salamander Habitat	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> • DPR-approved personnel will conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat onsite. If CGS are found during a survey, salamanders should be moved from the work area to the nearest CDFW-approved relocation site. Barrier fencing would be used to exclude CGS from work areas after the survey/relocation is complete. • During construction within or near stream habitat, only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment. An onsite biological monitor will inspect work areas daily for CGS.
PSR BIO-4: Foothill Yellow-Legged Frog	<ul style="list-style-type: none"> • A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of foothill yellow-legged frog (FYLF) within and near stream habitat onsite. It would include protection measures to insure that this species and other sensitive resources would not be impacted to a significant level by project activities.

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Table 2-2. Project Requirements

Issue	Project Requirement
	<ul style="list-style-type: none"> • Prior to the beginning of construction a DPR-approved biologist shall install barrier fencing to exclude FYLF habitat from work areas. • A DPR-approved biologist or biological monitor will conduct pre-construction surveys for FYLF. If FYLF is located within the project area, they will be relocated outside the work area by a CDFW or DPR-approved biologist. • Periodic surveys for sensitive biological resources would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion. • Only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) shall be used.
PSR BIO-5: California Red-Legged Frog	<ul style="list-style-type: none"> • Construction personnel will be instructed and trained by a USFWS or DPR-approved biological monitor in the life history of the California red-legged frog (CRLF) and its habitat, and trained in the appropriate protocol to follow in the event that a CRLF is found onsite. • Prior to the beginning of construction, a DPR-approved biologist shall install barrier fencing to exclude CRLF habitat from work areas. A DPR-approved biological monitor will be onsite during all activities within 50 feet of onsite streams to ensure there are no impacts to individual CRLF that might potentially move through the project area during dispersal. • Immediately prior to the start of work each morning, a USFWS or DPR-approved biological monitor will conduct a visual inspection of the construction zone in those areas within 50 feet of onsite stream habitat. • If a CRLF is found, start of work at that project location will not begin until the species moves out of the site on its own accord or is relocated by a USFWS or DPR biologist authorized to handle CRLF. • Work will be confined to daylight hours to avoid activities during periods when CRLF are known to be active.
PSR BIO-6: Red-Bellied Newt	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> • DPR-approved personnel would be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat onsite. If red-bellied newts are found near the construction site, newts would be moved from the work area to the nearest CDFW-approved relocation site as described in the Project's LSAA. Barrier fencing should be used to exclude red-bellied newt from work areas after the survey/relocation is complete. • Where habitat for red-bellied newt habitat is identified, only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment during construction. • A DPR-approved biological monitor would inspect work areas daily for red-bellied newt
PSR BIO-7: Northwestern Pond Turtle	<ul style="list-style-type: none"> • A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of northwestern pond turtle. It would include protection measures to insure that these species and other sensitive resources would not be impacted to a significant level by project activities. • Prior to the beginning of construction, a DPR-approved biologist or biological monitor will conduct pre-construction surveys for these aquatic species. If the species is

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Table 2-2. Project Requirements	
Issue	Project Requirement
	<p>located within the project areas they will be relocated outside the work area by the DPR-approved biologist or biological monitor.</p> <ul style="list-style-type: none"> Periodic surveys for sensitive biological resources would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion.
PSR BIO-8: Nesting Bird	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> Surveys for active raptor nests would be conducted within a 500-foot radius of project areas. The surveys would be conducted within 7 days prior to the beginning of construction at each work site. If nesting raptors are found, no construction would occur within a 500-foot radius of the nest tree between March 1 and August 31, or until the young have fledged and the young would no longer be impacted by project activities (as determined by a DPR-approved biologist). Surveys for active migratory bird nests would be conducted within a 100-foot radius of the project area 7 days prior to commencement of construction at each work site. If active nests are located, all construction disturbance activities within a 100-foot radius of the nest tree would be postponed until the end of the breeding season (August 31) or until the young have fledged and the young are no longer impacted by project activities (as determined by a DPR-approved biologist).
PSR BIO-9: Bats	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> For work activities conducted during the bat maternity season (i.e., February 1 through September 31), a bat specialist will conduct a survey for bats within 100 feet of the project area where trees are present. If bat roosts are observed, a buffer area with a 100-foot radius will be established around the roost in which no work activities would be allowed to occur until the breeding season is completed. If work activities have to be conducted near known bat roosts, only those activities that the bat specialist determines could occur without significant impacts to bats will be conducted within 100 feet of the bat roost during the bat maternity season.
PSR BIO-10: Sonoma Tree Vole	<p>The following shall be conducted prior to initiation of project construction:</p> <ul style="list-style-type: none"> A DPR-approved biologist would conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) where suitable Douglas fir and bishop pine trees would be removed. If Sonoma tree vole or their nests are found during surveys, a no-disturbance buffer around nest trees should be established. If avoidance is not possible, additional measures should be determined in consultation with CDFW.
PSR BIO-11: American Badger	<ul style="list-style-type: none"> A DPR-approved biologist will conduct pre-construction surveys for American badger denning habitat in appropriate grassland locations. If badger dens are located within 50 feet of the project area, then these sites will be mapped and fenced off prior to the start of construction activities, and completely avoided during the breeding season of June 1 through October 15.
PSR BIO-12: Wetlands and Waters of the U.S	<p>Jurisdictional Water and Wetlands Best Management Practices. The following BMPs shall be implemented:</p> <ul style="list-style-type: none"> To control sedimentation during construction and after project implementation, appropriate erosion control best management practices (i.e., installation of straw wattle, jute netting, etc.) shall be implemented to minimize adverse effects on jurisdictional areas in the vicinity of the Project.

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Table 2-2. Project Requirements

Issue	Project Requirement
	<ul style="list-style-type: none"> • Project activities within the jurisdictional areas shall occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies. Deviations from this work window can be made with permission from the relevant regulatory agencies. • During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site. In addition, all Project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them. • Any substances which could be hazardous to aquatic species resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering jurisdictional areas. • All refueling, maintenance, and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.
Cultural Resources	
PSR CUL-1: ESA	<ul style="list-style-type: none"> • In coordination with TCR-1, the ESAs will be clearly delineated on construction plans and noted for avoidance. At least three weeks in advance of Project construction, the Construction Manager will notify State Parks Archaeologist and the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date. • Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment. • A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation. • ESAs shall be established for each site as follows: <ul style="list-style-type: none"> – A minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east; – A minimum of 15 feet (4.6 meters) around the site boundaries of CA-SON-1453, CA-SON-1889, CA-SON 1454/H, and FR-13; – A minimum of four (1.2 meters) to 6 feet (1.8 meters) around selected features of F11, to be determined at the pre-construction meeting between the construction manager, project foremen, construction crews, and State Parks Archaeologist. – The Parks Archaeologist will be notified when construction begins and will inspect the construction area on a periodic basis to ensure that the ESAs have not been breached. The Parks Archaeologist will be present for removal of the ESA flagging and/or fencing post-construction.

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Table 2-2. Project Requirements	
Issue	Project Requirement
	<ul style="list-style-type: none"> The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned near sites CA-SON-228/H, -1453, -1454/H, and -1889.
PSR CUL-2: Unanticipated Discovery.	<p>In the event of a potential post-review discovery, inadvertent effect, or ESA violation (e.g., ground-disturbing work occurs outside of delineated areas), all work will stop within 100 feet of the location of the discovery, effect, or violation. The Parks Archaeologist will notify the Kashia Pomo and other Native American groups (if not already onsite). Evaluation and treatment options would be determined in direct communication with each party, as applicable.</p> <p>If subsurface deposits believed to be cultural or human in origin are discovered during construction and the find includes human remains, or remains that are potentially human, a qualified professional archaeologist, in coordination with the Parks Archaeologist, shall ensure reasonable protection measures are taken to protect the discovery from further disturbance (Assembly Bill [AB] 2641).</p> <p>The archaeologist shall notify the Sonoma County Coroner (as per § 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, then the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work cannot resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.</p>
PSR CUL-3: Cultural Monitoring Plan	<p>A comprehensive Cultural Monitoring Plan will be implemented for the Project and will include both construction and long-term post-construction monitoring. Monitoring will be conducted by a California State Parks Archaeologist and a Native American representative affiliated with the area.</p> <p>Construction Monitoring will be implemented at the discretion of the California State Park archaeologist and will focus on those locations where trail construction is adjacent to archaeological sites (CA-SON-228/H, -1453, -1454/H, and 1889). The California State Parks Archaeologist with assistance from a Tribal Representative, will monitor other construction activities as deemed necessary.</p> <p>The long-term post-construction monitoring plan entails walking the Kashia Loop Trail at least two times per year, including a buffer on either side of the trail to assess potential impacts from increased use of the terrace on archaeological sites. This shall be done over a five-year period. If impacts are noted, DPR in collaboration with Kashia will take steps to minimize these impacts with the development of an action plan, which identifies treatments appropriate for the noted impacts.</p>
Geology and Soils	
SPR GEO-1: Erosion Control BMPs	DPR will implement Best Management Practices to be used in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, or trenching.

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Table 2-2. Project Requirements	
Issue	Project Requirement
	BMPs must always be in place including, but not limited to, covering (tarping) any stockpiled materials or soils and constructing silt fences, straw bale barriers, wildlife-friendly fiber rolls, or other structures around stockpiles and disturbed areas.
SPR GEO-2: Debris Slide/Flow Signage	No track-mounted or heavy-wheeled vehicles will be driven through wet areas during the rainy season or when soils are saturated to avoid compaction and/or damage to soil structure.
Hazards and Hazardous Materials	
SPR HAZ-1: Spill Prevention and Response	Prior to the start of onsite construction activities, the construction manager will inspect all equipment for leaks and regularly inspect thereafter until equipment is removed from the project site. All contaminated water, sludge, spill residue, or other hazardous compounds will be contained and disposed of outside the boundaries of the site, at a lawfully permitted or authorized destination.
SPR HAZ-2: Spill Prevention and Response	<p>Prior to the start of onsite construction activities, the construction manager will prepare a Spill Prevention and Response Plan (SPRP) as part of the Storm Water Pollution Prevention Plan (SWPPP) for the construction approval to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of vehicle fluids or other potential contaminants. This plan will include (but not be limited to);</p> <ul style="list-style-type: none"> • a map that delineates construction staging areas, where refueling, lubrication, and maintenance of equipment will occur; • a list of items required in a spill kit onsite that will be maintained throughout the life of the project; • procedures for the proper storage, use, and disposal of any solvents or other chemicals used in the restoration process; and identification of lawfully permitted or authorized disposal destinations outside of the project site.
SPR HAZ-3: Wildfire Avoidance and Response	Prior to the start of construction, the construction manager will develop a Fire Safety Plan for State Parks approval. The plan will include the emergency calling procedures for both the California Department of Forestry and Fire Protection (CDF) and local fire department(s).
SPR HAZ-4: Wildfire Avoidance and Response	If construction activities extend into the rainy season or if an un-seasonal storm is anticipated, the contractor will properly winterize the site by covering (tarping) any stockpiled materials or soils and by constructing silt fences, straw bale barriers, fiber rolls, or other structures around stockpiles and graded areas. All erosion control measures must be wildlife friendly and will not pose a threat for species to become entangled in netting.
SPR HAZ-5: Wildfire Avoidance and Response	DPR personnel will have a State Park radio at the Park, which allows direct contact with CDF and a centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.
SPR HAZ 6: Wildfire Avoidance and Response	Under dry conditions, a filled water truck and/or fire engine crew will be onsite during activities with the potential to start a fire.
Hydrology and Water Quality	
SPR HYD-1: Erosion and Sediment Control and Pollution Prevention	Prior to the start of construction involving ground-disturbing activities, DPR will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for NCRWQCB approval that identifies temporary Best Management Practices (BMPs) (e.g., tarping of any stockpiled materials or soil; use of silt fences, straw bale barriers, fiber rolls, etc.) and permanent (e.g.,

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Table 2-2. Project Requirements	
Issue	Project Requirement
	structural containment, preserving or planting of vegetation) for use in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, trenching, repaving, or other ground-disturbing activities. The SWPPP will include BMPs for hazardous waste and contaminated soils management and a Spill Prevention and Control Plan (SPCP), as appropriate.
SPR HYD-2: Erosion and Sediment Control and Pollution Prevention	The project will comply with all applicable water quality standards as specified in the NCRWQCB Basin Plan.
SPR HYD-3: Erosion and Sediment Control and Pollution Prevention	All construction activities will be suspended during heavy precipitation events (i.e., at least 1/2-inch of precipitation in a 24-hour period) or when heavy precipitation events are forecast.
SPR HYD-4: Erosion and Sediment Control and Pollution Prevention	If construction activities extend into the rainy season or if an un-seasonal storm is anticipated, the contractor will properly winterize the site by covering (tarping) any stockpiled materials or soils and by constructing silt fences, straw bale barriers, fiber rolls, or other structures around stockpiles and graded areas. All erosion control measures must be wildlife friendly and will not pose a threat for species to become entangled in netting.
Noise	
SPR NOI-1: Noise Exposure	Internal combustion engines used for project implementation will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for Project-related activities will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts) whenever necessary.
SPR NOI-2: Noise Exposure	The contractor will locate stationary noise sources and staging areas as far from potential sensitive noise receptors, as possible. If they must be located near potential sensitive noise receptors, stationary noise sources will be muffled or shielded, and/or enclosed within temporary sheds.
SPR NOI-3: Noise Exposure	Construction activities will generally be limited to the daylight hours, Monday – Friday. If work during weekends or holidays is required, no work will occur on those days before 7:00 a.m. or after 7:00 p.m. (check contract docs for time restrictions).
SPR NOI-4: Noise Exposure	Internal combustion engines used for any purpose at the job site will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for construction will utilize the best available noise control techniques (e.g. engine enclosures, acoustically-attenuating shields, or shrouds, intake silencers, ducts) whenever necessary.
Tribal Cultural Resources	
PSR TRC-1: Tribal Cultural Resources	The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned within or near site CA-SON-1454/H.
PSR TCR-2:	Avoidance of TCRs. In coordination with Project Requirement PSR CUL-1 through PSR CUL-3, at least three weeks in advance of Project construction, the Construction Manager will notify California State Parks Archaeologist, the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date. Kashia will be provided given an opportunity to monitor trail construction during earth moving work.

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Table 2-2. Project Requirements	
Issue	Project Requirement
	<p>Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment.</p> <p>The following avoidance measures shall be implemented, in coordination with the implementation of avoidance measures for cultural resources under Project Requirement PSR CUL-1 through PSR CUL-3:</p> <ul style="list-style-type: none"> • An ESA shall be established a minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east; • An ESA shall be established a minimum of 15 feet (4.6 meters) around the site boundaries of SON-1453, SON-1889, SON-1454/H, and FR-13; • FR-22, FR-3, FR-5, and FR-12 will be avoided by all project activity. • A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation. • Any potential TCRs or any discoveries including human remains that are observed in any location will be subject to the decision process in CUL-2 and subsequent consultation between the monitoring tribe(s) and DPR to evaluate and, if necessary, treat the discovery to the satisfaction of DPR.
PSR TCR-3: Interpretive Signage	DPR will develop the interpretive signage for the Kashia Loop Trail Project in consultation with the Federated Indians of Graton Rancheria.

2.7 Visitation to Fort Ross State Historic Park

Fort Ross SHP receives, on average, 180,170 visitors each fiscal year (DPR 2011). The Proposed Project is designed to provide a trail system that meets DPR standards as well as the goals established for the Trail for current and projected visitation levels. Although construction of the trail could lead to an increase in visitors to the park as well as a means to introducing visitors to new areas of the park, it is impossible to quantify the maximum extent of increased visitation. The limiting factor will be its relatively remote setting as well as the availability of parking, consisting of approximately 115 spaces although there is a substantial area of unpaved overflow parking, utilized only during special events. Day Use, Overnight Camping, and Average Attendance across the last 10 fiscal years is shown in Table 2-3. *FRSHP Attendance*.

Table 2-3. FRSHP Attendance			
Fiscal Year	Day Use	Overnight Camping	Total Attendance
2008-2009	229,789	6,600	236,389
2009-2010	184,761	3,876	188,637
2010-2011	215,131	4,637	219,498
2011-2012	192,814	0	192,814
2012-2013	178,279	0	178,279
2013-2014	185,026	238	185,264
2014-2015	206,328	3,130	209,458
2015-2016	43,514	3,536	47,050
2016-2017	52,036	3,912	55,948
2017-2018	56,540	2,216	58,756
Average Attendance	154,422	3,987	157,209

2.8 Consistency with Local Plans and Policies

All Project components would be implemented entirely within the boundaries of Fort Ross SHP. The Proposed Project is consistent with the mission of DPR to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality recreation. The Proposed Project is consistent with local plans and policies currently in effect. Please see Section 4.11 *Land Use and Planning* for further details.

2.9 Discretionary Approvals

DPR retains approval authority for the proposed Kashia Loop Trail at Fort Ross SHP. The Proposed Project also requires consultation with the following government agencies:

- Sonoma County – Coastal Permit Approval
- California Department of Fish and Wildlife (CDFW)
- U.S. Army Corps of Engineers (USACE)

Additional internal document reviews include compliance with PRC 5024. DPR will acquire all necessary reviews and permits prior to implementing any Project components requiring regulatory review.

2.10 Related Projects

In addition to the proposed Kashia Loop Trail, other existing trail segments within Fort Ross SHP will be included in the interpretation program.

2.10.1 Fort Ross Foot Trail (Visitor Center to Old Highway 1)

This existing concrete trail (1536 LF) connects the Visitor Center to the Fort Compound (NW Portal) and terminates at Old Highway 1. An existing single accessible parking space is provided at this location. Existing features along this segment include four benches and four interpretive panel stopping points. Work proposed for this segment includes:

1. The installation of one new wayfinding/orientation display panel at the visitor center entry area.
2. Replacement of the existing windmill interpretive panel (B-1), and
3. Relocation of the existing Russian Village Panel (from the NW fort portal to B-2). Panel installations will require excavation of two 12-inch-diameter by 30-in-deep holes for each panel stanchion.

2.10.2 Old Highway 1

This segment connects the Fort Compound, Kashia Dance Circle, the Call Ranch House, and Call Ranch Picnic Area. The trail route runs along the existing paved park road (approximately 685 LF) from the Call Picnic Area to the intersection of the Fort Ross Foot Path. The last 150 feet of this segment is a compacted gravel surface with parallel concrete path to the Fort Compound (SW Portal). There is currently one existing interpretive panel at the Call House.

Two new interpretive stopping points are proposed along this route. One at the Call Ranch Picnic Area (B-3), and one at the Kashia Dance Circle (B-5). The proposed dance circle stopping point will require formalization of the existing access to improve trail definition. This upgrade includes accessible trail aggregate base surface with rock edging (55 LF x 5 feet wide) from the road and a landing (6 x 10 feet) terminus. Approximately seven large (0.25-ton) boulders would be set along the north side at five-foot intervals to protect the path from occasional vehicle use along the existing road edge. Boulders will require excavation of up to six inches.

2.10.2.1 Native Alaskan Spur Trail

This route would link the Fort Compounds SW and SE Portals around the exterior of the Fort. The route would feature areas of the park where the Alaskan Natives and others built their communities and lived. Currently there are two existing interpretive panels on the route. One at the SE Portal (B-7) and one just outside the southern corner of the Fort (B-6).

A formal accessible trail route is proposed to replace the existing informal path of travel. This upgrade would include:

1. Approximately 430 LF aggregate base trail (five feet wide) with non-structural rock wall edging. Existing interpretive panels at B-6 and B-7 will be replaced. This would include a drain lens approximately 35 LF x 8 feet wide to bridge an existing drainage swale.
2. Construction of a landing (approximately 8 x 10 feet) at the existing interpretive panel. The landing would be aggregate base with 4-x-8-inch timber edging. A new interpretive panel will be

installed (B-6) requiring an excavation (12 inches diameter by 30 inches deep) for the mounting post.

3. Reconstruct the existing landing outside the SE portal and relocating the existing bench and interpretive panel (B-7) within the confines of the landing. Landings will be reconstructed with aggregate base surfaces and non-structural rock edging. No excavation will be permitted on this segment.

2.10.2.2 Native Alaskan Spur Trail

This existing route of 0.26 mile connects the Fort and Native Alaskan Loop to the Sandy Cove area. This route also provides access to the beach at Sandy Cove.

Construction of two new interpretive stopping points (approximately 8 x 8 feet) are proposed along the route. One stopping point (B-8) is located on the point adjacent the existing bench, and the other (B-9) on the backside of Sandy Cove. Each would include an aggregate base surface with non-structural rock edging. Excavations required for landing construction would be up to six inches in depth. A new interpretive panel is proposed for Sandy Cove requiring excavation of two holes, each 12 inches in diameter x 30 inch deep. The existing road and trail that make up this route do not meet accessibility standards. Road gradients are such that improvements for accessibility are not feasible.

2.10.3 Cemetery Trail

From Sandy Cove, the existing aggregate base trail climbs .30 mile (1,594 LF) to the Fort Ross Cemetery. This route was reconstructed in 2018. The existing trail does not meet accessibility standards. Gradients are such that improvements for accessibility are not feasible and no improvements are proposed for the Cemetery Trail. Interpretive stopping point (B-10) will utilize existing interpretive panels.

2.11 Consultation With California Native American Tribe(s)

California State Parks reached out to the Native American Heritage Commission (NAHC) requesting a Sacred Lands Files Search and a list of California Native American tribes traditionally and culturally affiliated with the project area. The NAHC Sacred Lands search proved positive and directed State Parks to contact the Kashi Band of the Pomo Indians of Stewards Point Rancheria (Kashia) regarding sacred lands in the project area. In addition to the Kashia, the NAHC search provided a list of six other tribes traditionally and culturally affiliated with the project area. The following California Native American tribes identified by the NAHC have been notified of the Project: Cloverdale Rancheria of Pomo Indians, Dry Creek Rancheria Band of Pomo Indians, Federated Indians of Graton Rancheria, Kashia Band of Pomo Indians of Stewards Point Rancheria, Lytton Rancheria, Middletown Rancheria, and Mishewal-Wappo Tribe of Alexander Valley. California State Parks has a long-standing relationship with Kashia and acknowledge and respect their connection to the land occupied by Fort Ross SHP. Consultation with the Kashia for the Kashia Loop Trail has been on-going since project inception. The Federated Indians of Graton Rancheria requested consultation pursuant to PRC § 21080.3.1. A summary of the consultation process, including the determination of significance of impacts to tribal cultural resources, is provided in Section 4.18 Tribal Cultural Resources of this Initial Study.

SECTION 3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 Environmental Factors

3.2 Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

<input checked="" type="checkbox"/> Aesthetics	<input checked="" type="checkbox"/> Hazards/Hazardous Materials	<input type="checkbox"/> Recreation
<input type="checkbox"/> Agriculture and Forestry Resources	<input checked="" type="checkbox"/> Hydrology/Water Quality	<input type="checkbox"/> Transportation
<input checked="" type="checkbox"/> Air Quality	<input type="checkbox"/> Land Use and Planning	<input checked="" type="checkbox"/> Tribal Cultural Resources
<input checked="" type="checkbox"/> Biological Resources	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Utilities and Service Systems
<input checked="" type="checkbox"/> Cultural Resources	<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Wildfire
<input type="checkbox"/> Energy	<input type="checkbox"/> Paleontological Resources	<input type="checkbox"/> Mandatory Findings of Significance
<input checked="" type="checkbox"/> Geology and Soils	<input type="checkbox"/> Population and Housing	
<input type="checkbox"/> Greenhouse Gas Emissions	<input type="checkbox"/> Public Services	

Determination

On the basis of this initial evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	<input checked="" type="checkbox"/>
I find that although the Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	<input type="checkbox"/>
I find that the Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	<input type="checkbox"/>
I find that the Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	<input type="checkbox"/>
I find that although the Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.	<input type="checkbox"/>

AGENCY REP NAME	Date
TITLE	

SECTION 4.0 ENVIRONMENTAL CHECKLIST AND DISCUSSION

4.1 Aesthetics

4.1.1 Environmental Setting

4.1.1.1 Regional Setting

The Project is located on the Sonoma County Coast approximately 11 miles northwest of the town of Jenner and 25 miles southwest of the town of Gualala on Highway 1. The northern California coastline is generally characterized by both steep cliffs and coastal bluffs as well as coves and sandy beaches.

State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. A highway can be designated as scenic based on how much natural beauty can be seen by users of the highway, the quality of the scenic landscape, and if development impacts the experience of the view (California Department of Transportation [Caltrans] 2018). Highway 1 runs approximately 659 miles (north-south) along most of the pacific coastline, including past the Fort Ross SHP. Highway 1 southern terminus is at Interstate 5 in Orange County and the northern terminus is at U.S. Route 101 in Mendocino County. This highway is eligible for official designation as a California State Scenic Highway; however, as of the time of this document it has not been officially designated within Sonoma County (Caltrans 2020).

4.1.1.2 Visual Character of the Project Site

The Project Area is located within the 3,400-acre Fort Ross SHP. The park has expansive open natural landscapes as well as historical structures and exhibits that showcase the former Imperial Russian settlement, early California Ranch era, and Kashaya territory. Fort Ross SHP is surrounded by sandy beaches, ocean coves, pine forests, coastal grasslands, and natural rock outcroppings.

Highway 1 bisects the park, generally at elevations between 200 and 300 feet. The terrain rises steeply to the east of Highway 1 where the terrain starts as grasslands and quickly moves into dense tree cover. The west side of the park consists primarily of coastal grasslands and brush allowing clear and unobstructed ocean vistas along much of the park. Central to this open viewshed is Fort Ross and the Call Ranch Complex. These features are dominant on the landscape on the southern side of the park. On the northern side of the park (where the Project trail will be located) the view is dominated by open grasslands, rock outcroppings, and stands of trees. The coastline in this area is bordered by cliffs dropping to a rugged coastline.

4.1.2 Aesthetics (I) Environmental Checklist and Discussion

Except as provided in Public Resources Code Section 21099, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

A scenic vista is a viewpoint that provides a distant view of highly valued natural or manmade landscape features for the benefit of the general public. Typical scenic vistas are locations where views of rivers, ocean, hillsides, and open space areas can be obtained as well as locations where valued urban landscape features can be viewed in the distance.

As described in the Environmental Setting above, the park is located along Highway 1 overlooking the Pacific Ocean and many scenic vistas can be found along the highway. The proposed trail has a narrow profile and limited footprint and most segments are set back a significant distance from and below the highway, and would be visually screened by rock outcroppings, rolling topography, vegetation, and other natural features. Visually speaking, with implementation of Specific Project Requirement (PSR) AES-1, improvements to the trail will become lost and subordinate to anything else in this dramatically scenic area. Therefore, no long-term significant effect on scenic vistas would result from the Project.

Construction activities would require excavation of soil and removal of a limited amount of vegetation, primarily consisting of low-growing herbs and shrubs. These activities would change the close-range scenery at the Project Sites. These impacts would be considered temporary and therefore, less than significant.

PSR AES-1: Materials used in turnpike construction will be native rock materials, with emphasis on aggregate material that blends with soils native to the respective turnpike locations.

Except as provided in Public Resources Code Section 21099, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Project is situated on the coastal bluff and plain to the west of State Highway 1. This highway is eligible for official designation as a California State Scenic Highway; however, as of the publication of this document, it has not been officially designated (Caltrans 2020). The trail will be located in areas where "volunteer" trails already exist from both human and cattle use. The Proposed Project has been designed

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to avoid/reduce impacts to resources such as trees, historic resources, and rock outcroppings. Upon completion, trail improvements will not be visible from Highway 1 and will not alter the current view from the highway.

Highway travelers may see some construction activities and staging/storage of equipment and vehicles, particularly trail construction near the highway (on the segment of trail northwest of Old Highway 1). These impacts, however, are considered temporary and less than significant and no mitigation is required.

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

As described in Discussion (a) and (b) above, construction activities will include various treatments including graded earth and boardwalks and will be designed per design standards described in Section 2.3 *Trail Siting and Design Standards*. These design standards are intended to minimize impacts to the visual character of the area and will help blend the new features into the existing setting where possible. As with any construction project, a temporary decrease in the visual appeal of the areas immediately affected by the work being performed would occur. Revegetation of impacted areas will be completed and debris will be removed from the site following construction, thus returning the site to pre-construction conditions. This impact is considered less than significant.

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

Lighting is not an element of this Project and all work will be conducted during daylight hours, and as such, no permanent new light sources will be introduced into the landscape. No component of the trail construction will produce a metallic shine or glare. Therefore, there will be no impact.

4.1.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.2 Agriculture Resources and Forestry Services

4.2.1 Environmental Setting

The Project Area of Fort Ross SHP features expansive grasslands with islands/stands of coastal trees and brush west of Highway 1. Stands of bishop pines are scattered in the northwest/northern portion of the trail area and dominate the northeastern portion of the Fort Ross SHP. The Bishop pines grows close to the ocean and have become dominant on the coastal plain in the last few decades.

The majority of the Project Area is currently and has historically been grazed by sheep and cattle. It is predominantly covered in native grasses and plants but otherwise does not support agricultural production, primarily serving to maintain the pastoral quality of the site as well as enhancing conditions for rare plants. Grazing is currently permitted on a month-to-month lease basis within the Park. Fort Ross SHP does not support any other commercial agricultural cultivation or development (DPR, 1975).

The Department of Conservation (DOC) has classified Important Farmland in Sonoma County by the following categories:

- Prime Farmland – Farmland with the best combination of physical and chemical features able to sustain long-term production of agricultural crops.
- Farmland of Statewide Importance – Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture.
- Unique Farmland – Farmland of lesser quality soils used for the production of the state’s leading agricultural crops.
- Farmland of Local Importance – Land of importance to the local agricultural economy, as determined by each county’s board of supervisors and a local advisory committee.
- Grazing Land – Land on which the existing vegetation is suited to the grazing of livestock.
- Urban and Built-up Land – Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel.
- Other Land – Land not included in any other mapping category is included as other land. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is also mapped as Other Land.

The Proposed Project Site does not contain and is not adjacent to any Important Farmland based on the DOC criteria.

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4.2.2 Agriculture and Forestry Resources (II) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

No designated agricultural lands exist on the Project Site. The Proposed Project would not result in the conversion of farmland to a non-agricultural use. Therefore, no impacts would occur to farmlands.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project Site is not zoned for agriculture use and is not under a Williamson Act contract. Therefore, no impacts would occur to Williamson Act land.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project Site is not located within zoned forest land or timberland. Therefore, there will be no impacts to existing zoning.

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Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Proposed Project would not result in the loss or conversion of forest land to a non-forest use. No impacts would occur.

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

No designated agricultural lands exist on or near the Project Site. The historical grazing of the site would continue following implementation of the Project. The Proposed Project would not result in the conversion of farmland or forestland to a non-agricultural use. The Project Site is not zoned for agriculture and is not under a Williamson Act contract. No impacts would occur.

No significant impacts were identified and no mitigation measures are required.

4.3 Air Quality

4.3.1 Environmental Setting

The Project Area is located within the northern half of Sonoma County. The California Air Resource Board (CARB) has divided California into regional air basins according to topographic features, and the northern half of Sonoma County is located within the North Coast Air Basin (NoCAB). The Northern Sonoma County Air Pollution Control District (NSCAPCD) is the regional air quality agency for the area encompassing the Project Site. However, the NSCAPCD has not adopted CEQA-related thresholds of significance and instead recommends the use of the Bay Area Air Quality Management District (BAAQMD) thresholds and mitigation measures. As such, BAAQMD thresholds of significance are utilized for this analysis. The BAAQMD is the regional air quality agency for San Francisco Bay Area Air Basin (SFBAAB), which is comprised of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County.

Within the NoCAB, the Project Site is located within the Fort Ross SHP located on the Sonoma County coast, 11 miles northwest of the town of Jenner on State Highway 1. Sonoma County exhibits a mild Mediterranean climate with abundant rainfall. Cool moist air over the Pacific Ocean influences the temperatures on the coast and in the coastal valleys. Average annual air temperatures on the coast range from 38°F to 84°F. The cool marine air minimizes the difference between summer and winter and between daytime and nighttime temperatures. The influence of the marine air diminishes with increasing elevation and distance from the coastline. Precipitation falls primarily from October through May, averaging about 40 inches annually. Marine fog commonly occurs in coastal areas, especially during the nearly rainless summer months. The fog frequently moves inland over the lower elevations in the evening and burns off by midday. At the lower elevations near the coast, the fog may persist for several days before dissipating. Prevailing winds are from the northwest, with local variations due to topography. During daylight hours, up-canyon local winds predominate. In the evening hours, down-canyon winds along watercourses predominate.

Air quality in the NoCAB generally ranges from fair to poor and is similar to air quality in most of coastal California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.

Both the U.S. Environmental Protection Agency (USEPA) and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are ozone (O₃) (O₃ precursor emissions include nitrogen oxide [NO_x] and reactive organic gases [ROG]), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The Sonoma County portion of the NoCAB region is designated as attainment for all federal and state air quality standards (CARB 2018).

As stated previously, the BAAQMD, is charged with the responsibility of implementing air quality programs and ensuring that national and state ambient air quality standards are not exceeded and that air quality conditions are maintained in the SFBAAB. The NSCAPCD has not adopted thresholds of significance and instead recommends the use of the BAAQMD thresholds and mitigation measures for the evaluation of CEQA projects. As such, BAAQMD thresholds of significance are utilized for this analysis.

4.3.2 Air Quality (III) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

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The Project Site lies within the boundaries of the NoCAB, in northern Sonoma County. While the southern portion of Sonoma County has been identified as being in nonattainment for exceeding state and federal criteria pollutant levels for O₃, PM₁₀, and PM_{2.5}, the northern portion of Sonoma County is classified attainment for all federal and state air quality standards (CARB 2018). As such, the northern Sonoma County portion of the NOCAB is not subject to an air quality plan. No impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the Project's impact would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulatively considerable.

The Proposed Project's air quality impacts are attributable to construction and operational activities. Operational impact would be almost exclusively attributable to traffic-induced emissions. For purposes of impact assessment, air quality impacts have been separated into construction impacts and operational impacts.

4.3.2.1 Construction Emissions

Construction associated with the Proposed Project would generate short-term emissions of criteria air pollutants, including ROG, CO, NO_x, PM₁₀, and PM_{2.5}. The largest amount of ROG, CO, and NO_x emissions would occur during the earthwork phase. PM₁₀ and PM_{2.5} emissions would occur from fugitive dust (due to earthwork and excavation) and from construction equipment exhaust. Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the Project Site; emissions produced onsite as the equipment is used, and emissions from trucks transporting materials to and from the site and have the potential to represent a significant air quality impact.

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in Table 4.3-1. Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur. Construction emissions would be considered a significant air quality impact if the volume of pollutants generated exceeds the BAAQMD's thresholds of significance.

Table 4.3-1. Construction-Related Criteria Air Pollutant Emissions

Construction Year	Pollutant (pounds per day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Construction Year 2021	1.61	17.46	6.16	3.63
<i>BAAQMD Significance Threshold</i>	54	54	82	54
Exceed BAAQMD Threshold?	No	No	No	No

Source: California Emissions Estimator Model (CalEEMod) version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emissions are from winter or summer, whichever is higher.

As shown in Table 4.3-1, all criteria pollutant emissions would remain below their respective thresholds during Project construction. Therefore, criteria pollutant emissions generated during Project construction would not result in a violation of air quality standards. See *Appendix A* for model results.

4.3.2.2 Operational Emissions

As stated previously, the proposed 1.64-mile Kashia Loop Trail is a combination of new trail construction (1.25 miles) and trail use of existing Old Highway 1 (0.39 mile). The Project is anticipated to result in operational emissions attributable to a slight increase in traffic. The Project is anticipated to attract a slight increase in visitors to the park, resulting in an estimated one additional vehicle trip to the park per day (Institute of Transportation Engineers [ITE] Manual, 9th Edition). Project operational emissions are summarized in Table 4.3-2 below.

Table 4.3-2. Operational-Related Criteria Air Pollutant Emissions

Construction Year	Pollutant (pounds per day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Area	0.03	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00
Mobile	0.00	0.06	0.04	0.01
Total	0.04	0.06	0.04	0.01
<i>BAAQMD Significance Threshold</i>	54	54	82	54
Exceed BAAQMD Threshold?	No	No	No	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emissions are from winter or summer, whichever is higher.

As shown in Table 4.3-2, all criteria pollutant emissions would remain below their respective thresholds during Project operation. Therefore, criteria pollutant emissions generated during Project operation would not result in a violation of air quality standards. The Project will have a less than significant impact in this area. See *Appendix A* for model results.

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Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. There are no sensitive receptors in the immediate vicinity of the Project Site. However, Fort Ross SHP itself is frequented by visitors and employees. The Fort Ross visitor center, located approximately 455 feet northeast of the nearest trail point, is the location where visitors and employees may be most concentrated; however, the visitor Center is mostly located indoors so emissions would be less once inside the building. Additionally, walking the trail between the visitor center to the Fort and around the fort itself is an outdoor activity; however, it is a considerable distance away from the nearest part of the construction activities.

4.3.2.3 Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Proposed Project-generated emissions of diesel particulate matter (DPM), ROG, NO_x, CO, and PM₁₀ from the exhaust of off-road, diesel equipment for site preparation (e.g., clearing, grading); and other miscellaneous activities. Modeling includes the use of heavy-duty diesel equipment; however, the Proposed Project has been designed to only include smaller construction equipment and excavations. Even with the inclusion of heavy-duty construction equipment, the Project would not exceed the BAAQMD significance thresholds for construction emissions (as shown in Table 4.3-1). The Sonoma County portion of the NoCAB region is designated attainment for all federal and state air quality standards (CARB 2018).

The health effects associated with O₃ are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O₃ precursor emissions (ROG or NO_x) in excess of the BAAQMD thresholds, the Project is not anticipated to substantially contribute to regional O₃ concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve construction activities that would result in CO emissions in excess of the BAAQMD thresholds. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

Particulate matter (PM₁₀ and PM_{2.5}) contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction activity, DPM is the primary toxic air contaminant (TAC) of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Based on the emission modeling conducted, the maximum onsite construction-related daily emissions of exhaust PM_{2.5}, considered a surrogate for DPM, would be 0.70 pounds/day (see *Appendix A*). (PM_{2.5} exhaust is considered a surrogate for DPM because more than 90 percent of DPM is less than one microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter (i.e., PM_{2.5}). Most PM_{2.5} derives from combustion, such as use of gasoline and diesel fuels by motor vehicles.) As with O₃ and NO_x, the Project would not generate emissions of PM₁₀ or PM_{2.5} that would exceed the BAAQMD's thresholds. SPR AIR-1 through AIR-3 would further reduce impacts ensuring the impacts are less than significant.

SPR AIR-1: Fugitive Dust and Oxone

- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- All construction areas (dirt/gravel roads and surrounding dirt/gravel area) will be watered at least twice daily during dry, dusty conditions.
- All trucks hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All construction-related equipment and engines will be maintained in proper tune (according to manufacturer's specifications), and in compliance with all State and federal requirements.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points.
- Excavation and grading activities will be suspended if sustained winds exceed 25 miles mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads.
- Earth or other material that has been transported onto paved roadways by trucks, construction equipment, erosion, or other project-related activity will be promptly removed.

SPR AIR-2: Fugitive Dust and Oxone

- During dry, dusty conditions, all active construction areas will be lightly sprayed with dust suppressant water to reduce dust without causing runoff

SPR AIR-3: Fugitive Dust and Oxone

- All trucks or light equipment hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.
- All gasoline-powered equipment will be maintained according to manufacturer's specifications, and in compliance with all State and federal requirements SPR AIR- 4 Fugitive Dust and Oxone
- Paved streets adjacent to the Park shall either be swept or washed at the end of each day, or as required, to remove excessive accumulations of silt and/or mud that could have resulted from project-related activities.
- Excavation and grading activities will be suspended when sustained winds exceed 20 miles per hour (mph), instantaneous gusts exceed 30 mph, or when dust occurs from remediation related activities where visible emissions (dust) cannot be controlled by watering or conventional dust abatement controls.

4.3.2.4 Operational Air Contaminants

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). CO concentrations in the Project vicinity have steadily declined with the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities.

Because the Proposed Project would not increase traffic volumes at any intersection to more than 100,000 vehicles per day, there is no likelihood of the Project traffic exceeding CO values. The Project is anticipated to generate one additional trip per day (ITE Manual, 9th Edition). The impact is less than significant.

**Draft Initial Study and Negative Declaration
Fort Ross State Historic Park Kashia Loop Trail**

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Construction Impacts

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, construction odors would result in a less than significant impact related to odor emissions.

Operational Impacts

The land uses generally identified as sources of odors include wastewater treatment plants, wastewater pumping facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing and fiberglass manufacturing facilities, painting/coating operations, rendering plants, coffee roasters, food processing facilities, confined animal facilities, feedlots, dairies, green waste and recycling operations, and metal smelting plants. If a source of odors is proposed to be located near existing or planned sensitive receptors, this could have the potential to cause operational-related odor impacts. The Project does not include any of these land uses or similar land uses. The operational impact is less than significant.

4.3.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.4 Biological Resources

This section is based on the analysis and recommendations presented in the Biological Resource Assessment (BRA) prepared for the proposed Fort Ross State Historic Park Kashia Loop Trail (ECORP 2020, *Appendix B*). As part of preparing the BRA, ECORP conducted reconnaissance-level site visits August 22 and 23, 2018, and August 21, 2020. The Project Site was systematically surveyed on foot using a Trimble GPS unit with sub-meter accuracy, topographic maps, and aerial imagery to ensure total site coverage. Special attention was given to identifying those portions of the Project Site with the potential to support special-status species and sensitive habitats. During the field survey, biological communities occurring onsite were characterized. In addition to the reconnaissance survey, a focused special-status plant survey, an aquatic resources delineation, and a literature review were conducted. Additionally, Spade NRC conducted a botanical survey in August 2018 and prepared a Botanical Survey Report (*Appendix C*). Finally, an update to the Wetland Delineation and Botanical Survey Reports was prepared by California State Parks staff on August 17, 2020.

4.4.1 Environmental Setting

The 2.82-acre Study Area is in the Fort Ross SHP located in Sonoma County, 11 miles northwest of the town of Jenner on State Highway 1 (19005 Coast Highway 1, Jenner, California). The Study Area is bounded by Highway 1 to the northeast and the Pacific coast to the south and west. The Study Area corresponds to a portion of the unsectioned Muniz Land Grant within the "Plantation, California" and the "Fort Ross, California" 7.5-minute quadrangles (U.S. Geological Service [USGS] 1977, 1978, respectively).

The Study Area is located on a coastal terrace characterized by gently rolling terrain situated approximately 50–150 feet above mean sea level in the North Coast Subregion of the Northwestern California floristic region of California (Baldwin et. al. 2012). The climate along the coast is heavily influenced by the Pacific Ocean, which brings summertime fog, low clouds, winter storms, and seasonally variable winds. Summer temperatures are mild (average 64°F), with frequent low clouds and fog that provide important moisture to vegetation during the dry season. Prevailing summer winds are from the northwest, averaging 10 to 15 miles per hour (mph), with gusts as high as 50 to 60 mph. Winter storms often batter the coastline with strong, moisture-laden, southwesterly winds. These winter storms, from November through April, account for nearly all the average annual rainfall that varies between 30 and 38 inches. Winter temperatures are moderate, with averages ranging from highs in the 50's to lows in the 40's.

The Study Area is primarily composed of coastal prairie with intermittent stands of bishop pine (*Pinus muricata*) and rock outcrops. Coastal scrub is present along the southeastern edge of the Study Area. Several drainages and other aquatic resources are found onsite. The area supports many diverse natural plant communities, including communities which may be considered Sensitive Natural Communities or may be protected under the California Coastal Act (CCA). The diversity of habitat types found within the Study Area support a wide range of common species and are known to support multiple special-status plant species and have the potential to support special status wildlife species.

Land uses include developed areas of the Fort Ross State Historic Park, which are southeast of the Study Area, and year-round grazing by cattle within the coastal prairie outside of the developed areas.

4.4.1.1 Vegetation Communities






















Twenty-one vegetation communities were mapped within the vicinity of the Study Area during the 2018 botanical survey (Spade 2018) and are depicted in Figure 4.4-1. *Vegetation Communities Overview* (SNRC 2018). The vegetation mapping encompasses a larger area than the Study Area. Only 13 of the 21 mapped vegetation communities are present within the Study Area (Figure 4.4-2. *Vegetation Communities*, Sheets 1-5). The 13 vegetation communities are listed below, followed by the State rarity rank for each ranked community (a detailed discussion of the rankings can be found in *Appendix B*). A question mark (?) following the rank indicates the rank is estimated by CDFW rather than calculated due to insufficient sampling. Vegetation communities with ranks of S1, S2, or S3 are considered Sensitive Natural Communities.

- *Anthoxanthum odoratum* Semi-Natural Alliance
- *Baccharis pilularis* Shrubland Alliance (S5)
- *Carex obnupta* Herbaceous Alliance (S3)
- *Danthonia californica* Herbaceous Alliance (S3)
- *Danthonia pilosa* Provisional Semi-Natural Association
- *Deschampsia cespitosa* Herbaceous Alliance (S4?)
- *Festuca bromoides* Semi-Natural Association
- *Iris douglasiana* patch
- *Juncus balticus* Herbaceous Alliance (S4)
- *Lasthenia californica* Herbaceous Alliance (S4)
- *Lupinus arboreus* Semi-Natural Alliance (S4)
- *Pinus muricata* Forest Alliance (S3?)
- *Rocky Outcrop* Special Feature

ECORP: N:\2016\153.11 Fort Ross Trails Project\MAPS\Vegetation_and_LandCover\FIRoss_Vegetation_20200818_Overview.mxd (JDS-JSweager 9/28/2020)



Map Features

-  Study Area - 2.82 ac.
- Vegetation Community - Acres in Study Area *
-  *Anthoxanthum odoratum* Semi-Natural Herb Alliance - 0.41 ac.
 -  *Baccharis pilularis* Shrubland Alliance - 0.02 ac.
 -  *Briza maxima* Provisional Semi-Natural Association
 -  *Calamagrostis nutkaensis* Herbaceous Alliance
 -  *Carex obnupta* Herbaceous Alliance - 0.001 ac.
 -  *Danthonia californica* Herbaceous Alliance - 0.01 ac.
 -  *Danthonia pilosa* Provisional Semi-Nat Association - 0.14 ac.
 -  *Deschampsia cespitosa* Herb Alliance - 0.66 ac.
 -  *Eryngium armatum* Seep
 -  *Festuca bromoides* Provisional Semi-Nat Association - 0.21 ac.
 -  *Iris douglasiana* patch - 0.01 ac.
 -  *Juncus balticus* Herbaceous Alliance - 0.06 ac.
 -  *Juncus effusus* Herbaceous Alliance
 -  *Lasthenia californica* Herb Alliance - 0.05 ac.
 -  *Lupinus arboreus* Semi-Natural Alliance - 0.24 ac.
 -  *Nassella pulchra* Herbaceous Alliance
 -  *Pinus muricata* Forest Alliance - 0.28 ac.
 -  *Rubus ursinus* Shrubland Alliance
 -  Road - 0.69 ac.
 -  Rocky Outcrop Special Feature - 0.03 ac.

* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total acreage reported.

Sources: ESRI, USGS, CA State Parks, Sonoma County



Map Date: 9/28/2020

ECORP Consulting, Inc.
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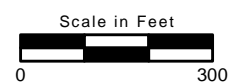


Figure 4.4-1. Vegetation Communities - Overview

2016-153.11 Fort Ross Trails Project

ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Vegetation_and_LandCover\FRoss_Vegetation_20200818_MapBook.mxd (JDS)-JSwager 9/28/2020



Map Features

- Study Area - 2.82 ac.
- Existing Road
- Kashia Loop Trail
- New Bench
- Interpretive Stop with Marker
- Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

- Anthoxanthum odoratum* Semi-Natural Herb Alliance
- Carex obnupta* Herbaceous Alliance
- Danthonia pilosa* Provisional Semi-Nat Association
- Festuca bromoides* Provisional Semi-Nat Association
- Juncus balticus* Herbaceous Alliance
- Pinus muricata* Forest Alliance
- Road

Sources: ESRI, USGS, CA State Parks, Sonoma County




ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Vegetation_and_LandCover\FRoss_Vegetation_20200818_MapBook.mxd (JDS)-JSwager 9/28/2020




Map Features

 Study Area - 2.82 ac.


 Existing Road

 Kashia Loop Trail


 Interpretive Stop with Marker

 Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

 *Anthoxanthum odoratum*
Semi-Natural Herb Alliance

 *Baccharis pilularis* Shrubland Alliance

 *Festuca bromoides* Provisional
Semi-Nat Association

 *Pinus muricata* Forest Alliance

 Road

Sources: ESRI, USGS, CA State Parks, Sonoma County



Map Date: 9/28/2020

ECORP Consulting, Inc.
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Scale in Feet

0 100



Figure 4.4-2 Vegetation Communities
(Sheet 2 of 5)

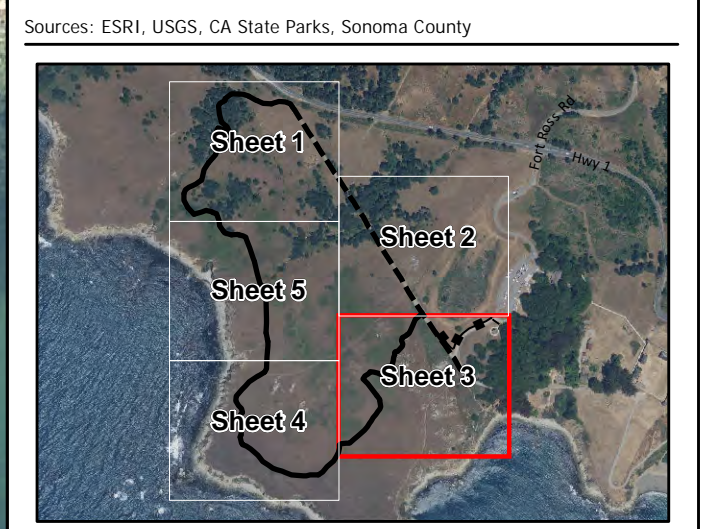


Map Features

- Study Area - 2.82 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail
- Existing Bench
- New Bench
- Interpretive Stop with Marker
- Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

- Anthoxanthum odoratum* Semi-Natural Herb Alliance
- Baccharis pilularis* Shrubland Alliance
- Danthonia californica* Herbaceous Alliance
- Deschampsia cespitosa* Herb Alliance
- Festuca bromoides* Provisional Semi-Nat Association
- Road
- Rocky Outcrop Special Feature










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ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Vegetation_and_LandCover\FRoss_Vegetation_20200818_MapBook.mxd (JDS)-JSwager 9/28/2020



Map Features

-  Study Area - 2.82 ac.
-  Kashia Loop Trail
-  Interpretive Stop with Marker
- Vegetation Community - Acres in Study Area *
-  *Deschampsia cespitosa* Herb Alliance
-  *Iris douglasiana* patch
-  *Lasthenia californica* Herb Alliance
-  *Lupinus arboreus* Semi-Natural Alliance

Sources: ESRI, USGS, CA State Parks, Sonoma County



Map Date: 9/28/2020

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

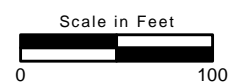


Figure 4.4-2 Vegetation Communities
(Sheet 4 of 5)

ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Vegetation_and_LandCover\FIRoss_Vegetation_20200818_MapBook.mxd (JDS)-JSwager 9/28/2020



Map Features

Study Area - 2.82 ac.

Kashia Loop Trail

New Bench

Interpretive Stop with Marker

Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

Anthoxanthum odoratum
Semi-Natural Herb Alliance

Danthonia pilosa Provisional
Semi-Nat Association

Deschampsia cespitosa Herb Alliance

Juncus balticus Herbaceous Alliance

Sources: ESRI, USGS, CA State Parks, Sonoma County



All vegetation communities are described in the *Botanical Survey Report (Attachment B1 of Appendix B)*. Seven of the 13 vegetation communities within the Study Area may be considered Sensitive Natural Communities and/or communities that are protected under the CCA because of the occurrence or potential for occurrence of wetlands. Descriptions for these seven communities are included in the following sections as summarized in the Botanical Survey Report (SNRC 2018).

Anthoxanthum odoratum Semi-Natural Alliance

This plant community occurred mostly in the drier areas in the northeastern portion of the Study Area and along the non-grazed east side of the road at the east side of the Study Area. Sweet vernal grass (*Anthoxanthum odoratum*) was the dominant grass with rattlesnake grass (*Briza maxima*), Douglas iris (*Iris douglasiana*), English plantain (*Plantago lanceolata*), California blackberry (*Rubus ursinus*), blue eyed grass (*Sisyrinchium bellum*), colonial bentgrass (*Agrostis capillaris*), and spring vetch (*Vicia sativa*) present.

Carex obnupta Herbaceous Alliance (S3)

This plant community occurred in an area along a stream in the northwestern portion of the Study Area and was thickly vegetated with slough sedge (*Carex obnupta*).

Danthonia californica Herbaceous Alliance (S3)

This plant community occurred along much of the southern and western edge of the Study Area in relatively flat areas and was dominated by California oatgrass (*Danthonia californica*). Other species present included brome fescue (*Festuca bromoides*), rattail fescue (*Festuca myuros*), small quaking grass (*Briza minima*), seaside lupine (*Lupinus variicolor*), miniature lupine (*L. bicolor*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), meadow barley (*Hordeum brachyantherum*), English plantain, silver hairgrass (*Aira caryophyllea*), and common rush (*Juncus patens*). Coyote thistle (*Eryngium armatum*), Johnny nip (*Castilleja ambigua*), Johnny tuck (*Triphysaria eriantha* subsp. *rosea*), yellow beak owl's clover (*Triphysaria versicolor*) and California goldfields (*Lasthenia californica* subsp. *californica*) were present in lower-lying areas.

Deschampsia cespitosa Herbaceous Alliance (S4?)

This plant community was present through the middle of the southern part of the Study Area, dominated by tufted hairgrass (*Deschampsia cespitosa*). Other species present in relatively drier areas included California blackberry, brome fescue, English plantain, rough cat's ear, hairy woodrush (*Luzula comosa*), purple velvet grass (*Holcus lanatus*), Douglas iris, purple stemmed checkerbloom (*Sidalcea malviflora* subsp. *purpurea*), sheep sorrel, and sweet vernal grass. Harlequin lotus (*Hosackia gracilis*), golden eyed grass (*Sisyrinchium californicum*), smooth cat's ear (*Hypochaeris glabra*), Harford's sedge (*Carex harfordii*), wonder woman sedge (*C. gynodynamis*), low bulrush (*Isolepis cernua*), and brown headed rush (*Juncus phaeocephalus* var. *phaeocephalus*) were present in somewhat wetter areas. Occurrences of coyote thistle, low bulrush, toad rush (*Juncus bufonius*), pennyroyal (*Mentha pulegium*), and deceiving sedge (*Carex saliniformis*) were found in low spots within this grassland. While *Deschampsia cespitosa* Herbaceous Alliance is not a Sensitive Natural Community, the middle of the southern portion of the Study Area containing this plant community could be considered an Association within the *Deschampsia cespitosa* Herbaceous Alliance that has a rare ranking. The *Deschampsia cespitosa* Herbaceous Alliance likely meets

the definition for environmentally sensitive habitat areas (ESHAs) because it provides habitat for special-status plant species, is scarce across Northern California, and is threatened by invasion of nonnative grasses and absence of fire and grazing in some areas.

Juncus balticus Herbaceous Alliance

This plant community was present in the northwestern portion of the Study Area, dominated by Baltic rush (*Juncus balticus*). Other species present included coyote brush (*Baccharis pilularis*), sheep sorrel, Pacific reedgrass (*Calamagrostis nutkaensis*), Henderson's angelica (*Angelica hendersonii*), wonder-woman sedge, split awn sedge (*C. tumulicola*), California blackberry, harlequin lotus, purple stemmed checkerbloom, California horkelia (*Horkelia californica*), California buttercup (*Ranunculus californicus*), sweet vernal grass, purple velvet grass, Douglas iris, and changing forget me not (*Myosotis discolor*).

Lasthenia californica Herbaceous Alliance

This plant community occurred along a drainage near the southwestern point of the Study Area. Predominant vegetation included California goldfields, California oatgrass, meadow barley, and coyote thistle. Other vegetation present included Johnny tuck, purple everlasting (*Gamochaeta ustulata*), yellow hairgrass (*Aira praecox*), short leaved evax (*Hesperervax sparsiflora* var. *brevifolia*), and a very significant population of purple stemmed checkerbloom. While *Lasthenia californica* Herbaceous Alliance is not a Sensitive Natural Community, this area could be considered a less abundant Association within the *Danthonia californica* Herbaceous Alliance, which has a rare ranking. Because it is also habitat for two rare plants and likely a significant resource for native pollinators, it could also be considered to provide an "especially valuable" role in the ecosystem and meets the definition for environmentally sensitive habitat areas (ESHAs).

Pinus muricata Forest Alliance (S3?)

Bishop pine dominated forest stands occurred in three locations in the northern portion of the Study Area. Bishop pine forest in this area is in decline due to drought and disease. Understory vegetation included coyote brush, cascara buckthorn (*Frangula purshiana*), western sword fern (*Polystichum munitum*), California blackberry, purple western morning glory (*Calystegia purpurata* subsp. *purpurata*), California ponysfoot (*Dichondra donelliana*), Pacific sanicle (*Sanicula crassicaulis*), little false Solomon's seal (*Maianthemum stellatum*), California huckleberry (*Vaccinium ovatum*), coast manroot (*Marah oreganus*), common bedstraw (*Galium aparine*), and Douglas iris.

A stream flows through the southernmost stand of bishop pine forest. At a location just below the road the following plants were observed in the understory: pink flowering currant (*Ribes sanguineum* var. *glutinosum*), thimbleberry (*Rubus parviflorus*), giant chain fern (*Woodwardia fimbriata*), cow parsnip (*Heracleum maximum*), seep monkeyflower (*Erythranthe guttata*), coast rush, miner's lettuce (*Claytonia perfoliata*), orchard grass (*Dactylis glomerata*), western sword fern, California blackberry, coastal burnweed (*Senecio minimus*), giant horsetail (*Equisetum telmateia*), California bee plant (*Scrophularia californica*), coast hedge nettle (*Stachys chamissonis*), cascara buckthorn, common bedstraw, slender foot sedge (*Carex leptopoda*), pennyroyal, broadleaf forget me not (*Myotis latifolia*), chickweed (*Stellaria media*), sweet vernal grass, bull thistle (*Cirsium vulgare*), field mustard (*Brassica rapa*) and Italian thistle (*Carduus pycnocephalus*).

4.4.1.2 Wildlife

Wildlife species detected in the vicinity of the Study Area during the August 22 and 23, 2018, and August 21, 2020 reconnaissance-level site visits are listed in *Attachment C of Appendix B*.

Wildlife Corridors/Movement

The Study Area consists of coastal prairie with intermittent stands of bishop pine forest, rocky outcrops, and patches of coastal brambles and coyote brush scrub. The Study Area is minimally developed with trails, roads, historic structures, and infrastructure associated with the Park. The Study Area is bounded by State Highway 1 on the north and east, the Pacific coast on the west and south, and surrounded by mostly undeveloped lands. Several intermittent and ephemeral drainages bisect the Study Area.

The Study Area includes land with CDFW's Areas of Conservation Emphasis (ACE) connectivity Rank 1 (limited connectivity opportunity) in the southeast portion of the Study Area and ACE Rank 3 (Connections with implementation flexibility) in the northeast portion of the Study Area (CDFW 2020a). Areas with ACE Rank 1 have limited or no connectivity importance. Areas with ACE Rank 3 have important connectivity but have not yet been identified as a priority wildlife movement corridor.

The Study Area has the potential to serve as a movement corridor for terrestrial species, although State Highway 1 may limit north-south movement of non-avian wildlife in the vicinity of the Study Area and human presence within the Park may limit wildlife use. The intermittent and ephemeral drainages are unlikely to provide important movement corridors for aquatic species due to the lack of perennial water and due to the steep coastal bluffs creating a natural barrier for anadromous species.

4.4.1.3 Aquatic Resources

Several surveys have been conducted to delineate the aquatic resources on-site, including an Aquatic Resources Delineation (ECORP 2020b, *Attachment B2 of Appendix B*), a Botanical Survey Report (Spade Natural Resources Consulting, 2018, Appendix C), and an update to the Wetland Delineation and Botanical Survey Reports prepared by California State Parks staff (August 17, 2020, Attachment D). The results of these combined studies are summarized in the Aquatic Resources Delineation Map that depicts the locations and acreages of potential Waters of the U.S. within the 14-foot-wide trail footprint (Figure 4.4-3

Potential Waters of the U.S.

An aquatic resources delineation of Waters of the U.S. was conducted for the Study Area as per USACE guidelines (see Figure 4.4-4. *Aquatic Resources Delineation*, Sheets 1-7). A total of 0.086-acre and 63 LF of potential Waters of the U.S. have been mapped within the Study Area. Each of these features is described below, and a summary of the potential Waters of the U.S. acreages by feature is presented in Table 4.4-1. *Potential Waters of the U.S.*

Table 4.4-1. Potential Waters of the U.S.		
Type	Acreage ¹	Linear Feet
Wetlands		
Seasonal Wetland Swale	0.027	Not Applicable
Wet Meadow	0.052	Not Applicable
Other Waters		
Ephemeral Drainage	0.004	34
Intermittent Drainage	0.003	29
Total²	0.086	63

¹Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

² Summation of individual wetland type acreages may not equal the reported total due to error incurred by rounding.

³Under the new Clean Water Rule, Ephemeral Drainages are not considered under federal jurisdiction by the USACE. These features are included pending verification by the USACE

Wetlands

Seasonal Wetland Swale

Seasonal wetland swales are generally linear wetland features that convey stormwater runoff, but do not exhibit an ordinary high-water mark (OHWM), and support a predominance of hydrophytic vegetation, hydric soil, and wetland hydrology. These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation into the growing season.

Dominant plant species identified within the seasonal wetland swale at the sample points included coyote thistle, velvet grass, rough cat's ear, soft rush (*Juncus effusus*), and Kentucky bluegrass (*Poa pratensis*). The vegetation within the seasonal wetland swale was considered hydric, as the dominance test indicator was met. Dominant plant species identified within the adjacent uplands included sweet vernal grass, rough cat's ear, Douglas iris, bishop pine, California blackberry, and purple awned wallaby grass (*Rytidosperma penicillatum*).

Wet Meadow

The wet meadow mapped onsite is a level to sloped wetland feature that likely remains saturated for prolonged periods into the growing season. It may support small areas of standing water during the wet season but is more likely to maintain soil saturation from a combination of direct precipitation, surface runoff, and subsurface flows from upslope sources.

ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20201216.mxd (JDS)-Jswager 12/16/2020



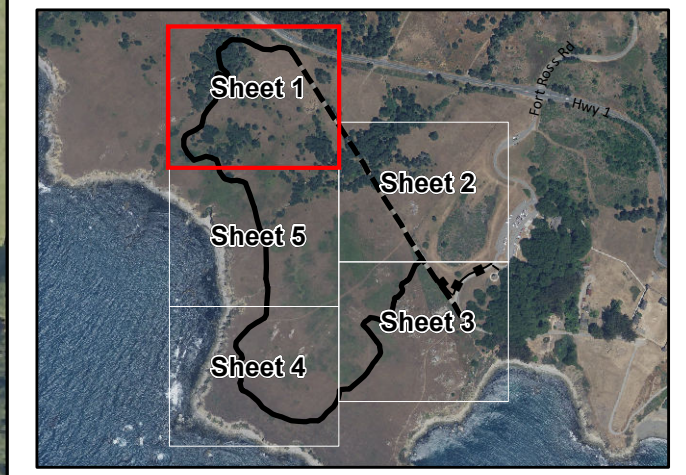
Map Features

- Study Area - 2.82 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail

Aquatic Resources

- CCC Wetland (0.697 ac.)
- Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
- Intermittent Drainage (0.003 ac.) (29 lin.ft.)
- Seasonal Wetland Swale (0.027 ac.)
- Wet Meadow (0.052 ac.)





Sources: ESRI, USGS, CA State Parks, Sonoma County








ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20201216.mxd (JDS)-Jswager 12/16/2020



Map Features

-  Study Area - 2.82 ac.
-  Connector Trail
-  Existing Road
-  Kashia Loop Trail

Aquatic Resources

-  CCC Wetland (0.697 ac.)
-  Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
-  Intermittent Drainage (0.003 ac.) (29 lin.ft.)
-  Seasonal Wetland Swale (0.027 ac.)
-  Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County



ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20201216.mxd (JDS)-Jswager 12/16/2020



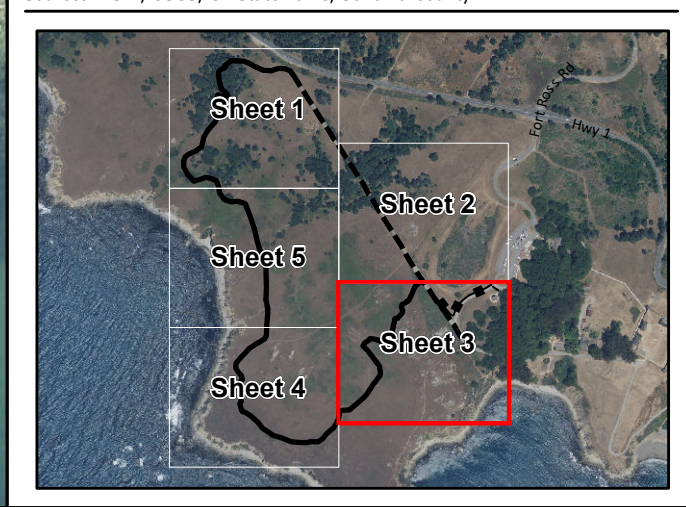
Map Features

- Study Area - 2.82 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail

Aquatic Resources

- CCC Wetland (0.697 ac.)
- Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
- Intermittent Drainage (0.003 ac.) (29 lin.ft.)
- Seasonal Wetland Swale (0.027 ac.)
- Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County



ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Wetland_Delineation\2\FIRoss_BRA_WD_20201216.mxd (JDS)-Jswager 12/16/2020



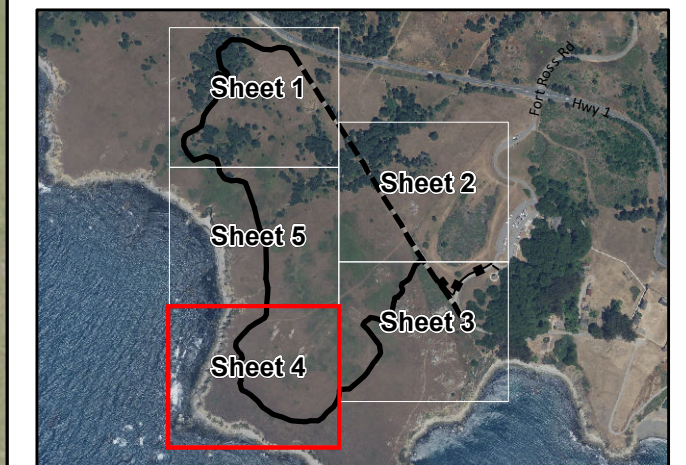
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Sources: ESRI, USGS, CA State Parks, Sonoma County



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Map Features

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Sources: ESRI, USGS, CA State Parks, Sonoma County

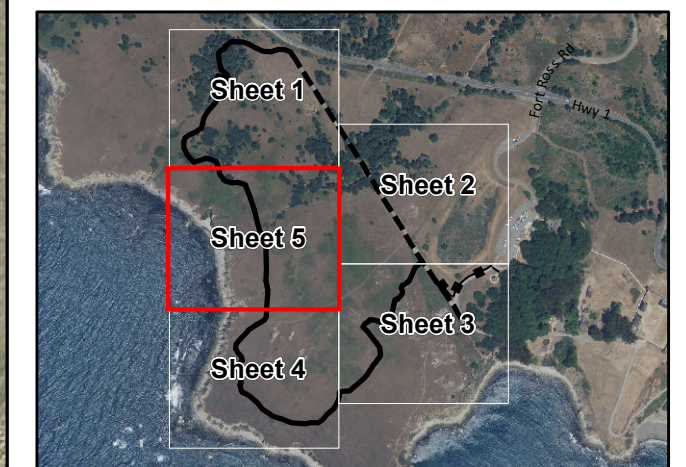


Figure 4.4-3. Aquatic Resources Delineation
(Sheet 5 of 5)

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Dominant plant species observed within the wet meadow included tufted hairgrass, sweet vernal grass, soft rush, and velvet grass.

Other Waters

Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features typically convey runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year. Two ephemeral drainages were mapped within the Project.

The ephemeral drainages mapped within the Project did not meet hydrophytic vegetation or hydric soil criteria as wetlands but were delineated in the field by the presence of an OHWM at vegetation breaks on the eroded banks and water marks.

Intermittent Drainage

Intermittent drainages are linear features that exhibit a bed and bank and an OHWM. Intermittent drainages differ from ephemeral drainages in that they flow for longer duration, typically weeks or months following rainfall events and are often influenced by sub-surface flows. This usually results in greater quantities and duration of flow relative to ephemeral drainages.

The intermittent drainages mapped within the Project were delineated due to the presence of an OHWM, which was identified in the field by water marks.

Potential California Coastal Commission Jurisdictional Waters

A total of 0.783-acre of potential CCC jurisdictional wetlands within the Study Area may be regulated under the CCA (see Figure 4.4-3. *Aquatic Resources Delineation*, Sheets 1-5). A summary of the potential CCC jurisdictional waters is presented in Table 4.4-2. *Potential CCC Jurisdictional Waters*.

Table 4.4-2. Potential CCC Jurisdictional Waters¹		
Type	Acreage	Linear Feet
Seasonal Wetland Swale	0.027	Not Applicable
Wet Meadow	0.052	Not Applicable
CCC One-Parameter Wetland	0.697	Not Applicable
Ephemeral Drainage	0.004	34
Intermittent Drainage	0.003	29
Total²:	0.783	63

¹Acreages and linear footage represent a calculated estimation and are subject to modification following the CCC verification process.

²Summation of individual wetland type acreages may not equal the reported total due to error incurred by rounding.

4.4.1.4 Special-Status Species

Table 4.4-3. lists all the special-status plant and wildlife species identified as potentially occurring within the Study Area through literature and database searches identified in the Project's BRA (Attachment B). Included in this table are the listing status for each species, a brief habitat description, and a determination on the potential to occur within the Study Area. Following the table are brief descriptions and discussions of special-status species that are known to occur in the Study Area (from the literature review), were found to occur in the Study Area during the 2018 field surveys, or are considered to potentially occur within the Study Area.

Table 4.4-3. Potentially Occurring Special-Status Species						
Plants						
Blasdale's bent grass (<i>Agrostis blasdalei</i>)	–	–	1B.2	Sandy or gravelly soil close to rocks, often in nutrient-poor soil with sparse vegetation in coastal bluff scrub, coastal dunes, and coastal prairie communities (Elev. range 0' – 493').	May–July	Potential to occur. Observed during 2018 botanical surveys growing along bluff edge outside of the proposed trail alignment (SNRC 2018).
Sonoma alopecurus (<i>Alopecurus aequalis</i> var. <i>sonomensis</i>)	FE	–	1B.1	Wet areas, marshes, and riparian banks with other wetland species in freshwater marsh, marsh and swamp, riparian scrub, and wetland communities (Elev. range 1' – 112').	May–July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Napa false indigo (<i>Amorpha californica</i> var. <i>napensis</i>)	–	–	1B.2	Openings in broadleafed upland forest, chaparral, and cismontane woodland communities (Elev. range 393' – 6,561').	April- July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Baker's manzanita (<i>Arctostaphylos bakeri</i> subsp. <i>bakeri</i>)	–	CR	1B.1	Often on serpentine in broadleafed upland forest, ultramafic, and chaparral communities (Elev. range 246' – 985')	February-April	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
Cedars manzanita <i>(Arctostaphylos bakeri</i> subsp. <i>sublaevis)</i>	–	CR	1B.2	Serpentine seeps in chaparral and closed-cone coniferous forest (Elev. range 607'–2,493').	February–May	Absent. No suitable habitat in Study Area.
Rincon Ridge manzanita <i>(Arctostaphylos stanfordiana</i> subsp. <i>decumbens)</i>	–	–	1B.1	Highly restricted to red rhyolites in Sonoma County in chaparral and cismontane woodland communities (Elev. range 246'–1,213').	February–April (May)	Absent. No suitable habitat in Study Area.
Watershield <i>(Brasenia schreberi)</i>	–	–	2B.3	Freshwater marshes and swamps (Elev. range 98'–7,218').	June–September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
The Cedar's fairy-lantern <i>(Calochortus raichei)</i>	–	–	1B.2	On serpentine, usually on shaded slopes but also on barrens and talus in chaparral, closed-cone coniferous forest, and ultramafic communities (Elev. range 656' – 1,607').	May–August	Absent. No suitable habitat in Study Area.
Coastal bluff morning-glory <i>(Calystegia purpurata</i> subsp. <i>saxicola)</i>	–	–	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, and North Coast coniferous forest (Elev. range 0' – 345')	(March) April–September	Present. Found during 2018 special-status plant surveys growing throughout drier portions of Study Area (SNRC 2018).
Swamp harebell <i>(Campanula californica)</i>	–	–	1B.2	Mesic sites in bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and freshwater swamps, and North Coast coniferous forest (Elev. range 3' – 1,329')	June–October	Potential to occur. Found during 2018 special-status plant survey in two locations outside but near the Study Area (SNRC 2018).

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
California sedge (<i>Carex californica</i>)	–	–	2B.2	Meadows, drier areas of swamps, and marsh margins in bog and fen, closed-cone coniferous forest, coastal prairie, freshwater marsh, marsh and swamp, meadow and seep, and wetland communities (Elev. range 295' – 1,100').	May-August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Bristly sedge (<i>Carex comosa</i>)	–	–	2B.1	Coastal prairie, marshes and swamps including lake margins, and in valley and foothill grassland (Elev. range 0'–2,051').	May–September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Deceiving sedge (<i>Carex saliniformis</i>)	–	–	1B.2	Mesic sites in coastal prairie, coastal scrub, meadow and seep, and marsh and swamp (coastal salt) communities (Elev. range 9' – 755').	May-June (July)	Potential to occur. Found during 2018 special-status plant surveys growing along several wet depressions outside but near the Study Area (SNRC 2018).
Rincon Ridge ceanothus (<i>Ceanothus confusus</i>)	–	–	1B.1	Volcanic or serpentine soils in closed-cone coniferous forest, chaparral, and cismontane woodland communities (Elev. range 246' – 3,494').	February-June	Absent. No suitable habitat in Study Area.
Holly-leaved ceanothus (<i>Ceanothus purpureus</i>)	–	–	1B.2	Volcanic, rocky slopes in chaparral and cismontane woodland communities (Elev. range 393' – 2,100').	February-June	Absent. No suitable habitat in Study Area.
Dwarf soaproot (<i>Chlorogalum pomeridianum</i> var. <i>minus</i>)	–	–	1B.2	Serpentine soils within chaparral (Elev. range 1,001'–3,281').	May-August	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
Woolly-headed spineflower (<i>Chorizanthe cuspidata</i> var. <i>villosa</i>)	–	–	1B.2	Sandy soils in coastal dunes, coastal prairie, and coastal scrub communities (Elev. range 9' – 197').	May-July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Sonoma spineflower (<i>Chorizanthe valida</i>)	FE	CE	1B.1	Sandy soil in coastal prairie (Elev. range 32' – 1,000').	June-August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Greene's narrow-leaved daisy (<i>Erigeron greenei</i>)	–	–	1B.2	Serpentine and volcanic substrates, generally in chaparral (Elev. range 262' – 345').	May-September	Absent. No suitable habitat in Study Area.
Serpentine daisy (<i>Erigeron serpentinus</i>)	–	–	1B.3	Serpentine seeps in chaparral (Elev. range 393 – 1,312).	May-August	Absent. No suitable habitat in Study Area.
Supple daisy (<i>Erigeron supplex</i>)	–	–	1B.2	Usually in grassy sites in coastal bluff scrub and coastal prairie communities (Elev. range 32' -165').	May-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
The Cedars buckwheat (<i>Eriogonum cedrorum</i>)	–	–	1B.3	Closed cone coniferous forest (Elev. range 1,197'-1,804').	June-September	Absent. No suitable habitat in Study Area..
Snow Mountain buckwheat (<i>Eriogonum nervulosum</i>)	–	–	1B.2	Dry serpentine outcrops, balds, and barrens in chaparral communities (Elev. range 984'-6,907').	June-September	Absent. No suitable habitat in Study Area.
Bluff wallflower (<i>Erysimum concinnum</i>)	–	–	1B.2	Coastal bluff scrub, coastal dunes, and costal prairie (Elev. range 0'-607').	February-July	Absent. Suitable habitat is present, but species was not observed during

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
						2018 surveys (SNRC 2018).
Coast fawn lily (<i>Erythronium revolutum</i>)	–	–	2B.2	Mesic sites and streambanks in bogs and fens, broadleafed upland forest, and North Coast coniferous forest communities (Elev. range 0'-5,250').	March-July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Minute pocket moss (<i>Fissidens pauperculus</i>)	–	–	1B.2	Damp soil, dry streambeds, and stream banks in North Coast coniferous forest and redwood communities (Elev. range 32'-3,360').	Wet season	Potential to occur. Suitable habitat is present, and non-vascular plants may not have been targeted in 2018 surveys.
Blue coast gilia (<i>Gilia capitata</i> subsp. <i>chamissonis</i>)	–	–	1B.1	Coastal dunes and coastal scrub (Elev. range 6'-657').	April-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Pacific gilia (<i>Gilia capitata</i> subsp. <i>pacifica</i>)	–	–	1B.2	Coastal bluff scrub, openings in chaparral, coastal prairie, and valley and foothill grassland (Elev. range 16'-5,463').	April–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Woolly-headed gilia (<i>Gilia capitata</i> subsp. <i>tomentosa</i>)	–	–	1B.1	Rocky outcrops and serpentine soils in coastal bluff scrub, and valley and foothill grassland (Elev. range 32' – 722').	May-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Dark-eyed gilia (<i>Gilia millefoliata</i>)	–	–	1B.2	Coastal dunes (Elev. range 6' – 99').	April-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
Congested-headed hayfield tarplant (<i>Hemizonia congesta</i> subsp. <i>congesta</i>)	–	–	1B.2	Grassy valleys and hills, often in fallow fields, sometimes along roadsides, in valley and foothill grassland (Elev. range 66'–1,837').	April–November	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Short-leaved evax (<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>)	–	–	1B.2	Sandy bluffs and flats in coastal bluff scrub, coastal dunes, and coastal prairie (Elev. range 0'–705').	March–June	Present. Found during 2018 special-status plant surveys growing mostly near rocky outcrops near the coastal terrace, including within the Study Area.
Pygmy cypress (<i>Hesperocyparis pygmaea</i>)	–	–	1B.2	On podzol-like blacklock soil in pygmy cypress plant community (Elev. range 98'–1,969').		Absent. No suitable habitat in Study Area.
Thin-lobed horkelia (<i>Horkelia tenuiloba</i>)	–	–	1B.2	Mesic, sandy openings of broad-leaved upland forest, chaparral, valley, and foothill grassland (Elev. range 164'–1,640').	May–July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Small groundcone (<i>Kopsiopsis hookeri</i>)	–	–	2B.3	Open woods, shrubby places, generally on <i>Gaultheria shallon</i> in North Coast coniferous forest (Elev. range 295'–2,904').	April–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Baker's goldfields (<i>Lasthenia californica</i> subsp. <i>bakeri</i>)	–	–	1B.2	Openings in closed-cone coniferous forest, coastal scrub, marsh and swamp, and meadow and seep (Elev. range 196'–1,707').	April–October	Potential to occur. Found during 2018 special-status plant surveys growing in the western edge of the botanical survey area outside but near

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
						the Study Area (SNRC 2018).
Perennial goldfields (<i>Lasthenia californica</i> subsp. <i>macrantha</i>)	–	–	1B.2	Coastal bluff scrub, coastal dunes, and coastal scrub (Elev. range 0'–1,542').	January–November	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Marsh pea (<i>Lathyrus palustris</i>)	–	–	2B.2	Moist coastal areas in bog and fen, coastal prairie, coastal scrub, lower montane coniferous forest, marsh and swamp, North Coast coniferous forest, and wetland communities (Elev. range 1'–329').	March–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Jepson's leptosiphon (<i>Leptosiphon jepsonii</i>)	–	–	1B.2	Usually volcanic soils of chaparral, cismontane woodland, valley, and foothill grasslands (Elev. range 328'–1,640').	March–May	Absent. No suitable habitat in Study Area.
Rose leptosiphon (<i>Leptosiphon rosaceus</i>)	–	–	1B.1	Coastal bluff scrub (Elev. range 0'–328').	April–July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Crystal Springs lessingia (<i>Lessingia arachnoidea</i>)	–	–	1B.2	Grassy slopes on serpentine, sometimes on roadsides in cismontane woodland, coastal scrub, and valley and grassland communities (Elev. range 295'–657').	July–October	Absent. No suitable habitat in Study Area.
Coast lily (<i>Lilium maritimum</i>)	–	–	1B.1	Historically in sandy soil often on raised hummocks or bogs, today found mostly in roadside ditches in broadleaf upland forest,	May–August	Absent. Suitable habitat is present, but species was not observed during

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				closed-cone coniferous forest, coastal prairie, coastal scrub, marsh and swamp, and North Coast coniferous forest communities (Elev. range 14'-1,608').		2018 surveys (SNRC 2018).
Tidestrom's lupine (<i>Lupinus tidestromii</i>)	FE	CE	1B.1	Coastal dunes (Elev. range 0'–328').	April–June	Absent. No suitable habitat in Study Area.
White-flowered rein orchid (<i>Piperia candida</i>)	–	–	1B.2	Broadleaved upland forest, lower montane coniferous forest, and North Coast coniferous forest, sometimes on serpentinite soils (Elev. range 98'-4,298').	(March) May-September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Point Reyes checkerbloom (<i>Sidalcea calycosa</i> subsp. <i>rhizomata</i>)	–	–	1B.2	Freshwater marshes near the coast in freshwater marsh, marsh and swamp, and wetland communities (Elev. range 9' – 247').	April-September	Absent. No suitable habitat in Study Area.
Marin checkerbloom (<i>Sidalcea hickmanii</i> subsp. <i>viridis</i>)	–	–	1B.1	Rhyolitic substrates in chaparral communities (Elev. range 164' – 1,410').	May-June	Absent. No suitable habitat in Study Area.
Purple-stemmed checkerbloom (<i>Sidalcea malviflora</i> subsp. <i>purpurea</i>)	–	–	1B.2	Broadleaf upland forest and coastal prairie communities (Elev. range 49' – 279').	May-June	Present. Found during 2018 special-status plant surveys growing in native grassland throughout the Study Area including within the proposed trail alignment.
Hoffman's bristly jewelflower (<i>Streptanthus glandulosus</i> subsp. <i>hoffmanii</i>)	–	–	1B.3	Moist, steep rocky banks, sometimes in serpentine soils in chaparral, cismontane woodland, ultramafic, and valley and foothill	March-July	Absent. Suitable habitat is present, but species was not observed during

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				grassland communities (Elev. range 393' – 1,558').		2018 surveys (SNRC 2018).
Three peaks jewelflower (<i>Streptanthus morrisonii</i> subsp. <i>elatus</i>)	–	–	1B.2	Serpentine soils in chaparral (Elev. range 295' – 2,674').	June-September	Absent. No suitable habitat in Study Area.
Dorr's Cabin jewelflower (<i>Streptanthus morrisonii</i> subsp. <i>hirtiflorus</i>)	–	–	1B.2	Only known from serpentine barrens at the head of Austin Creek in Sonoma County; may occur in chaparral, closed-cone coniferous forest, and ultramafic communities (Elev. range 606' – 2,691').	June	Absent. No suitable habitat in Study Area.
Morrison's jewelflower (<i>Streptanthus morrisonii</i> subsp. <i>morrisonii</i>)	–	–	1B.2	Only known from serpentine outcrops in the Austin Creek area in Sonoma County, in chaparral and ultramafic communities (Elev. range 393' – 1,919').	May, August-September	Absent. No suitable habitat in Study Area.
Two-fork clover (<i>Trifolium amoenum</i>)	FE	–	1B.1	Coastal bluff scrub and valley and foothill grassland communities and is sometimes associated with serpentinite soils (Elev. range 16' – 1,362').	April–June	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Santa Cruz clover (<i>Trifolium buckwestiorum</i>)	–	–	1B.1	Gravelly sites and on the margins of broadleaved upland forest, cismontane woodland, and coastal prairie (Elev. range 344'–2,001').	April–October	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Invertebrates						
Western bumble bee (<i>Bombus occidentalis</i>)	-	CC	-	Primarily nests underground in open grassland and scrub habitats from the	March - September	Potential to occur. Suitable habitat is present and the species

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				California coast east to the Sierra Cascade and south to Mexico.		has been documented within 10 miles of the Study Area (CDFW 2020b)
Gualala roach (<i>Lavinia symmetricus parvipinnis</i>)	–	–	SSC	Aquatic habitat. Found only in the Gualala River and Austin Creek in Sonoma County.	Year round	Absent. Study Area is outside of known range for this species.
Behren's silverspot butterfly (<i>Speyeria zerene behrensii</i>)	FE	–	–	Restricted to coastal area ranging from the city of Mendocino in Mendocino County to Salt Point State Park in Sonoma County. Inhabits coastal terrace prairie habitat. Food plant is <i>Viola adunca</i> .	April – August	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)
Myrtle's Silverspot butterfly (<i>Speyeria zerene myrtleae</i>)	FE	–	–	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Inhabits coastal dunes. Larval food plant though to be <i>Viola adunca</i> .	April – August	Absent. Study Area is outside of known range for this species. Silverspot butterfly populations near Fort Ross appear to have intermediates between the Behren's and Myrtle's (<i>S. z. myrtleae</i>) silverspot butterfly. The intermediates are proposed to be a new subspecies, but the USFWS currently considers all intermediates north of the Russian River to be Behren's (USFWS 2015).
California freshwater shrimp (<i>Syncaris pacifica</i>)	FE	CE	–	Aquatic habitat. Endemic to Marin, Napa, and Sonoma	Year round	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				counties. Found in low elevation, low gradient streams where riparian cover is moderate to heavy. Found in shallow pools away from main streamflow in areas with undercut banks and exposed roots in the winter and with leafy branches touching the water in summer.		
Fish						
Tidewater goby (<i>Eucyclogobius newberryi</i>)	FE	–	–	Aquatic habitat. Found in shallow, brackish, or salty water in coastal lagoons, estuaries, marshes, and still-water lower stream reaches from the mouth of the Smith River in Del Norte County to northern San Diego County. Absent from areas with steep coastlines and streams that do not form lagoons or estuaries.	Year round	Absent. No suitable habitat in Study Area.
Gualala roach (<i>Lavinia symmetricus parvipinnis</i>)	–	–	SSC	Aquatic habitat. Found only in the Gualala River and Austin Creek in Sonoma County.	Year round	Absent. Study Area is outside of known range for this species.
Coho salmon (central California coast ESU) (<i>Oncorhynchus kisutch</i> pop. 4)	FE	CE	–	Aquatic habitat. Requires beds of loose, silt-free, coarse gravel for spawning. Needs cover, cool water, and sufficient dissolved oxygen.	September – January (adult spawning)	Absent. No suitable habitat in Study Area.
Steelhead (Central California coast DPS) (<i>Oncorhynchus mykiss irideus</i> pop. 8)	FT	–	–	Aquatic habitat. Undammed rivers, streams, and creeks from the Russian River to Aptos Creek in Santa Cruz County and drainages of San	September – March (adult spawning)	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				Francisco and San Pablo bays.		
Longfin smelt (<i>Spirinchus thaleichthys</i>)	FC	CT	–	Freshwater and seawater estuaries.	Year round	Absent. No suitable habitat in Study Area.
Amphibians						
California giant salamander (<i>Dicamptodon ensatus</i>)	–	–	SSC	Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes. Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County and east to Napa County.	Year round	Potential to occur. May occur in intermittent drainage habitat onsite. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b).
Foothill yellow-legged frog – Northwest/North Coast clade (<i>Rana boylei</i>)	-	-	SSC	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May – October	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b).
California red-legged frog (<i>Rana draytonii</i>)	FT	-	SSC	Lowlands or foothills in or near waters with dense shrubby or emergent riparian vegetation. Adults must have upland aestivation habitat to endure summer dry down.	May 1- November 1	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b).

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
Red-bellied newt (<i>Taricha rivularis</i>)	–	–	SSC	Terrestrial habitat. Juveniles generally stay underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate. Found in coastal drainages from Humboldt County south to Sonoma County, inland to Lake County with an isolated population in Santa Clara County.	January – April	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)
Reptiles						
Northwestern pond turtle (<i>Actinemys marmorata</i>)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)
Green sea turtle (<i>Chelonia mydas</i>)	FT	-	-	Marine habitats with adequate supply of seagrasses and algae.	Year round	Absent. No suitable habitat in Study Area.
Birds						
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California, western Sacramento Valley, and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments;	May-August	Low Potential. Marginally suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				removal of grass cover by grazing often detrimental.		
Great blue heron (<i>Ardea herodias</i>)	-	-	CDFS	Colonial nester; prefers to nest in vegetation on islands or in swamps but may also be found in upland habitats in trees, bushes, on the ground and on artificial structures. Foraging habitat is widely diverse and includes swamps, coastlines, estuaries, beaches, pastures, cultivated fields, and riparian areas.	February-July	Absent. No suitable habitat in Study Area.
Black turnstone (<i>Arenaria melanocephala</i>)	-	-	BCC	Breeding range includes coastal Alaska. Wintering range is coastal southern Alaska to Mexico. Wintering habitat includes coastal habitats, including rocky shorelines, reefs, sea stacks, and headlands with rock or gravel substrates, mud and sandflats, estuaries, sandy beaches, jetties, rip-rap, piers, pilings, booms, and sewage treatment ponds.	August-April (Migrant/Wintering in California)	Absent. No suitable habitat in Study Area.
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	FT	CE	-	Breeding habitat consists of mature and old-growth coniferous forests, or forests with old-growth components.	March-October	Absent. No suitable habitat in Study Area.
Rhinoceros auklet (<i>Cerorhinca monocerata</i>)	-	-	CDFW WL	Nests in burrows on undisturbed, forested and unforested islands; may also nest in cliff caves on the mainland. Found in off-shore	March-September	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				islands and rocks along the California coast.		
Wrentit (<i>Chamaea fasciata</i>)	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Potential. Suitable habitat is present in the Study Area.
Western snowy plover (<i>Charadrius nivosus nivosus</i>)	FT	-	BCC, SSC	Nests on the ground, on open sandy coastal beaches, barrier islands, barrens shores of inland saline lakes, on river bars, and man-made ponds such as wastewater ponds, dredge spoils, and salt evaporation ponds.	March-September	Absent. No suitable habitat in Study Area.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Potential. Suitable habitat is present in the Study Area.
White-tailed kite (<i>Elanus leucurus</i>)	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential. Suitable habitat is present in the Study Area.
Tufted puffin (<i>Fratercula cirrhata</i>)	-	-	SSC	This open-ocean bird nests along the coast on islands, islets, or (rarely) mainland cliffs. Birds burrow into sod or earth on island cliffs or grassy island slopes.	May-October	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
Red-throated loon <i>(Gavia stellata)</i>	-	-	BCC	Breeding ranges includes western Canada to Alaska and from the Yukon Territory to Newfoundland. Winters in Pacific Coastal waters from southern Alaska to Baja California.	October-April	Absent. This species does not nest in the region of the Study Area.
Black oystercatcher <i>(Haematopus bachmani)</i>	-	-	BCC	Nests along the Pacific Coast from Baja California to Alaska. Rocky shorelines are favored nesting habitat but may also nest on a variety of substrates ranging from mixed sand and gravel beaches to rocky headlands. Typical nesting sites include sand and pebble beaches, shell beaches, cobble beaches, gravel outwashes, exposed rocky shoreline, wave-cut platforms, and offshore boulders.	April-August	Absent. No suitable habitat in Study Area.
Purple finch <i>(Haemorhous purpureus)</i>	-	-	BCC	In California, purple finch breeding range includes Klamath Mountains south along Coast Range into San Bernardino County, along the western slopes of the Cascade-Sierra Nevada axis from Shasta County south to Kern County. Nest in moist cool coniferous forests, mixed coniferous-deciduous forest, edges of bogs, riparian corridors, and to a lesser deciduous forests, orchards, ornamental plantations,	April-September	Potential. Suitable habitat is present in the Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				pastures and lawns with scattered conifers, shrubs, hedgerows and developed areas.		
Osprey <i>(Pandion haliaetus)</i>	-	-	CDFW WL	Nesting habitat requires close proximity to accessible fish, open nest site free of mammalian predators, and extended ice-free season. The nest in large trees, snags, cliffs, transmission/communication towers, artificial nest platforms, channel markers/buoys.	March- September	Potential. Suitable habitat is present in the Study Area.
Bryant's savannah sparrow <i>(Passerculus sandwichensis alaudinus)</i>	-	-	SSC	Resident coastally from Humboldt Bay south to Point Conception; breeding habitat includes tidal saltmarsh, adjacent ruderal areas, and upland grassy slopes of the coastal fog belt.	Nests March- August	Potential. Suitable habitat is present in the Study Area.
California brown pelican <i>(Pelecanus occidentalis californicus)</i>	Delisted	Delisted	CFP	Nests on rocky offshore islands along Pacific Coast of California south to Baja California. Winters throughout coastal California	January- September (nesting); wintering grounds September- April	Absent. No suitable habitat in Study Area.
Double-crested cormorant <i>(Phalacrocorax auritus)</i>	-	-	CDFW WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	April-August	Absent. No suitable habitat in Study Area.
Short-tailed albatross <i>(Phoebastria albatrus)</i>	FE	-	SSC	Nests primarily on Torishima Island in Japan, non-nesters found throughout northern	Nests in Japan	Absent. No suitable habitat in Study Area and this species does

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				Pacific Ocean, including, rarely California and Oregon waters.		not nest in the region.
Purple martin (<i>Progne subis</i>)	-	-	SSC	In California, breeds along coast range, Cascade-northern Sierra Nevada region and isolated population in Sacramento. Nesting habitat includes montane forests, Pacific lowlands with dead snags. Winters in South America.	May-August	Potential. Suitable habitat is present in the Study Area.
Bank swallow (<i>Riparia riparia</i>)	-	CT	-	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May-July	Absent. No suitable habitat in Study Area.
Allen's hummingbird (<i>Selasphorus sasin</i>)	-	-	BCC	Breeds along narrow coastal band from SW Oregon south to Santa Barbara and Ventura counties. Channel Islands. Migratory subspecies winter in Mexico, and <i>sedentarius</i> resident on Channel Islands and coastal southern California. Breeding occurs in coastal scrub, riparian habitat, mixed evergreen, or live oak woodlands.	February -June	Potential. Suitable habitat is present in the Study Area.
Northern spotted owl (<i>Strix occidentalis caurina</i>)	FT	CC	SSC	Found from Marin County through coastal ranges north to British Columbia; breeds in old growth mature forest.	March-June	Absent. No suitable habitat in Study Area.

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Table 4.4-3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
				They use forests with greater complexity and structure.		
Mammals						
Pallid bat (<i>Antrozous pallidus</i>)	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2017).	April-September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)
Sonoma tree vole (<i>Arborimus pomo</i>)	-	-	SSC	Feeds almost exclusively on Douglas-fir needles. Will occasionally use needles of grand fir, hemlock, or spruce. Known to occur in Douglas-fir, redwood, and montane hardwood-conifer forests in the north coast fog belt from Oregon border to Sonoma County.	Year-round	Low potential to occur. Marginally suitable habitat is present in the vicinity of the Study Area and the species has been documented within 10 miles of the Study Area (CDFW 2020b)
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	-	-	SSC	Caves, mines, buildings, rock crevices, trees.	April-September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)

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Table 4.4-3. Potentially Occurring Special-Status Species

Common Name (<i>Scientific Name</i>)	FESA Status	CESA Status	Other Status	Habitat Description	Approximate Survey Dates	Potential To Occur On-Site
American badger (<i>Taxidea taxus</i>)	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020b)

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	Federal Endangered Species Act listed, Endangered.
FT	Federal Endangered Species Act listed, Threatened.
FC	Candidate for federal Endangered Species Act listing as Threatened or Endangered.
Delisted	Formally Delisted (delisted species are monitored for 5 years).
BCC	U. S. Fish and Wildlife Service Bird of Conservation Concern (USFWS, 2002).
CE	California Endangered Species Act or Native Plant Protection Act listed, Endangered.
CT	California Endangered Species Act or Native Plant Protection Act listed, Threatened.
CR	California Endangered Species Act or Native Plant Protection Act listed, Rare.
CC	Candidate for California Endangered Species Act listing as Endangered or Threatened.
CDFW WL	CDFW Watch List
SSC	CDFW Species of Special Concern (CDFW, updated July 2017).
CFP	California Fish and Game Code Fully Protected Species (§3511-birds, §4700-mammals, §5050-reptiles/amphibians).
CDFS	California Department of Forestry and Fire Protection Sensitive Species (§895.1 of the California Forest Practice Rules).
1B	California Rare Plant Rank (CRPR)/Rare or Endangered in California and elsewhere.
2B	CRPR/Rare, threatened, or endangered in California but more common elsewhere.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Special-Status Plants

Fifty-four special-status plant species were identified as having the potential to occur within the Study Area based on the literature review and the results of (see Table 4.4-3). However, upon further analysis, 19 species were determined to be absent from the Study Area due to the lack of suitable habitat and 28 additional species were determined to be absent due to not being reported as observed in the Botanical Survey Report (SNRC 2018). No further discussion of those species is provided in this assessment. Brief descriptions of the remaining seven species that have been documented or have the potential to occur within the Study Area are presented in the following sections.

Blasdale's Bent Grass

Blasdale's bent grass (*Agrostis blasdalei*) is not listed pursuant to either the federal and/or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous rhizomatous perennial that occurs in coastal bluff scrub, dunes, and prairie (CNPS 2020). Blasdale's bent grass blooms between May and July and is known to occur at elevations ranging from sea level to 492 feet above mean sea level (MSL) (CNPS

2020). Blasdale's bent grass is endemic to California; its current range includes Mendocino, Monterey, Marin, Santa Cruz, San Mateo, and Sonoma counties (CNPS 2020).

Six occurrences of Blasdale's bent grass have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal bluff scrub and coastal prairie within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in medium to high density along bluff edge (SNRC 2018) outside of the Study Area. Blasdale's bent grass has potential to occur onsite.

Coastal Bluff Morning Glory

Coastal bluff morning glory (*Calystegia purpurata* subsp. *saxicola*) is not listed pursuant to either the federal and/or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous perennial that occurs in coastal bluff scrub, coastal dunes, coastal scrub, and North Coast coniferous forest (CNPS 2020). Coastal bluff morning glory blooms between April and September and is known to occur at elevations ranging from sea level to 344 feet above MSL (CNPS 2020). Coastal bluff morning glory is endemic to California; its current range includes Contra Costa, Lake, Mendocino, Marin, and Sonoma counties (CNPS 2020).

Six occurrences of coastal bluff morning glory have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal bluff scrub, coastal scrub, and bishop pine forest within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred at relatively low density throughout drier portions of Study Area (SNRC 2018).

Swamp Harebell

Swamp harebell (*Campanula californica*) is not listed pursuant to either the federal and/or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in mesic areas of bogs and fens, closed-cone coniferous forests, coastal prairie, meadows and seeps, and freshwater marshes and swamps (CNPS 2020). Swamp harebell blooms from June through October and is known to occur at elevations ranging from 3 to 1,329 feet above MSL (CNPS 2020). Swamp harebell is endemic to California; its current range includes Mendocino, Marin, Santa Cruz, and Sonoma counties; however, it is presumed extirpated in Santa Cruz County (CNPS 2020).

Nine occurrences of swamp harebell have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie and mesic areas within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in two locations within the coastal prairie outside of the Study Area (SNRC 2018). Swamp harebell has potential to occur onsite.

Deceiving Sedge

Deceiving sedge is not listed pursuant to either the federal and/or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in mesic sites in coastal prairie and scrub, meadows and seeps, and marshes and swamps (coastal salt) (CNPS 2020). Deceiving sedge blooms between May and June and is known to occur at elevations ranging from nine to 755 feet above MSL (CNPS 2020). Deceiving sedge is endemic to California; its current range includes Humboldt,

Mendocino, Santa Cruz, and Sonoma counties; however, it is presumed extirpated in Santa Cruz County (CNPS 2020).

One occurrence of deceiving sedge has been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie and mesic areas within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred at high density in a relatively narrow range (SNRC 2018) outside of the Study Area. Deceiving sedge has potential to occur onsite.

Minute Pocket Moss

Minute pocket moss (*Fissidens pauperculus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a moss that occurs in damp soils of North Coast coniferous forest (CNPS 2020). Minute pocket moss is known to occur at elevations ranging from 32 to 3,360 feet above MSL (CNPS 2020). The current range of this species in California includes Alameda, Butte, Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Mateo, Sonoma, and Yuba counties.

One occurrence of minute pocket moss has been reported within 10 miles of the Study Area (CDFW 2020b). The damp soils of the bishop pine forest within the Study Area provide suitable habitat for this species. This species was not observed during the 2018 botanical surveys; however, no non-vascular plants were included in the list of observed species so it is likely that the survey only targeted vascular plant species. Minute pocket moss has potential to occur onsite.

Short-leaved Evax

Short-leaved evax is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an annual herb that occurs in sandy soils of coastal bluff scrub; coastal dunes, and coastal prairie (CNPS 2020). Short-leaved evax blooms from March through June and is known to occur at elevations ranging from sea level to 706 feet above MSL (CNPS 2020). The current range of this species in California includes Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Francisco, San Mateo, and Sonoma counties; the species is presumed extirpated in San Francisco County (CNPS 2020).

Six occurrences of short-leaved evax have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal bluff scrub and coastal prairie within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in high density in a relatively broad range (SNRC 2018), including within the Study Area.

Purple-Stemmed Checkerbloom

Purple-stemmed checkerbloom is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in broadleafed upland forest and coastal prairie (CNPS 2020). Purple-stemmed checkerbloom blooms from May through June and is known to occur at elevations ranging from 49 to 279 feet above MSL (CNPS 2020). Purple-stemmed checkerbloom is endemic to California; the current range of this species includes Mendocino, Marin, and Sonoma counties; however, there is uncertainty about the distribution or identity of the species in Marin County (CNPS 2020).

Seven occurrences of purple-stemmed checkerbloom have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie within the Study Area provides suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred scattered throughout the coastal prairie (SNRC 2018), including within the Study Area.

Special-Status Wildlife

Invertebrates

Five special-status invertebrate species were identified as having potential to occur in the Study Area based on the literature review (see Table 4.4-3). However, upon further analysis and after the site visit, three species (Gualala roach (*Lavinia symmetricus parvipinnis*), Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), and California freshwater shrimp [*Syncares pacifica*]) were considered to be absent from the site due to the lack of suitable habitat or due to the Study Area being outside of the known range. No further discussion of those species is provided within this assessment. A brief description of the remaining species that have the potential to occur within the Study Area is presented below.

Western Bumble Bee

The western bumble bee (*Bombus occidentalis*) is a candidate for listing as endangered under CESA. The western bumble bee was once common in the western United States but is now absent across much of its historic range (Xerxes 2018). In California, the species is largely restricted to high elevation sites in the Sierra Nevada although there have been a couple observations on the northern California coast (Xerxes 2018). The species inhabits meadows and grasslands with abundant floral resources, and primarily nests underground in cavities created by ground dwelling animals although a few nests have been reported above-ground in logs or among railroad ties (Xerxes 2018). Little is known about specific overwintering sites, but bumble bees generally overwinter in soft, disturbed soils or under leaf litter or other debris (Goulson 2010, Williams et al. 2014). The species visits a wide variety of flowering plants, but its short tongue is most suitable for foraging on open flowers with short corollas (Xerxes 2018). The flight period for queens in California is from early February to late November (Thorp et al. 1983). The flight period for workers and males in California is from early April to early November (Thorp et al. 1983). Significant threats are posed to the survival of this species by modification or destruction of its habitat, overexploitation, competition, disease, pesticide use, population dynamics and structure, and global climate change (Xerxes 2018).

Three occurrences of the western bumble bee have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie and scrub within the Study Area represents suitable habitat for this species. The western bumble bee has potential to occur onsite.

Behren's Silverspot Butterfly

The Behren's silverspot butterfly (*Speyeria zerene behrensi*) is listed as endangered pursuant to FESA. No critical habitat has been designated for the species. The historic range of the Behren's silverspot butterfly is known from six locations which extended from the area of the City of Mendocino in Mendocino County south to the area of Salt Point State Park in Sonoma County (U.S. Fish and Wildlife Service [USFWS] 2015).

The species occupies early successional coastal terrace prairie habitat that contains its larval host plant, western dog violet (*Viola adunca*), and nectar sources for adults (USFWS 2015). Vegetation that provides sheltering habitat can also be important, especially if the sheltering habitat is near violets and nectar sources (USFWS 2015). Most life-history information about the Behren's silverspot butterfly comes from studies of a closely-related subspecies, the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). It is thought that female Behren's silverspot butterflies lay their eggs in the debris and dried stems of the western dog violet and likely other violets (USFWS 2015). Upon hatching, the caterpillars spin a silk pad upon which they overwinter (USFWS 2015). Caterpillars reemerge in spring and feed upon the western dog violet (USFWS 2015). During the spring and early summer, they pass through five instars before forming a pupa within a chamber of leaves that they draw together with silk (USFWS 2015). The adult butterflies emerge within two weeks and live for approximately three weeks, during which time they feed on nectar and reproduce (USFWS 2015). Depending upon environmental conditions, the flight period of the Behren's silverspot butterfly ranges from early July to October (USFWS 2015).

One occurrence of the Behren's silverspot butterfly has been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie within the Study Area represents suitable habitat for this species. The Behren's silverspot butterfly has potential to occur onsite.

Amphibians

Four special-status amphibians were identified as having potential to occur in the Project area based on the literature review (Table 4,4-3). A brief description of these species is presented below.

California Giant Salamander

The California giant salamander (CGS, *Dicamptodon ensatus*) is not listed pursuant to either the California or federal ESAs; however, this species is considered a species of special concern (SSC) by CDFW. The CGS is a large (to 17 centimeter snout-vent length), heavy-bodied salamander of California's central mesic coast forests (Thomson et al 2016). Adults are terrestrial most of the year and are found under rocks, debris, bark, and other cover near streams. Breeding is aquatic, with adults laying eggs in streams in both spring and fall (Stebbins 2003). Stream-type larvae hatch in winter and may transform into terrestrial adults in the second or third summer. A proportion of paedomorphic adults often remain in aquatic habitat along with young larvae. California giant salamanders occur in the Coast Range from the Point Arena vicinity of Mendocino County, east into Lake and Glenn counties, and south to Santa Cruz County. They occur in wet, cold coniferous forests or oak woodlands with permanent to semi-permanent creeks and streams. Diet presumably consists of a wide variety of arthropods and suitable-sized vertebrates and may feature a high proportion of banana slugs. California giant salamanders can vocalize, and when threatened make a creaking or groaning sound. Although the aquatic larvae can be very common in suitable waters and biomass is often greater than other aquatic vertebrates within a system, terrestrial adults can be elusive, and it has been suggested they are largely subterranean (Fellers et al. 2010).

Eighteen occurrences of CGS have been reported within 10 miles of the Study Area (CDFW 2020b). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. CGS has potential to occur onsite.

Foothill Yellow-Legged Frog (Northwest/North Coast Clade)

Six clades are recognized for foothill yellow-legged frog (FYLF, *Rana boylei*). The clade present within the vicinity of the Study Area is the Northwest/North Coast clade. While the other clades of FYLF have been proposed for listing under CESA, the Northwest/North Coast has not been proposed for listing. However, this species is considered a SSC by CDFW. FYLF occurs in the Coast Ranges, from the Oregon border south to the Transverse Mountains in Los Angeles County, west of the Cascade crest in most of northern California, and in the Sierra Nevada foothills south to Kern County, from sea level to 6,000 feet (Stebbins 1985).

FYLFs occupy rocky streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow plant communities. They are rarely found far from water and will often dive into water to take refuge under rocks or sediment when disturbed (Zeiner et al. 1988).

Thirty occurrences of FYLF have been reported within 10 miles of the Study Area (CDFW 2020b). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. FYLF has potential to occur onsite.

California Red-legged Frog

The California red-legged frog (*Rana draytonii*; CRLF) is listed as threatened pursuant to the FESA and is considered an SSC by CDFW. The current range and abundance of CRLF is greatly reduced from historic levels, with most remaining populations occurring along the coast from Marin County to Ventura County and in blue oak woodland, foothill pine/oak, and riparian deciduous forests in the foothills of the western slope of the Sierra Nevada (Barry and Fellers 2013).

Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.) are preferred (Hayes and Jennings 1988). Adult CRLFs use dense, shrubby, or emergent riparian vegetation near deep [≥ 0.6 to 0.9 meters (2 to 3 feet)], still or slow-moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail (*Typha* sp.) occur adjacent to open water. CRLFs breed from November through April (Jennings and Hayes 1994), and larvae generally metamorphose by mid to late summer. Upland and riparian areas provide important sheltering habitat during summer when CRLFs aestivate in dense vegetation, burrows, and leaf litter.

There is no critical habitat for CRLF within the vicinity of the Study Area. Three occurrences of CRLF have been reported within one mile of the Study Area (CDFW 2020b). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. CRLF has potential to occur onsite.

Red-Bellied Newt

The red-bellied newt (*Taricha rivularis*) is not listed pursuant to either the California or federal ESAs; however, this species is classified as a SSC by CDFW. The red-bellied newt is one of four species of Pacific

newts in the genus *Taricha* (Crother et al. 2017). All *Taricha* are endemic to northwestern North America west of the Sierra Nevada/Cascade divide, from Alaska south to southern California (San Diego County) (Stebbins 2003). The red-bellied newt is a California endemic and has the most restricted range of all *Taricha* species. *Taricha*. It occurs along coastal California from Sonoma and Lake Counties north through Mendocino County to southwestern Humboldt County. An isolated population occurs in the Stevens Creek Watershed of Santa Clara County, 80 miles south of the main distribution of this species (Reilly et al. 2014). In parts of its range, including the Steven's Creek Watershed, red-bellied newts co-occur with both coast range newts (*T. torosa*) and rough-skinned newts (*T. granulosa*). Red-bellied newts are dark brown, dark gray, or black above, bright tomato red ventrally and lack costal grooves and nasolabial grooves (Stebbins 2003). One characteristic that differentiates *T. rivularis* from the other *Taricha* species is a dark band of pigment across the vent (Stebbins 2003); especially noticeable in breeding males.

This is a species of cold creeks, streams, and rivers in coastal woodlands, and almost exclusively tied to coast redwood (*Sequoia sempervirens*) forests. Typically, breeding season starts in February with adults breeding through May in rocky stream substrates of cold, rapidly moving streams. Egg masses averaging 10 eggs are attached to the bottoms of rocks or vegetation in fast moving water (Twitty 1942). Incubation can last from 16–34 days and proceeds quicker in warmer water (Licht and Brown 1967). Larvae tend to be stream type, with reduced external gills, short tail fins, and short toes (Stebbins 2003). Larvae metamorphose in late August at 45–55-millimeter total length (Stebbins 1951, Stebbins and McGinnis 2012).

Twelve occurrences of red-bellied newt have been reported within 10 miles of the Study Area (CDFW 2020b). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. Red-bellied newt has potential to occur onsite.

Reptiles

One special-status reptile was identified as having the potential to occur in the Study Area based on the literature review (see Table 4.4-3). A brief description of this species is presented below.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either the California or federal ESAs; however, this species is classified as a SSC by CDFW. The range of the northwestern pond turtle in California extends from the Oregon border southward to the Stockton area in the Central Valley, and the western slope of the Sierra-Cascade (Bury et al. 2012a). The elevational range extends from sea level to 2000 meters, but it becomes rare at the higher elevations (Stebbins 2003). They can occur in a variety of waters including ponds, lakes, streams, reservoirs, rivers, settling ponds of wastewater treatment plants, and other permanent and ephemeral wetlands (Bury et al. 2012b) within blue oak woodland, foothill pine/oak, chaparral, Ponderosa pine woodland, black oak woodland, and riparian deciduous forests. In streams and other lotic features, they generally require slack- or slow-water aquatic microhabitats (Jennings and Hayes 1994). Western pond turtles also require basking areas such as logs, rocks, banks, and brush piles for thermoregulation (Bury et al. 2012b). They are typically active between March and April through October or November, the timing of which depends on variables such as

latitude, elevation, and local climate (Bury et al. 2012b). Western pond turtles have a generalist diet consisting of aquatic invertebrates, carrion, and small vertebrates (Bury 1986, Jennings and Hayes 1994); adults overwinter on land or in the water depending on specific location and habitat (Bury et al. 2012a). If overwintering on land, they may move beyond 1,500 feet upslope to burrow in soil or detritus, particularly in areas near flowing streams and rivers (Reese and Welsh 1997).

Three occurrences of northwestern pond turtle have been reported within 10 miles of the Study Area (CDFW 2020b). The intermittent drainage and surrounding upland habitats represent suitable habitat for this species. Northwestern pond turtle has potential to occur onsite.

Birds

Twenty-eight special-status bird species were identified as having the potential to occur within the Project Area based on the literature review (see Table 4.4-3). However, upon further analysis and after the site visit, 19 of these species are considered to be absent from the site due to the lack of suitable habitat. No further discussion of these species is provided in this analysis. A brief description of the nine remaining species that have the potential to occur within the Project area is presented below.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is not listed pursuant to either the California or federal ESAs, but it is classified as a SSC by the CDFW. The grasshopper sparrow is an uncommon and local, summer resident and breeder along the western edge of the Sierra Nevada and most coastal counties south to Baja California (Small 1994, Vickery 2020). This species generally inhabits moderately open grasslands and prairies with patchy bare ground and scattered shrubs (Vickery 2020). Grasshopper sparrows are more likely to occupy large tracts of habitat than small fragments (Samson 1980, Herkert 1994, Vickery et al. 1994 as cited in Vickery 2020). Breeding generally occurs from early May through August. There is a low potential for nesting in the various grassland communities onsite because they are heavily grazed.

Wrentit

The wrentit (*Chamaea fasciata*) is not listed in accordance with either the California or federal ESAs but is designated as a BCC by the USFWS. Wrentit are a sedentary resident along the west coast of North America from the Columbia River south to Baja California (Geupel and Ballard 2020). Wrentit are found in coastal sage scrub, northern coastal scrub, and coastal hard and montane chaparral and breed in the dense understory of valley oak riparian, Douglas-fir and redwood forests, early-successional forests, riparian scrub, coyote bush and blackberry thickets, suburban parks, and larger gardens (Geupel and Ballard 2020). Nesting occurs during March through August. Dense scrub vegetation found in the understory of the bishop pine forest and in the California blackberry thickets onsite represent potentially suitable nesting habitat for this species.

Olive-Sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) is not listed pursuant to either the California or federal ESAs, but is a CDFW SSC and a USFWS BCC. In the western United States, olive-sided flycatchers breed from Washington south throughout California, except the Central Valley, eastern deserts, and mountains of southern California (Small 1994). This species breeds in late-successional coniferous forests including Ponderosa pine woodlands, black oak woodlands, mixed coniferous forests, and Jeffrey pine forests, usually at mid to high elevations (Widdowson 2008). They use edges and clearings surrounding dense forests, foraging primarily on bees and wasps. Nesting occurs during May through August. The bishop pine forest onsite supports potentially suitable nesting habitat for this species.

White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is not listed pursuant to either the California or federal ESAs; however, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 2020). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 2020). The bishop pine forest onsite supports potentially suitable habitat for this species.

Purple Finch

The purple finch (*Haemorhous purpureus*) is not listed and protected under either FESA or CESA; however, it is considered a BCC by USFWS. In California, purple finch breeding range includes Klamath Mountains south along Coast Range into San Bernardino County, along the western slopes of the Cascade-Sierra Nevada axis from Shasta County south to Kern County (Wootton 2020). Purple finches nest in moist cool coniferous forests, mixed coniferous-deciduous forest, edges of bogs, riparian corridors, and to a lesser extent deciduous forests, orchards, ornamental plantations, pastures and lawns with scattered conifers, shrubs, hedgerows and developed areas (Wootton 2020). Nesting occurs from April to September. The bishop pine forest onsite supports potentially suitable habitat for this species.

Osprey

The osprey (*Pandion haliaetus*) is not listed pursuant to either the federal or California ESAs; however, the species is fully protected pursuant to § 3511 of the California Fish and Game Code and is identified as a CDFW watch list species. Osprey have expanded their range throughout much of North American (Bierregaard et al. 2020). Breeding habitat requirements include proximity to fish, open nest sites free from predators, and an ice-free fledging season (Bierregaard et al. 2020). Natural nesting sites include live and dead trees, cliffs, shoreline boulders, and on the ground on predator-free islands; they readily use artificial nest sites such as duck-hunting blinds, channel markers, communication towers, and platforms erected for nesting (Bierregaard et al. 2020). Breeding season occurrences of osprey are found throughout

California, with highest frequencies found along the northern California coast, northern Sacramento Valley, and the Sierra Nevada (eBird 2020). Nesting occurs from April to September. The bishop pine forest onsite supports potentially suitable habitat for this species.

Bryant's Savannah Sparrow

Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) is not listed pursuant to either the federal or California ESAs, but it is designated as an SSC by the CDFW. This sparrow is found in low tidal habitat, adjacent ruderal area, and moist grasslands within and just above the fog belt (Fitton 2008). Cup nests are placed in dense cover on the ground in grass clumps or under matted vegetation or raised up to 10 cm on supporting vegetation (Johnston 1968 in Fitton 2008). The grassland and meadow communities onsite represent potentially suitable nesting habitat for this species.

Purple Martin

The purple martin (*Progne subis*) is not listed pursuant to either the federal or California ESAs, but it is designated as a SSC by the CDFW. In California, purple martins occur within the foothills of the Sierra Nevada and the Coast Range to the Pacific Coast, and a small sub-population occurs within the urbanized portion of Sacramento County. Purple martins typically nest in mid-elevation forests comprised of conifers, oaks, or mixed woodlands usually with large trees. The Sacramento sub-population nests under elevated bridges. Purple martins nest in North America and winter in South America; they arrive onto breeding grounds in mid-March and depart for wintering grounds in September, with nesting occurring in May through August (Airola and Williams 2008). The bishop pine forest onsite supports potentially suitable habitat for this species.

Allen's Hummingbird

The Allen's hummingbird (*Selasphorus sasin*) is not listed and protected under either federal or California ESAs; however, it is classified as a BCC by the USFWS. Allen's hummingbirds breed along the Pacific Coast from Oregon to southern California (Clark and Mitchell 2020). Male breeding territories are located in open areas of coastal scrub or riparian vegetation, and females select nest sites in densely vegetated areas with some tree cover, such as mixed evergreen, Douglas fir, redwood and bishop pine forests, riparian woodlands, eucalyptus and cypress groves, live oak woodlands, and coastal scrub (Clark and Mitchell 2020). Nesting occurs during February through June. The bishop pine forest onsite supports potentially suitable habitat for this species.

Mammals

Four special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (see Table 4.4-3). A brief description of these species is presented below.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the federal or California ESAs; however, this species is classified as an SSC by CDFW. The pallid bat is a large, light-colored bat with long,

prominent ears, and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyons, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species utilizes echolocation to locate prey, often they use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (Western Bat Working Group [WBWG] 2017).

One occurrence of pallid bat has been reported within 10 miles of the Study Area (CDFW 2020b). The rocky outcrops and trees within the Study Area provide suitable roosting habitat and the entire Study Area provides suitable foraging habitat for this species. Pallid bat has potential to occur within the Study Area.

Sonoma Tree Vole

The Sonoma tree vole (*Arborimus pomo*) is not listed pursuant to either the California or federal ESAs; however, this species is classified as a SSC by CDFW. The Sonoma tree vole is a small arboreal rodent that is mostly restricted to the fog belt along the North Coast from Sonoma County to the Oregon border (CDFW 2014). The species primarily inhabits old-growth coniferous forests dominated by Douglas-fir (*Pseudotsuga menziesii*), although it can also occur in hardwood and coniferous forests in other seral stages and where Douglas-fir co-occurs with other tree species (Chinnici et al. 2012). The Sonoma tree vole feeds exclusively on the needles of Douglas-fir and grand fir (*Abies grandis*) (CDFW 2014). Both male and female Sonoma tree voles will use fir needles to construct tree nests that are typically situated six to 150 feet above the ground in a whorl of limbs around the base of the trunk or at the outer limits of branches (CDFW 2014). Nests may be used by succeeding generations. Males may also infrequently nest in shallow burrows under litter at the base of fir trees (CDFW 2014). The Sonoma tree vole is active year-round and is mostly nocturnal outside the nest but may feed throughout the day on fir needles stored within the nest (CDFW 2014). The home range of the Sonoma tree vole is thought to encompass one to several fir trees (Howell 1926). The species breeds year-round, but peak breeding occurs from February through September (CDFW 2014).

Twelve occurrences of Sonoma tree vole have been reported within 10 miles of the Study Area (CDFW 2020b). Douglas-fir trees were observed during the 2018 botanical survey and may occur within the Study Area. If Douglas fir trees occur within the Study Area, they may provide marginally suitable habitat for this species. Sonoma tree vole has low potential to occur within the Study Area.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is not listed pursuant to either the federal or California ESAs; however, this species is classified as a SSC by CDFW. Townsend's big-eared bat is a fairly

large bat with prominent bilateral nose lumps and large “rabbit-like” ears. This species occurs throughout the west and ranges from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. This species has been reported from a wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats used include coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Its distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. This species is readily detectable when roosting due to their habit of roosting pendant-like on open surfaces. Townsend’s big-eared bat is a moth specialist with over 90% of its diet composed of Lepidopterans. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. This species often travels long distances when foraging and large home ranges have been documented in California (WBWG 2017).

Two occurrences of Townsend’s big-eared bat have been reported within 10 miles of the Study Area (CDFW 2020b). While there is limited roosting habitat onsite, the entire Study Area provides suitable foraging habitat for this species. Townsend’s big-eared bat has potential to forage within the Study Area.

American Badger

The American badger (*Taxidea taxus*) is not listed pursuant to either the federal or California ESAs; however, this species is classified as a SSC by CDFW. The species historically ranged throughout much of the state, except in humid coastal forests (Williams 1986).

American badgers occupy a variety of habitats and are most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils (CDFW 2014). The principal requirements seem to be significant food supply; friable soils; and relatively open, uncultivated ground (Williams 1986). Young are born in burrows dug in relatively dry, often sandy soils with sparse understory cover (CDFW 2014).

Four occurrences of American badger have been reported within 10 miles of the Study Area (CDFW 2020b). The coastal prairie onsite represents suitable habitat for this species. American badger has potential to den and forage within the Study Area.

4.4.2 Regulatory Setting

4.4.2.1 Federal

Federal Endangered Species Act

FESA protects plants and animals that are listed as endangered or threatened by the USFWS and the National Marine Fisheries Service (NMFS). Section 9 of FESA prohibits the taking of listed wildlife, where take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a

biological opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of FESA provides for issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan is developed.

Section 7

Section 7 of FESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. If direct and/or indirect effects will occur to critical habitat that appreciably diminish the value of critical habitat for both the survival and recovery of a species, the adverse modifications will require formal consultation with USFWS or NMFS. If adverse effects are likely, the applicant must conduct a biological assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat to establish and justify an "effect determination." The federal agency reviews the BA; if it concludes that the project may adversely affect a listed species or its habitat, it prepares a BO. The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat.

Critical Habitat and Essential Habitat

Critical habitat is defined in Section 3 of FESA as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with FESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For inclusion in a critical habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary constituent elements). Primary constituent elements are the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior
- Food, water, air, light, minerals, or other nutritional or physiological requirements
- Cover or shelter
- Sites for breeding, reproduction, or rearing (or development) of offspring and
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species

Excluded essential habitat is defined as areas that were found to be essential habitat for the survival of a species and assumed to contain at least one of the primary constituent elements for the species but were excluded from the critical habitat designation. The USFWS has stated that any action within the excluded

essential habitat that triggers a federal nexus will be required to undergo the Section 7(a)(1) process, and the species covered under the specific Critical Habitat designation would be afforded protection under Section 7(a)(2) of the FESA.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Department of Fish and Game Code.

Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into “Waters of the United States” without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b). The USEPA also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

4.4.2.2 State

California Fish and Game Code

California Endangered Species Act

The CESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of FESA, but unlike its federal counterpart, the CESA applies the take prohibitions to species proposed for listing (called “candidates” by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects. State lead agencies may consult

with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

Fully Protected Species

The State of California first began to designate species as “fully protected” prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

Native Plant Protection Act

The NPPA of 1977 was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW and provided in California Fish and Game Code Sections 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. The CESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

Birds of Prey

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take non-game birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting native birds.

California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a Streambed Alteration Application (SAA) be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, submits measures protecting affected fish and wildlife resources to the applicant. The final proposal that is mutually agreed-upon by CDFW and the Applicant is the SAA. Nearly always,

projects that require a SAA also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA overlap.

Species of Special Concern

Species of Special Concern (SSC) are defined by the CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under the FESA, CESA or the California Fish and Game Code, but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered or meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.

SSC are typically associated with habitats that are threatened. Project-related impacts to SSC, state-threatened or endangered species are considered “significant” under the CEQA.

California Rare Plant Ranks

The California Native Plant Society (CNPS) maintains the *Inventory of Rare and Endangered Plants of California* (CNPS 2020), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of one through three, with one being the most threatened and

three being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20–80 percent occurrences threatened / moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Factors such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank, and differences in Threat Ranks do not constitute additional or different protection (CNPS 2020). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4. DPR considers a broader definition for special status plant species which encompasses impacts to designated plants ranked 3 or 4 as potentially significant.

Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, with any region that could affect the water of the state” (Water Code 13260(a)). Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code 13050 ©). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

California Environmental Quality Act

Per the CEQA Guidelines’ Section 15380 a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the FESA, CESA and Sections 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant and are particularly relevant to SSC. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant and require lead agencies to prepare an Environmental Impact Report to thoroughly analyze and evaluate the impacts. Assessment of "impact significance" to populations of non-listed species (i.e., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.
- have a substantial adverse effect on federally protected waters of the U.S. including wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

California Coastal Act

The CCC regulates development activities within the coastal zone pursuant to the California Coastal Act of 1976 (CCA). In general, the coastal zone is defined as the area which extends three miles seaward and approximately 1,000 feet inland. The California State Legislature finds and declares that the basic goals of the CCA are to:

- protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.
- assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the State.
- maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.
- assure priority for coastal-dependent and coastal-related development over other development on the coast; and
- encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Section 30231 of the CCA requires the maintenance and restoration (if feasible) of the biological productivity and quality of wetlands appropriate to maintain optimum populations of marine organisms and for the protection of human health.

Section 30233 of the CCC limits the filling of wetlands to identified high priority uses, including certain boating facility, public recreational piers, restoration, nature study, and incidental public services. Any wetland fill must be avoided unless there is no feasible less environmentally damaging alternative, and authorized fill must be fully mitigated.

Section 30240 of the CCC requires environmentally sensitive habitat areas (ESHAs) to be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. An ESHA is defined as any area in which plant or animal life or their habitats are especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (PRC § 30107.5). As such, projects requiring a coastal development permit are required to identify areas that may qualify as ESHAs and the CCC must determine whether the project violates the ESHA requirements of the Coastal Act.

CCC One-Parameter Wetland Definition

Section 30121 of the CCA defines the term "wetland" as:

Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

The CCC's regulations (California Code of Regulations [CCR] Title 14) establish a one-parameter definition that only requires evidence of a single parameter to establish wetland conditions:

Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such Wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577).

4.4.2.3 Local

Sonoma County Local Coastal Program

Under the CCA, cities and counties along the California Coast are responsible for preparing a Local Coastal Program (LCP), which consists of a Local Coastal Plan and an Implementation Plan. The current LCP for Sonoma County was written in 1981, amended in 2001, and is currently being updated by Sonoma County. The LCP serves as a conservation and development planning document for the coastal zone of Sonoma County. The CCA encourages the productive maintenance and protection of marine resources and environmentally sensitive habitat areas, such as wetlands. The pending updated LCP will provide a modern, up-to-date, and easy-to-use document with digital maps, and will focus on new information, changed conditions, and policies in these key areas: agricultural resources, public access, sea level rise, biotic resources, geologic hazards, and water quality.

4.4.3 Biological Resources (IV) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant.

Special-Status Species

There is suitable habitat within the Study Area for eight special-status plants, two special-status invertebrates, four special-status amphibians, one special-status reptile, nine special-status birds, and four special-status mammals. A brief discussion of impacts and recommendations is presented below for each group.

Plants

A total of seven plant species may be impacted by the Project. Three special status plants are known to occur within the Study Area: coastal bluff morning-glory, short-leaved evax, and purple-stemmed checkerbloom. Four additional special-status plants are known to occur within the immediate vicinity of the Study Area but were not found in the Study Area during 2018 botanical surveys: Blasdale's bent grass, swamp harebell, deceiving sedge, and Baker's goldfields (*Lasthenia californica* subsp. *bakeri*). There is also potential habitat for one special-status moss within the Study Area, minute pocket moss. Figure 4.4-4. *Botanical Survey Results* depicts the location of special-status species in relation to the Study Area, as mapped during the 2018 botanical survey (SNRC 2018).

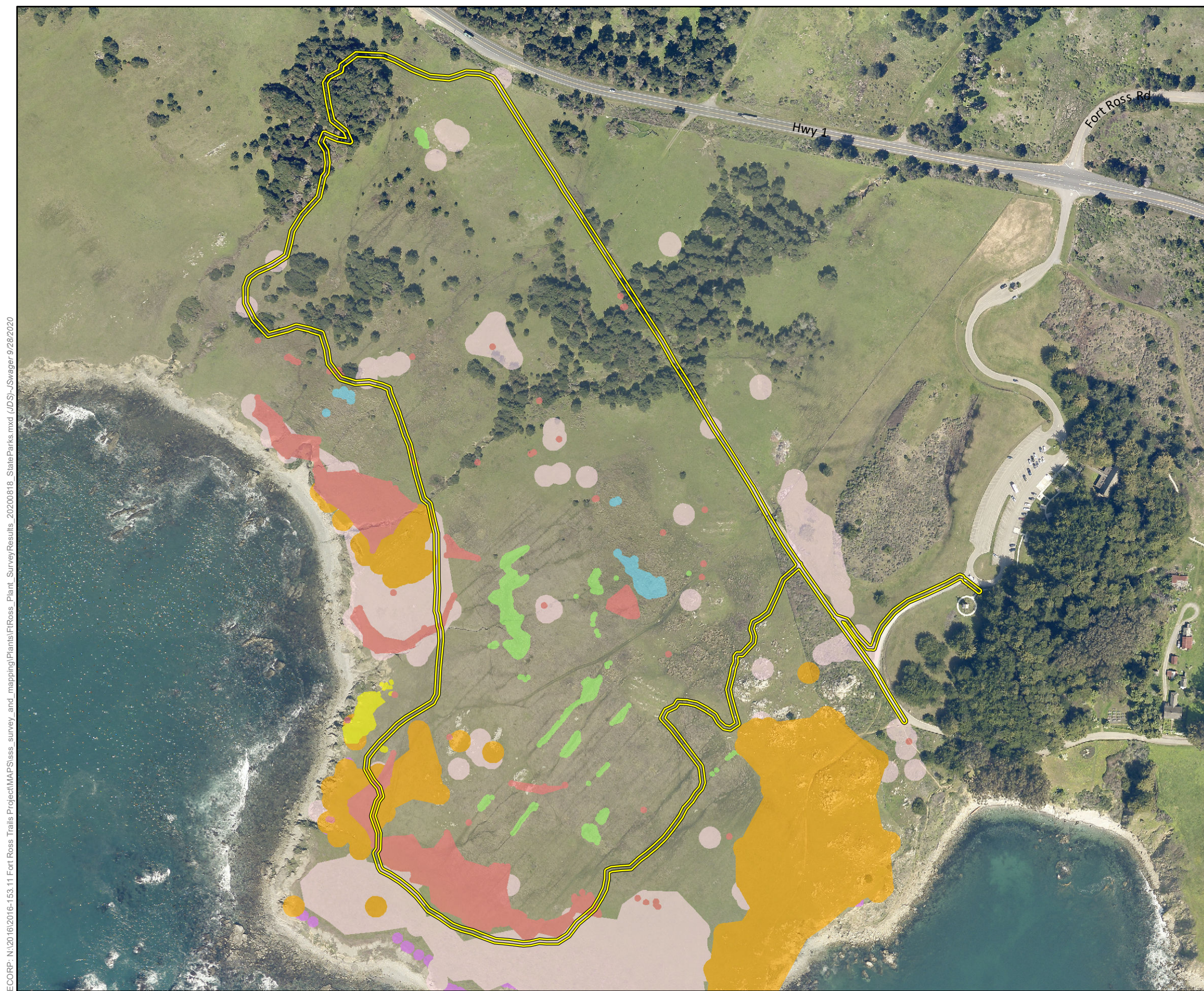
The Project would result in direct and permanent impacts to coastal bluff morning-glory, short-leaved evax, and purple-stemmed checkerbloom. Based on the 2018 botanical survey and observations by DPR Environmental Scientists at other locations in the state park, system coastal bluff morning glory and short-leaved evax may be underreported and are likely not as rare as their ranking suggests (SNRC 2018). Both species are also somewhat resilient to disturbance (SNRC 2018). Therefore, it is unlikely that the Project would substantially impact coastal bluff morning-glory and short-leaved evax populations onsite.

Table 4.4-4, *Estimated Impacts for Special Status Plant Species*, summarizes the estimated acres of impacts to these species, based on their extent as mapped during the 2018 botanical survey and assuming a 10-foot-wide area of direct impacts to habitat due to trail construction and two feet of temporary disturbance on either side. The table also estimates the percentage of the populations that may be impacted, based on the extent of the mapped populations and the species' densities described in the 2018 botanical survey report. Impacts for all species are negligible and are not expected to result in a loss of viability for the populations onsite. While the distribution and abundance of plant populations may change from year to year it is unlikely that normal changes in population dynamics would result in a significant change to the estimate of impacts as described.

Table 4.4-4. Estimated Impacts for Special Status Plant Species							
Species	Acres of Permanent Impacts	Acres of Temporary Impacts	Total Acres of Impacts	Total Acres for Mapped Populations¹	Estimated Number of Individuals per Acre¹	Estimated Number of Individuals Impacted	Percent of Populations Impacted
Coastal Bluff Morning-Glory	0.365	0.147	0.512	18.766	37	19	2.73%
Short-Leaved Evax	0.063	0.025	0.088	11.476	2,614,151	230045	0.77%
Purple-Stemmed Checkerbloom	0.053	0.022	0.075	4.328	67	5	0.02%

¹Based on species locations mapped during 2018 botanical survey and extrapolation of estimated density provided in 2018 botanical survey report.

ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\ss_survey_and_mapping\Plants\FIRoss_Plant_SurveyResults_20200818_StateParks.mxd (JDS)-Jswager 9/28/2020



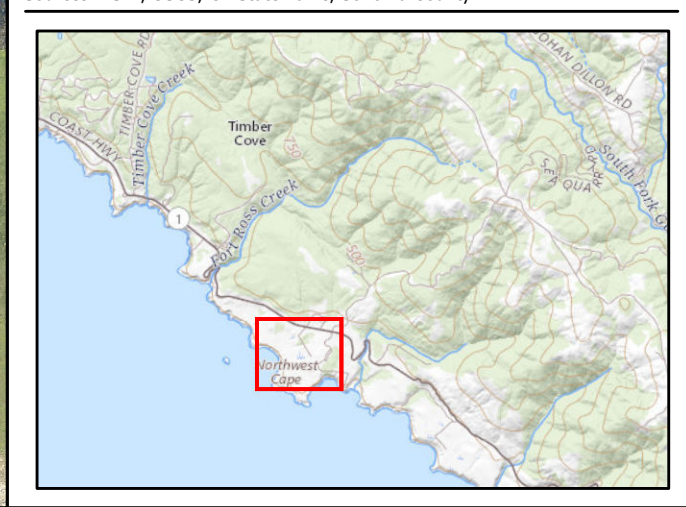
Map Features

Study Area - 2.82 ac.

Rare Plants

- Sidalcea malviflora* ssp. *purpurea*
- Hesperervax sparsiflora* var. *brevifoliata*
- Lasthenia californica* subsp. *bakeri*
- Carex saliniformis*
- Campanula californica*
- Agrostis blasedalei*
- Calystegia purpurata* subsp. *saxicola*

Sources: ESRI, USGS, CA State Parks, Sonoma County



The Project may also result in direct and permanent impacts to Blasdale's bent grass, swamp harebell, deceiving sedge, Baker's goldfields, and minute pocket moss should they occur within the proposed trail alignment. These species are not known to occur within the trail alignment, but are either known to occur within the immediate vicinity of the Study Area or, in the case of minute pocket moss, may have not been included in the botanical survey. Due to the small amount of potential habitat that would be affected and the lack of individuals known in the Study Area, if impacts should occur, they are unlikely to impact more than a few individuals and would not impact the viability of populations.

Indirect permanent impacts to special-status plants adjacent to the Study Area may occur due to a change in habitat post construction (e.g., vegetation removal causing an increase in sunlight, alteration of hydrology from the trail, and introduction of invasive plant species. Indirect temporary impacts may result from the deposition of dust onto the leaves of special-status plants and/or unintentional crushing of special-status plants during construction.

However, this area is not currently closed to pedestrian travel and visitors have already created non-designated trails. A designated trail in this location may serve to consolidate travel and lessen impacts from off-trail use. These indirect impacts are expected to be minimal, as it is expected that the trail will be designed and managed to allow for continued grazing and to minimize alteration of hydrology, erosion, and off-trail travel.

SPR BIO-1 would ensure impacts to special-status plant species remain less than significant. As previously described, impacts to special-status plant species are minimal and would not be considered significant under CEQA.

SPR BIO-1: Special-Status Plant Species. The following shall be conducted prior to initiation of project construction:

- Conduct pre-construction special-status plant surveys following agency protocols within the Project impact areas.
- Establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones should be maintained until the completion of construction.
- Clothing, vehicles, and equipment, including shoes and the undercarriage and tires/tracks, should be cleaned prior to entering the Project area to avoid the introduction and spread of invasive plant species.
- Any materials used for the Project, such as fill dirt, aggregate or erosion control materials, should be from weed-free locations or certified weed free.
- Dust generation should be kept to a minimum near special-status plant occurrences

Invertebrates

Suitable habitat for two special-status invertebrates is present within the Study Area. These include western bumble bee and Behren's silverspot butterfly.

Western Bumble Bee

Potential direct impacts to western bumble bee include disturbance of a ground nest or disturbance to foraging individuals where flowering plants occur in the Study Area. Direct impacts to a ground nest could result in direct mortality of individual bees and eggs. Disturbance of foraging individuals will be temporary.

Potential indirect effects include permanent removal of flowering plants within the Study Area, which may minimally reduce available floral resources for the western bumble bee. Measures implemented to avoid potential impacts to known flowering plant populations on-site (**PSR BIO-1**) including avoidance of sensitive flowering plant populations through project design, pre-construction plant surveys, establishing avoidance and buffer zones, and invasive species and erosion control BMP's will minimize potential impacts to western bumble bee. Implementation of **PSR BIO-1** and **PSR BIO-2** would ensure impacts to the western bumble bee remain less than significant.

Behren's Silverspot Butterfly

Vegetation removal and ground disturbance for the Project may result in the direct loss of eggs, larvae, and adults. Strikes from project vehicles and equipment may also result in direct loss of individuals.

Potential indirect effects include permanent removal of violets (*Viola* sp.) and other flowering plants within the Study Area, which may reduce available food for larvae and nectar sources for adults. Indirect effects may also include introduction and spread of invasive species, which may outcompete violets or contribute to degradation of habitat for violets. **SPR BIO-1** will reduce the spread of invasive species to less than significant.

Potential indirect impacts to Behren's silverspot butterfly have been avoided or minimized through project design and implementation of **PSR BIO-2** would reduce direct impacts to less than significant.

PSR BIO-2: Behren's Silverspot Butterfly

- A DPR-approved biologist will conduct surveys for the larval host plants (western dog violet) in areas that will be impacted by the project. Surveys will be conducted prior to project implementation and when the plants were in a phenological stage favorable for positive identification (i.e., during the species blooming period).
- If larval host plants are located within areas of potential construction impacts, these locations will be flagged by a DPR-approved biologist and an exclusion zone with a radius of 10 feet around the plant(s) will be established prior to the start of construction activities. If avoidance of host plant habitat is not possible, then construction in those areas will not be allowed from April 1 through July 31 in order to protect pupae or larvae during the primary feeding season. are

Amphibians

Suitable habitat for four special-status amphibians is present within the Study Area. These include CGS, FYLF, California red-legged frog, and red-bellied newt.

California Giant Salamander

Suitable breeding, aestivation, and dispersal habitat for the foothill CGS is present within the Study Area. Construction activities may result in direct permanent impacts to CGS habitat and may result in the direct loss of eggs, larvae, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to CGS habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Potential indirect impacts to CGS would be avoided or minimized through project design, and implementation of construction BMPs (included as part of the project) designed to protect aquatic habitats (e.g., erosion control measures along the intermittent drainage on-site). **PSR BIO-3** would reduce direct impacts to CGS to less than significant.

PSR BIO-3: California Giant Salamander Habitat. The following shall be conducted prior to initiation of project construction:

- DPR-approved personnel will conduct preconstruction surveys for CGS immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat on-site. If CGS are found during a survey, salamanders should be moved from the work area to the nearest relocation site. Barrier fencing would be used to exclude CGS from work areas after the survey/relocation is complete.
- During construction within or near stream habitat, only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment. An onsite biological monitor will inspect work areas daily for CGS.

Foothill Yellow-Legged Frog

Suitable breeding, aestivation, and dispersal habitat for the FYLF is present along the streams within the Study Area. Construction of bridges and other crossings for these streams may result in direct permanent impacts to FYLF habitat and may result in the direct loss of eggs, tadpoles, juveniles, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to FYLF habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Potential indirect impacts to FYLF would be avoided or minimized through project design and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures). Implementation of **PSR BIO-4** would ensure direct impacts to FYLF remain less than significant.

PSR BIO-4: Foothill Yellow-Legged Frog

- A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of FYLF within and near stream habitat on-site. It would include protection measures to ensure that this species and other sensitive resources would not be impacted to a significant level by project activities.
- Prior to the beginning of construction, a DPR-approved biologist shall install barrier fencing to exclude FYLF habitat from work areas.
- A DPR-approved biologist or biological monitor will conduct pre-construction surveys for FYLF. If FYLF is located within the project area, they will be relocated outside the work area by a CDFW or DPR-approved biologist.
- Periodic surveys for sensitive biological resources would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion.
- Only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) shall be used.

California Red-Legged Frog

There is low potential for breeding within the Study Area, although breeding habitat may occur within the vicinity of the Study Area and there is suitable dispersal habitat for CRLF within the Study Area.

Construction activities would remove dispersal habitat for this species and may also result in the loss of individuals. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to CRLF dispersal habitats from construction-related activities that cause increased erosion, sedimentation, turbidity, and pollution/contamination.

Potential indirect impacts to CRLF would be avoided or minimized through project design, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures). **PSR BIO-5** would ensure direct impacts to CRLF remain less than significant.

PSR BIO-5: California Red-Legged Frog

- Construction personnel will be instructed and trained by a USFWS or DPR-approved biological monitor in the life history of CRLF and its habitat, and trained in the appropriate protocol to follow in the event that a CRLF is found onsite.
- Prior to the beginning of construction, a DPR-approved biologist shall install barrier fencing to exclude CRLF habitat from work areas. A DPR-approved biological monitor will be onsite during all activities within 50 feet of on-site streams to ensure there are no impacts to individual CRLF that might potentially move through the project area during dispersal.
- Immediately prior to the start of work each morning, a USFWS or DPR-approved biological monitor will conduct a visual inspection of the construction zone in those areas within 50 feet of on-site stream habitat.

- If a CRLF is found, start of work at that project location will not begin until the species moves out of the site on its own accord or is relocated by a USFWS or DPR biologist authorized to handle CRLF.
- Work will be confined to daylight hours to avoid activities during periods when CRLF are known to be active.

Red-Bellied Newt

Suitable breeding and dispersal habitat for the red-bellied newt is present within the Study Area and surrounding areas. Construction activities may result in direct permanent impacts to red-bellied newt habitat and may result in the direct loss of eggs, larvae, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to red-bellied newt habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Potential indirect impacts to red-bellied newt would be avoided or minimized through project design, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures). **PSR BIO-6** would ensure direct impacts to red-bellied newt remain less than significant.

PSR BIO-6: Red-Bellied Newt. The following shall be conducted prior to initiation of project construction:

- DPR-approved personnel would be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat on-site. If red-bellied newts are found near the construction site, newts would be moved from the work area to the nearest predetermined relocation site. Barrier fencing should be used to exclude red-bellied newt from work areas after the survey/relocation is complete.
- Only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment during construction.
- A DPR-approved biological monitor would inspect work areas daily for red-bellied newt.

Reptiles

Suitable habitat for one special-status reptile, northwestern pond turtle, is present within the Study Area.

Northwestern Pond Turtle

There is low potential for breeding within the Study Area, although breeding habitat may occur within the vicinity of the Study Area and there is suitable dispersal habitat for northwestern pond turtle within the Study Area. Construction activities would remove dispersal habitat for this species and may also result in the loss of individuals. In addition to direct permanent impacts, implementation of the proposed Project

could result in indirect temporary impacts to northwestern pond turtle habitats from construction-related activities that result in increased erosion, sedimentation, turbidity, and pollution/contamination.

Potential indirect impacts to northwestern pond turtle would be avoided or minimized through project design, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures). **PSR BIO-7** would ensure direct impacts to northwestern pond turtle remain less than significant.

PSR BIO-7: Northwestern Pond Turtle

- A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of northwestern pond turtle. It would include protection measures to ensure that these species and other sensitive resources would not be impacted to a significant level by project activities.
- Prior to the beginning of construction, a DPR-approved biologist or biological monitor will conduct pre-construction surveys for northwestern pond turtle (NPT). If NPT are found within the project area, they will be relocated outside the work area by the DPR-approved biologist or biological monitor.
- Periodic surveys for sensitive biological resources, including NPT, would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion.

Birds

Suitable nesting and/or wintering and foraging habitat for nine special-status birds is present within the Study Area. These include grasshopper sparrow, wrentit, olive-sided flycatcher, white-tailed kite, purple finch, osprey, Bryant's savannah sparrow, purple martin, and Allen's hummingbird. If present, the Project could result in harassment to nesting individuals and may temporarily disrupt foraging activities.

In addition to the above listed special-status birds, all native birds, including raptors, are protected under the California Fish and Game Code and the federal MBTA. As such, to ensure that there are no impacts to protected active nests, **PSR BIO-8** would be implemented to reduce impacts to less than significant.

PSR BIO-8: Nesting Birds. The following shall be conducted prior to initiation of project construction:

- Surveys for active raptor nests would be conducted within a 500-foot radius of project areas.
- The surveys would be conducted within seven (7) days prior to the beginning of construction at each work site. If nesting raptors are found, no construction would occur within a 500-foot radius of the nest tree between March 1 and August 31, or until the young have fledged and the young would no longer be impacted by project activities (as determined by a DPR-approved biologist).

- Surveys for active migratory bird nests would be conducted within a 100-foot radius of the project area 7 days prior to commencement of construction at each work site. If active nests are located, all construction disturbance activities within a 100-foot radius of the nest tree would be postponed until the end of the breeding season (August 31) or until the young have fledged and the young are no longer impacted by project activities (as determined by a DPR-approved biologist).

Mammals

Suitable habitat for four special status mammals is present within the Study Area. These include pallid bat, Townsend's big-eared bat, Sonoma tree vole, and American badger.

Pallid Bat

Crevices of the rock outcrops and trees within the Study Area represent suitable roosting habitat and the entire Study Area represents suitable foraging habitat for the pallid bat. Trail construction may remove habitat for pallid bat and may result in direct loss of roosting individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary and permanent impacts to bat habitat from construction-related impacts (e.g., increased noise, increased human presence, and dust).

Townsend's Big-Eared Bat

There is low potential for roosting within the Study Area, although roosting may occur within the vicinity of the Study Area and there is suitable foraging habitat for Townsend's big-eared bat within the Study Area. Trail construction may remove a small amount of foraging habitat for Townsend's big-eared bat.

Direct impacts to Townsend's big-eared bat are not expected, and indirect impacts would be less than significant.

Potential indirect impacts to pallid bat and Townsend's big-eared bat would be avoided or minimized through project design. **PSR BIO-9** would reduce direct impacts to bat species to less than significant.

PSR BIO-9: Bats

- For work activities conducted during the bat maternity season (i.e., February 1 through September 31), a bat specialist will conduct a survey for bats within 100 feet of the project area where trees are present. If bat roosts are observed, a buffer area with a 100-foot radius will be established around the roost in which no work activities would be allowed to occur until the breeding season is completed.
- If work activities have to be conducted near known bat roosts, only those activities that the bat specialist determines could occur without significant impacts to bats will be conducted within 100 feet of the bat roost during the bat maternity season.

Sonoma Tree Vole

Douglas fir and Bishop pine trees within the Study Area represent suitable nesting habitat for Sonoma tree vole. Removal of Douglas fir and Bishop pine trees and ground disturbance around these trees may remove habitat for Sonoma tree vole and may result in direct loss of individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to Sonoma tree vole from construction-related impacts (e.g., increased noise, increased human presence, and dust).

Potential indirect impacts to Sonoma tree vole would be avoided or minimized through Project design and implementation of **PSR BIO-10** would ensure impacts to Sonoma tree vole remain less than significant.

PSR BIO-10: Sonoma Tree Vole. The following shall be conducted prior to initiation of project construction:

- A DPR-approved biologist will conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) where suitable Douglas fir and Bishop pine trees would be removed.
- If Sonoma tree vole or their nests are found during surveys, a no-disturbance buffer around nest trees should be established. If avoidance is not possible, additional measures should be determined in consultation with CDFW.

American Badger

The coastal prairie represents suitable denning habitat and the entire Study Area represents suitable foraging habitat for American badger. Trail construction may remove habitat for American badger and may result in direct loss of denning individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to American badger habitat from construction-related impacts (e.g., increase noise, increased human presence, and dust).

Potential indirect impacts to American badger would be avoided or minimized through project design, where feasible. Implementation of **PSR BIO-11** would ensure direct impacts to American badger would remain less than significant.

PSR BIO-11: American Badger

- A DPR-approved biologist will conduct pre-construction surveys for American badger denning habitat in appropriate grassland locations.
- If badger dens are located within 50 feet of the project area, then these sites will be mapped and fenced off prior to the start of construction activities, and completely avoided during the breeding season of June 1 through October 15.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant.

Vegetation Communities

There are three vegetation communities mapped within the Study Area that are identified as Sensitive Natural Communities by CDFW (see Figure 4.4-1 and Figure 4.4-2). These communities are *Carex obnupta* Herbaceous Alliance (S3), *Danthonia californica* Herbaceous Alliance (S3), and *Pinus muricata* Forest Alliance (S3?) (SNRC 2018). *Deschampsia cespitosa* Herbaceous Alliance (S4?) and *Lasthenia californica* Herbaceous Alliance (S4) are not listed as Sensitive Natural Communities, although they may be considered ESHAs. Table 4.4-5, *Estimated Impacts to Sensitive Natural Communities and ESHAs*, summarizes the area of each of these communities impacted permanently and temporarily by the trail project, based on the extent of each community as mapped during the 2018 botanical survey.

Table 4.4-5. Estimated Impacts to Sensitive Natural Communities and ESHAs					
Sensitive Habitat	Total Acres Mapped in Vicinity of Study Area¹	Acres of Permanent Impacts	Acres of Temporary Impacts	Total Acres of Impacts	Percent of Sensitive Habitat in Vicinity of Study Area Impacted
<i>Carex obnupta</i> Herbaceous Alliance	0.0937	0.0003	0.0004	0.0007	0.75%
<i>Danthonia californica</i> Herbaceous Alliance	6.4945	0.0096	0.0039	0.0135	0.21%
<i>Deschampsia cespitosa</i> Herbaceous Alliance	26.0015	0.4671	0.1887	0.6558	2.52%
<i>Lasthenia californica</i> Herbaceous Alliance	0.8144	0.0359	0.0126	0.0485	5.95%
<i>Pinus muricata</i> Forest Alliance	9.5299	0.1936	0.0870	0.2806	2.94%

¹Based on vegetation mapping for 2018 botanical survey, which was conducted in an area larger than the Study Area.

The Project would result in direct and permanent impacts to Sensitive Natural Communities within the Study Area. During the permitting process, impacts to Sensitive Natural Communities may require consultation with CDFW. However, impacts would be minor and the Project would not remove entire vegetation communities nor have a substantial adverse effect on Sensitive Natural Communities.

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State and Federally Protected Waters

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

A total of 0.086 acres and 687 LF of potential Waters of the U.S. regulated by the USACE have been mapped within the Study Area (see Table 4.4-1 in Section 4.4.1.4). In addition, the aquatic resources delineation identified a total of 0.783-acre of potential CCC jurisdictional wetlands resources that may be regulated under the CCA (see Figure 4.4-3), including approximately 0.697-acre that meets the CCC definition for one-parameter wetlands (see Table 4.4-2 in Section 4.4.1.4). The delineation, however, has not yet been verified by USACE or the California Coastal Commission.

Design modifications have been made to the trail alignment, subsequent to the aquatic resources delineations, botanical surveys, and cultural resources surveys to avoid these resources to the fullest extent possible. Design includes construction that incorporates boardwalks and bridge crossings to avoid impacts to these resources.

The proposed Project is anticipated to require a Section 404 Nationwide Permit under the Clean Water Act from the USACE. Likewise, a Section 401 Water Quality Certification from the RWQCB is also anticipated to be required. In addition, impacts the wetlands and other aquatic habitats will require a Coastal Development and a CDFW Lake and Streambed Alteration Agreement with CDFW.

Implementation of **SPR BIO-1** and **SPR BIO-12** would reduce impacts to Jurisdictional Waters to less than significant. **SPR BIO-1** would also be required to reduce any potential impacts to waters under USACE, RWQCB, Coastal Commission, and CDFW.

SPR BIO-12: Jurisdictional Water and Wetlands Best Management Practices. The following BMPs shall be implemented:

- To control sedimentation during construction and after project implementation, appropriate erosion control best management practices (i.e., installation of straw wattle, jute netting, etc.) shall be implemented to minimize adverse effects on jurisdictional areas in the vicinity of the Project.
- Project activities within the jurisdictional areas shall occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies. Deviations from this work window can be made with permission from the relevant regulatory agencies.

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- During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site. In addition, all Project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them.
- Any substances which could be hazardous to aquatic species resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering jurisdictional areas.
- All refueling, maintenance, and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.

Implementation of PSR **BIO-12** would ensure that potential impacts to jurisdictional water and wetlands remain at less than significant levels.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant.

The Study Area includes land with CDFW's Areas of Conservation Emphasis (ACE) connectivity Rank 1 (limited connectivity opportunity) in the southeast portion of the Study Area and ACE Rank 3 (Connections with implementation flexibility) in the northeast portion of the Study Area (CDFW 2020b). Areas with ACE Rank 1 have limited or no connectivity importance. Areas with ACE Rank 3 have important connectivity but have not yet been identified as a priority wildlife movement corridor.

The Study Area serves as a movement corridor for terrestrial and avian species. The intermittent and ephemeral drainages provide potential movement corridors for terrestrial and aquatic species. The steep coastal bluffs create a natural barrier that precludes the use of the intermittent drainage feature on-site by anadromous fish species. Upon completion, the trail would not be a barrier to wildlife movement. Impacts would be less than significant.

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Local Policies and Ordinances

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant.

The California Department of Parks and Recreation (DPR) is not subject to local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; however, Department policy and its Mission Statement incorporate the protection of natural resources into the short-term and long-term management goals for its park units. Furthermore, DPR operates cooperatively with sister agencies and local jurisdictions to ensure natural resources are protected in perpetuity. This impact is less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project Site is not located within or adjacent to a Habitat Conservation Plan or Natural Community Conservation Plan. There would be no impact, and no mitigation is required.

4.5 Cultural Resources

Far Western Anthropological Research Group, Inc. (FWARG 2019) prepared a *Cultural Resources Inventory Report* for the Project, (*CONFIDENTIAL*). Although that study included some trail configurations and alignments that have since been rejected, the current Project alignment was included in the study area. Only the findings and recommendations from the FWARG study that are applicable to the current Project configuration have been incorporated into this analysis.

4.5.1 Environmental Setting

4.5.1.1 Archaeology

The archaeological record of the Sonoma coast has previously been classified into broad patterns of cultural historical traits represented in the archaeological record. Five patterns are represented on the Sonoma County coast, including: Post (13,500–10,000 years ago), Borax Lake (10,000–5500 years ago),

Mendocino (5500–2300 years ago), Berkeley (2300–900 years ago), and Augustine (post-900 years ago). These patterns occur during sequential time periods accepted by archaeologists that represent broad changes in California’s cultural history. As currently defined for southern Sonoma County, the Mendocino Pattern roughly correlates with the Early Period and Early/Middle Transition; the Berkeley Pattern with the all four phases of the Middle Period; and the Augustine Pattern with the Middle/Late Transition and Late Period.

4.5.1.2 Ethnography

The project area lies within the traditional territory of the Kashia Band of Pomo Indians of the Stewarts Point Rancheria, a federally recognized tribe historically referred to as the Kashaya or Southwestern Pomo. Several Pomo villages existed along this stretch of coast, with the community of “Meteni” (CA-SON-175) in the general vicinity of the current project area at Fort Ross. Pomo tribelets were small, autonomous groups that each controlled a territory typically encompassing an entire drainage system, 389 square kilometers (150 square miles) or less. Village populations varied but the central settlement might consist of 200 to 400 people. Seasonal camps were placed near food sources like salmon streams or shellfish beds. Most of their food supply came from the ocean, but also from seeds, roots and bulbs of coastal plants and oaks from the adjacent mountains. The coast was used from spring through summer, with winter settlements on the interior. A more robust ethnographic account can be found in Section 4.18 *Tribal Cultural Resources*.

4.5.1.3 Historical Background

The Fort Ross settlement (from the Russian Rossiya meaning Russia) was founded in 1812 and inhabited by Russians, Alaska Natives (from Aleutian Islands, Kodiak Island, Kenai Peninsula, and Prince William Sound), local Native Americans (Kashia Pomo, Central Pomo, Southern Pomo, and Coast Miwok), and Creoles (mixed Russian and Native). The colony’s population was anywhere between 300 and 500 individuals, usually with fewer than 100 of any one group. The Russians were primarily males, while women were mostly local Natives (Schwartz 1977).

The Ross Colony was the southernmost extent of long-term Russian settlement in North America, primarily established for fur trading and agriculture and, on a smaller scale, raising livestock, brick making, hide tanning, ship building, and vegetable gardening. The fort, stockade, and blockhouses were built first. Structures included homes, a chapel, barracks, smokehouse, bakery, jail, two windmills, and storage barns for furs, trade goods, and grains. The fort was sold to John Sutter in December 1841, with the Russians departing on January 1, 1842.

The ranching and farming tradition at Fort Ross continued in 1841; however, the Mexican government refused to acknowledge Sutter’s claim to the property and subsequently divided Fort Ross colony into the Bodega and Muniz Ranchos. The Muniz Rancho, including Fort Ross, went to Manuel Torres, who quickly sold it to William Benitz. William Benitz was the fourth and last caretaker of the property for Sutter, arriving at Fort Ross in 1843. By 1845 he and his partner Ernest Rufus, later joined by Charles Meyer about 1849, began recreating the ranching and farming economy with the help of some Native Californians, mainly Kashaya Pomo. Benitz and his growing family continued living at Fort Ross until 1867 when he sold the property to an Irishman named James Dixon and his partner Charles Fairfax. Dixon ran a successful

logging business, harvesting redwood timber until 1873 when he, in turn, sold the property to George Washington Call. Call and his family took up residence in 1874 and the family continued to farm the land well into the twentieth century. In 1903, they sold the site of the Fort Ross stockade, amounting to 2.5 acres, to a representative of the Landmarks League, who, in turn deeded the property over to the State of California in 1906. The Call family held the surrounding property for another 59 years before selling a large parcel to the state in 1962.

4.5.1.4 Cultural Resources

A *Cultural Resources Inventory Report* was prepared by Far Western Research Group (2019, *CONFIDENTIAL Appendix E*) for the Proposed Project to determine if cultural resources were present in or adjacent to the Project area and assess the sensitivity of the Project area for undiscovered or buried cultural resources. The full cultural context of the Project Area, along with the methods and results of the study, can be found in the report. Because the locations of archaeological sites are confidential and restricted from public distribution by state and federal law, the report is not included as an appendix to this document.

The cultural inventory included surface pedestrian survey and records search, and subsurface boundary testing to identify the extent of both pre-contact and historic-period resources. Thirteen cultural resources were identified within the Project Area:

- CA-SON-228/H, a multicomponent site (pre-contact and historic-period) with an artifact scatter and structural remains.
- CA-SON-1453, a pre-contact site with fire features and artifact scatter.
- CA-SON-1454/H, a multicomponent site with an artifact scatter, rock art, a timber chute and wharf remains.
- CA-SON-1888, a pre-contact shell midden site.
- CA-SON-1889, a pre-contact shell midden site.
- Call Ranch, historic period structural remains.
- Old Highway 1, abandoned alignment of Coast Highway 1.
- FR-13, a pre-contact shell midden site.
- FR-22, a pre-contact site with fire features and artifact scatter.
- FR-3, isolated pre-contact artifact.
- FR-5, isolated pre-contact artifact.
- FR-9 Isolated historic-period artifact; and
- FR-12, isolated pre-contact artifact.

The four isolated artifacts (FR-3, FR-5, FR-9, and FR-12) are not considered Historical Resources and require no further management. The remaining nine cultural resources are considered Historical Resources for the purposes of this project.

Subsurface excavations were focused onsite boundary definition where the trail was close to four of the archaeological sites. Subsurface testing was undertaken in areas where site boundaries were close to or intersected the original trail alignment; test units were excavated out from known boundaries in relation to the trail until they were culturally sterile. The trail alignment was subsequently moved outside revised site boundaries.

No Historical Resources exist within the trail alignment itself. Eight of the nine resources will be avoided by Project activities or identified as environmentally sensitive areas. One site will be impacted by Project activities, but the impacts will not be significant:

- CA-SON-228/H will be marked as an ESA and avoided.
- CA-SON-1453 will be marked as an ESA and avoided.
- CA-SON-1888 will be completely avoided.
- CA-SON-1889 will be marked as an ESA and avoided.
- All existing Call Ranch features will be avoided and selected ones will be marked as ESAs.
- FR-13 will be marked as an ESA and avoided; and
- FR-22 will be completely avoided.
- CA-SON-1454/H be marked as an ESA and avoided.
- Old Highway 1 will be used as a staging area and segment of the trail with no significant impacts.

ESAs will be established for sites in closer proximity to Project activity. Two sites (CA-SON-1888 and FR-22) and selected features of FR-11 will be completely avoided with no impacts and no further management. For five sites (CA-SON-228/H, CA-SON-1453, CA-SON-1889, CA-SON 1454/H, and FR-13) and selected features of site FR-11, ESAs will be established. The ESAs will be a minimum of six (1.8 meters) to 15 feet (4.6 meters) from the recorded site boundaries of sites SON-228/H, SON-1453, SON-1889, FR-13 and selected features of site FR-11.

ESAs will be established with a minimum 15-foot (4.6 meters) buffer from boundaries at four sites (SON-1453, SON-1889, SON-1454/H, and FR-13). A six-foot (1.8 meters) buffer will be used at SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east. These ESAs will be fenced/flagged and mapped to ensure their protection.

4.5.2 Cultural Resources (V) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant.

All nine identified historic-era or Native American sites and features are considered Historical Resources based on prior and current studies. Site boundaries within the Project Area have been tested for presence/absence and project plans have been designed to avoid impacts where feasible. However, measures have been developed in order to avoid significant impacts to these resources that could occur as a result of the Project. **PSR CUL-1** through **PSR CUL-3**, would ensure potential impact on known Historical Resources remain at a less than significant level.

Also, excavations that occur in association with development of the Project could affect unknown Historical Resources buried on the property, and if so, the resulting damage to the resources could be considered a significant impact. As such, implementation of **PSRs CUL-1** through **CUL-3**, will ensure potential impacts on unknown Historical Resources will remain at a less than significant level.

PSR CUL-1: ESA. In coordination with TCR-1, the ESAs will be clearly delineated on construction plans and noted for avoidance. At least three weeks in advance of Project construction, the Construction Manager will notify California State Parks Archaeologist and the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date.

- Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment. Kashia will give a detailed TCR awareness training to emphasize that areas outside planned construction zones must be completely avoided and that environmental regulations prohibit unauthorized disturbance to, or removal of, TCRs on public land.
- A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation.
- ESAs shall be established for each site as follows:

- A minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east
- A minimum of 15 feet (4.6 meters) around the site boundaries of CA-SON-1453, CA-SON-1889, CA-SON 1454/H, and FR-13
- A minimum of four (1.2 meters) to 6 feet (1.8 meters) around selected features of F11, to be determined at the pre-construction meeting between the construction manager, project foremen, construction crews, and State Parks Archaeologist
- The Parks Archaeologist will be notified when construction begins and will inspect the construction area on a periodic basis to ensure that the ESAs have not been breached. The Parks Archaeologist will be present for removal of the ESA flagging and/or fencing post-construction.
- The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned within or near sites CA-SON-228/H, -1453, -1454/H, and -1889.1454/H.

PSR CUL-2: Unanticipated Discoveries. In the event of a potential post-review discovery, inadvertent effect, or ESA violation (e.g., ground-disturbing work occurs outside of delineated areas), all work will stop within 100 feet of the location of the discovery, effect, or violation. The Parks Archaeologist will notify the Kashia Pomo and other Native American groups (if not already on-site). Evaluation and treatment options would be determined in direct communication with each party, as applicable.

- If subsurface deposits believed to be cultural or human in origin are discovered during construction and the find includes human remains, or remains that are potentially human, a qualified professional archaeologist, in coordination with the Parks Archaeologist, shall ensure reasonable protection measures are taken to protect the discovery from further disturbance (Assembly Bill [AB] 2641).
- The archaeologist shall notify the Sonoma County Coroner (as per § 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, then the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work cannot resume within the no-work radius until the lead agencies,

through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

PSR CUL-3: Cultural Monitoring Plan. A comprehensive Cultural Monitoring Plan will be implemented for the Project and will include both construction and long-term post-construction monitoring. Monitoring will be conducted by a California State Parks Archaeologist and a Native American representative affiliated with the area.

Construction Monitoring will be implemented at the discretion of the California State Park archaeologist and will focus on those locations where trail construction is adjacent to archaeological sites (CA-SON-228/H, -1453, -1454/H, and 1889). The California State Parks Archaeologist with assistance from a Tribal Representative, will monitor other construction activities as deemed necessary.

The long-term post-construction monitoring plan entails walking the Kashia Loop Trail at least two times per year, including a buffer on either side of the trail to assess potential impacts from increased use of the terrace on archaeological sites. This shall be done over a five-year period. If impacts are noted, DPR in collaboration with Kashia will take steps to minimize these impacts with the development of an action plan, which identifies treatments appropriate for the noted impacts.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The project area was investigated by a professional archaeologist, who determined that archaeological resources do exist within the Project Area. Additionally, although the Pleistocene-age terrace has little potential to contain deeply buried archaeological sites not observable on the surface, there is always the possibility to come across previously unidentified deposits, especially considering the number of known archaeological resources that are present within the Project Area. Under the current baseline conditions, there are no controls or limitations over where people can hike/walk within the state park. This could lead to visitors inadvertently or intentionally impacting cultural resources. However, with construction of the trail, the symbolic fencing and interpretive elements would be used to keep visitors on the trails as well as educate them on the importance of preserving cultural resources.

PSRs CUL-1 through CUL-3 as noted above have been included to ensure that potential impacts to archaeological resources remain at a less than significant level. Therefore, the impact is found to be less than significant.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Throughout history, human burials have occurred outside of dedicated cemeteries, usually associated with archaeological resource sites and pre-contact people; therefore, areas with known archaeological resources sites may have higher risk for containing human remains.

No human remains have been identified within the Project Area. However, implementation of the Proposed Project would include ground-disturbing construction activities near known archaeological midden and habitation sites, which have known potential to contain human remains. Project activity could result in the inadvertent disturbance of currently undiscovered human remains. Procedures of conduct following the discovery of human remains on non-federal lands are mandated by Health and Safety Code § 7050.5, by PRC § 5097.98, and by CEQA in California Code of Regulations (CCR) § 15064.5(e).

According to state law, should human remains be encountered, all work in the immediate vicinity of the remains must cease, and any necessary steps to ensure the security and integrity of the discovery must be taken. The Sonoma County Coroner would be immediately notified, and the coroner would then determine whether the remains are Native American. If the coroner determines the remains are Native American, the coroner has 24 hours to notify the NAHC, which will in turn notify the person identified as the most likely descendant (MLD) of those human remains. Further actions would be determined, in part, by the recommendations of the MLD, who has 48 hours to make recommendations regarding the disposition of the remains from the time that access to the property is granted.

Implementation of **PSR CUL-1** through **SPR CUL-3** as noted above would assure that any discovery of human remains within the Project Area would be subject to these procedural requirements. This impact, therefore, is considered less than significant.

4.5.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.6 Energy

4.6.1 Environmental Setting

4.6.1.1 Electricity/Natural Gas Services

The Pacific Gas and Electric Company (PG&E) provides electricity and natural gas to the Project area. PG&E generates or buys electricity from hydroelectric, nuclear, renewable, natural gas, and coal facilities. PG&E provides natural gas and electricity to most of the northern two-thirds of California, from Bakersfield and Barstow to near the Oregon, Nevada, and Arizona State Line. It provides 5.2 million people with electricity and natural gas across 70,000 square miles.

4.6.1.2 Energy Consumption

Electricity use is measured in kilowatt-hours (kWh), and natural gas use is measured in therms. Vehicle fuel use is typically measured in gallons (e.g. of gasoline or diesel fuel), although energy use for electric vehicles is measured in kWh.

The electricity consumption associated with all non-residential uses in Sonoma County from 2015 to 2018 is shown in Table 4.6-1. As indicated, the demand has increased since 2015.

Table 4.6-1. Non-Residential Electricity Consumption in Sonoma County 2015–2018	
Year	Electricity Consumption (kilowatt hours)
2018	1,670,333,406
2017	1,692,708,193
2016	1,662,202,516
2015	1,661,656,412

Source: CEC 2019a

The natural gas consumption associated with non-residential uses in Sonoma County from 2015 to 2018 is shown in Table 4.6-2. As indicated, the demand has increased since 2015.

Table 4.6-2. Non-Residential Natural Gas Consumption in Sonoma County 2015–2018	
Year	Natural Gas Consumption (therms)
2018	42,105,550
2017	40,860,932
2016	39,416,758
2015	38,118,301

Source: CEC 2019b

Automotive fuel consumption in Sonoma County from 2014 to 2019 is shown in Table 4.6-3. *Automotive Fuel Consumption* has decreased between 2015 and 2019.

Table 4.6-3. Automotive Fuel Consumption in Sonoma County 2016–2019	
Year	Total Fuel Consumption (gallons)
2019	203,736,127
2018	208,441,089
2017	213,097,381
2016	215,055,699

Source: CARB 2017

4.6.2 Energy (VI) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The impact analysis focuses on the two sources of energy that are relevant to the proposed Project: the equipment-fuel necessary for Project construction and the automotive fuel use which will result from Project operations (increased visitation from new trail). Addressing energy impacts requires an agency to make a determination as to what constitutes a significant impact. There are no established thresholds of significance, statewide or locally, for what constitutes a wasteful, inefficient, and unnecessary consumption of energy for a proposed land use project. For the purpose of this analysis, the amount of fuel necessary for Project construction and operations is calculated and compared to that consumed in Sonoma County.

The amount of operational automotive fuel use was estimated using the CARB's EMFAC2017 computer program, which provides projections for typical daily fuel usage in Sonoma County. The amount of total construction-related fuel use was estimated using ratios provided in the Climate Registry's General Reporting Protocol for the Voluntary Reporting Program, Version 2.1. Energy consumption associated with the Proposed Project is summarized in Table 4.6-4.

Table 4.6-4. Proposed Project Energy and Fuel Consumption		
Energy Type	Annual Energy Consumption	Percentage Increase Countywide
Automotive Fuel Consumption		
Project Construction ¹	6,394 gallons	0.0000 percent
Project Operations 2	1,487 gallons	0.0000 percent

Source: ¹Climate Registry 2016; 2EMFAC2017 (CARB 2017) (See Appendix F – Project Fuel Consumption)

Notes: The Project increases in electricity and natural gas consumption are compared with all of the non-residential uses in the respective service provider's service area in 2018, the latest data available. The Project increases in automotive fuel consumption are compared with the countywide fuel consumption in 2019, the most recent full year of data.

As shown in Table 4.6-4, the Project's gasoline fuel consumption during the construction period is estimated to be 6,394 gallons of fuel, which would increase the annual gasoline fuel use in the county by very little; 0.0000 percent when rounded. As such, Project construction would have a nominal effect on local and regional energy supplies. No unusual Project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the state. Construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would conserve the use of their supplies to minimize costs and maximize profit. Additionally, construction equipment fleet turnover and increasingly stringent state and federal

regulations on engine efficiency combined with state regulations limiting engine idling times and require recycling of construction debris, would further reduce the amount of transportation fuel demand during Project construction. For these reasons, it is expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

Finally, as indicated in Table 4.6-4, Project operation is conservatively estimated to consume 1,487 gallons of automotive fuel per year, which would increase the annual countywide automotive fuel consumption by very little; 0.0000 percent when rounded. The amount of operational fuel use was estimated using CARB's EMFAC2017 computer program, which provides projections for typical daily fuel usage in Sonoma County. It is assumed that the trail would induce very little new visitors to the park. Trail users are assumed to be visitors already at the park that will also enjoy use of the new loop trail. Therefore, this analysis assumes that the Project would generate approximately one additional trip to the State Historic Park per day. This trip estimate is based on the ITE 9th Edition Trip Generation Manual trip rate for State Parks. The Project would not result in any unusual characteristics that would result in excessive long-term operational automotive fuel consumption. Fuel consumption associated with vehicle trips generated by the Project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

For these reasons, this impact would be less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Project would be designed in a manner that is consistent with relevant energy conservation plans designed to encourage development that results in the efficient use of energy resources. The Project Site is designated *P-P - Public/Quasi Public* by the Sonoma County General Plan and the Fort Ross Historic Park, which encompasses the Project Site, is already in use as a California State Historic Park. The Project, the construction of a trail within the park, is not inconsistent with development projections for the area and would not induce population growth. The Project would comply with relevant energy conservation policies included in the Sonoma County General Plan; many of which are included in the Open Space and Resource Conservation Element. A major overarching goal of this element is to ensure that development in the County aligns with the County's resource conservation goals. The Project would not conflict or obstruct any local or state plans for renewable energy or energy efficiency.

For these reasons, this impact would be less than significant.

4.6.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.7 Geology and Soils

4.7.1 Environmental Setting

4.7.1.1 Topography

The overall topography of FRSHP ranges from sea level along the coast, to approximately 1,500 feet in elevation further inland. The topography in the park changes from a series of flat, young coastal marine terraces along the coastline to steeper uplifted terraces further eastward. These terraces form a series of broad levels with each terrace progressively higher in elevation and older than the terrace adjacent to it on the west. The San Andreas Fault Zone, approximately 0.5 miles from the coastline in this area, marks this abrupt change in topography.

4.7.1.2 Geology

The portion of FRSHP that lies to the west of the San Andreas Fault is underlain by what is known as the Gualala block. The block includes a suite of Cretaceous and Tertiary-aged sedimentary rocks that at FRSHP include the German Rancho Formation and the Gallaway Formation (Elder 1998). The German Rancho formation is light-gray, well-bedded arkosic sandstone that includes beds that are fine, medium, and coarse-grained and is found in the north part of the park unit. The sandstone and mudstone of the Gallaway Formation, located in the south part of the park, is primarily a grayish-white arkosic sandstone interbedded with black siltstone and mudstone (CGS 2004).

These two units form the lowest emergent marine terrace from the coastline to State Route 1. Quaternary terrace deposits overlie the German Rancho and Gallaway Formations. The Gualala block, including both the German Rancho and Gallaway Formations, underlies a portion of the proposed Coastal Trail project area. The San Andreas Fault Zone divides the younger bedrock units of the Gualala and Salinian blocks from the older Franciscan Formation east of the Fault in FRSHP. The Franciscan Formation is generally characterized as sandstone and shale with greenstone, conglomerate, chert, and limestone; however, it is subdivided into coastal belt and eastern central belt rocks. The coastal belt rocks consist of silty marine sandstone, shale, conglomerate, minor limestone, and rare greenstone. The central and eastern belt rocks consist of sandstone, shale, and conglomerate much of which was sheared, crushed, and folded into a chaotic mix commonly referred to as a "mélange." Franciscan Formation does not occur within the proposed Coastal Trail project area.

4.7.1.3 Regional Seismicity and Fault Zones

An "active fault," according to California Department of Conservation, Division of Mines and Geology, is a fault that has indicated surface displacement within the last 11,000 years. A fault that has not shown geologic evidence of surface displacement in the last 11,000 years is considered "inactive." FRSHP is located on the coastal side of the Northern California Coast Ranges geomorphic province and straddle the active boundary between the Pacific and North American tectonic plates. The predominant movement along these plates is northwest-south east; however, there is also a compressive force along the plate boundary that has resulted in a series of northwest trending mountain ranges and sub-parallel fault zones. The primary and most notable active fault along the plate margin is the San Andreas Fault that trends

along the eastern boundary of Salt Point State Park (CGS 2004). It forms the boundary between these two huge tectonic plates and traverses the State of California from the head of the Gulf of California in the south to Point Arena in the north (Hirschfield 2001; CGS 2004). Additionally, the contact between the German Rancho Formation and the Gallaway Formation is considered a southwest-northeast trending fault that underlies the fort at FRSHP (CGS 2004).

The San Andreas Fault, including the segment that passes near the proposed project area, ruptured during the 1906 San Francisco Earthquake. In the Fort Ross area, roads and fences were offset 7.5 feet to 12 feet horizontally with a three-foot vertical uplift in some areas (CGS 004; DPR 1975).

4.7.1.4 Soils

According to the Web Soil Survey (NRCS 2019a), five soil units, or types, have been mapped within the Study Area. These are:

- KnE – Kneeland loam, 15 to 30 percent slopes
- KnF – Kneeland loam, 30 to 50 percent slopes
- RrC – Rohnerville loam, 0 to 9 percent slopes
- RrD – Rohnerville loam, 9 to 15 percent slopes

Rohnerville loams are formed in alluvium derived from sedimentary rock and make up the majority of the Study Area. Kneeland loams are formed in residuum weathered from sedimentary rock and are found in the northwest portion of the Study Area. None of these soil types contain hydric elements (NRCS 2019b). No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity

4.7.2 Geology and Soils (VII) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i)	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii)	Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

i and ii) The site can be expected to experience strong ground motion caused by an earthquake at least once during the lifetime due to the close proximity to the San Andreas Fault. The potential for primary surface ground rupture within the site is remote due to the absence of known active faults crossing the site. The potential for damage due to ground shaking would be minimized by proper design of the Proposed Project involves construction of a trail and will have very minimal structural element (i.e., Bridges, and boardwalks). The proposed project does not include structures that would be a risk to loss, injury, or death. Therefore, a less than significant impact would occur, and no mitigation is required.

iii) Liquefaction is a phenomenon where water-saturated granular soil loses shear strength during strong ground shaking produced by earthquakes. The loss of soil strength occurs as a consequence of cyclic pore water pressure increases below the groundwater surface. Potential hazards due to liquefaction include loss of bearing strength beneath structures, possibly causing foundation failure and/or significant settlements and differential settlements. There are no areas of liquefaction mapped within the project area at Fort Ross SHP and no structures planned for the project area. Therefore, a less than significant impact would occur, and no mitigation is required.

iv) The Proposed Project Site is not located within a State of California Seismic Hazard Zone for landslides (area unmapped), which would require an evaluation of the potential for seismically induced landslides. There are minimal slopes within the majority of the project site. Areas to the northeast that are on slightly sloped terrain are covered in vegetation that minimizes landslide potential. No landslides are mapped or were noted in areas of planned improvements. Therefore, a less than significant impact would occur and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Best Management Practices (BMPs) are included as part of the Storm Water Pollution Prevention Plan (SWPPP) prepared for the Proposed Project, and would be implemented to manage erosion and the loss of topsoil during construction-related activities (see Section 4.10.2 *Hydrology and Water Quality (X) Environmental Checklist and Discussion*). Some soil erosion could occur as a result of ground-disturbing

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activities associated with the trail construction. To minimize the potential for soil erosion during construction activities, **PSR GEO-1** and **PSR GEO-2** have been incorporated into the project design to ensure these impacts remain at a less than significant level. No mitigation is required.

PSR GEO-1: DPR will implement Best Management Practices to be used in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, or trenching.

BMPs must always be in place including, but not limited to, covering (tarping) any stockpiled materials or soils and constructing silt fences, straw bale barriers, wildlife-friendly fiber rolls, or other structures around stockpiles and disturbed areas.

PSR GEO-2: No track-mounted or heavy-wheeled vehicles will be driven through wet areas during the rainy season or when soils are saturated to avoid compaction and/or damage to soil structure.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Less than significant impact.

As noted in a) iv) above, the Proposed Project Site is not located within a State of California Seismic Hazard Zone for landslides and includes minimal slopes within the majority of the project site. No landslides are mapped or were noted in areas of planned improvements and therefore a less than significant impact would occur. No mitigation is required.

As noted in a) iii) above, there are no areas of liquefaction mapped within the project area at Fort Ross SHP and no structures planned for the project area. Therefore, no impact would occur. No mitigation necessary.

The project does not involve structures that would be susceptible to collapse in the event of a seismic event. Therefore, no impact would occur, and mitigation is not required.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

Expansive soils are those soils that have high clay content that swell when wet and shrink when dry. Soils on the project site are loams, sandy loams, and loamy sands and do not have a high clay content that would swell when wet and shrink when dry. No impact would occur, and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

Septic tanks or alternative wastewater disposal systems are not part of the Proposed Project design. No impacts would occur. No mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

There are no known unique paleontological or geologic resources existing within the project area; therefore, no impact to these resources is anticipated as a result of project implementation.

4.7.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.8 Greenhouse Gas Emissions

4.8.1 Environmental Setting

Greenhouse gases (GHGs) are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally-occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH₄ traps over 25 times more heat per molecule than CO₂, and N₂O absorbs 298 times more heat per molecule than CO₂. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO₂e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

The Northern Sonoma County Air Pollution Control District (NSCAPCD) does not promulgate GHG significance thresholds for CEQA projects. Project emissions are compared to the thresholds issued by the California Air Pollution Control Officers Association (CAPCOA), which is an association of the air pollution control officers from all 35 local air quality agencies throughout California, including the NSCAPCD. CAPCOA recommends a significance threshold of 900 metric tons of CO₂e annually. This threshold is based on a capture rate of 90 percent of land use development projects, which in turn translates into a 90 percent capture rate of all GHG emissions. The 900 metric ton threshold, the lowest promulgated in any region in the state, is considered by CAPCOA to be low enough to capture a substantial fraction of future projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

4.8.2 Greenhouse Gas Emissions (VIII) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Construction-Generated GHG Emissions

A potent source of GHG emissions associated with the Proposed Project would be combustion of fossil fuels during construction activities. The construction phase of the Proposed Project is temporary but would result in GHG emissions from the use of construction equipment and construction-related vehicle trips. The operational phase would result in minimal GHG emissions compared to baseline levels.

GHG emissions associated with the Project would occur in the short term from construction activities, consisting primarily of emissions from equipment exhaust. The approximate quantity of daily GHG emissions generated by construction equipment utilized to build the proposed Project is depicted in Table 4.8-1. Construction GHG emissions are compared to both the CAPCOA and BAAQMD thresholds of significance.

Table 4.8-1. Construction GHG Emissions – Metric Tons per Year	
Construction Activities	CO₂e
Construction Total	65
<i>CAPCOA's Potentially Significant Impact Threshold</i>	<i>900</i>
Exceed Significance Threshold?	No

Source: CalEEMod, version 2016.3.2. See Appendix G – Emissions Modeling Outputs for emission model outputs.

As shown, construction would generate a maximum of approximately 65 metric tons of CO₂e over the course of construction. Project construction would not result in the exceedance of 900 metric tons of CO₂e during construction. The generation of these GHG emissions would cease once construction is complete.

Long-Term Operational Impacts

In terms of operational GHG emissions, the Proposed Project would only generate GHG emissions due to increased traffic to the Project Site. Based on the ITE 9th Edition Trip Generation Manual (2012) trip rate for State Parks, the Project will attract one additional vehicle trip to the Fort Ross SHP per day. The Project does not propose any buildings and therefore no permanent stationary source emissions. Operational Project emissions are summarized in Table 4.8-2.

Table 4.8-2. Operational GHG Emissions - Metric Tons per Year	
Project Operation	CO₂e
Construction Emissions (amortized over the 30 year life of the project)	2
Area Source Emissions	0
Energy Source Emissions	0
Mobile Source Emissions	9

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Table 4.8-2. Operational GHG Emissions - Metric Tons per Year	
Project Operation	CO₂e
Solid Waste Emissions	1
Water Emissions	0
Total Operational Emissions	12
<i>CAPCOA's Potentially Significant Impact Threshold</i>	<i>900</i>
Exceed Significance Threshold?	No

Source: CalEEMod, version 2016.3.2. See Appendix G for emission model outputs.

As shown, Project operation would generate a maximum of approximately 12 metric tons of CO₂e. Project implementation would not result in the exceedance of 900 metric tons of CO₂e during any year of operation.

For these reasons, the Proposed Project would result in a less than significant impact related to GHG emissions. No mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Project would not conflict with any adopted plans, policies, or regulations adopted for the purpose of reducing GHG emissions. The Proposed Project is subject to compliance with statewide GHG-reducing goals promulgated by the California 2008 Climate Change Scoping Plan and subsequent updates. As discussed previously, the proposed Project-generated GHG emissions would not surpass the CAPCOA's significance threshold. CAPCOA's threshold is the lowest promulgated in any region in the state.

The Sonoma County Regional Climate Action Plan - Climate Action 2020 and Beyond (CAP), was published in July 2016. The CAP identifies strategies that will reduce countywide GHG emissions in the near term and put Sonoma County on track toward the long-term goals of reducing emissions by 40 percent below 1990 levels by 2030 and 80 percent below by 2050. The reduction measures identified in the CAP support (and exceed) the state's 2020 GHG emission reduction targets. The CAP includes state, regional, and local GHG reduction measures. The state and regional measures apply to the Project, but the local measures do not, as these apply to projects located within the limits of all participating communities in Sonoma County.

Both the existing and the projected GHG inventories in the CAP were derived based on the land use designations and associated densities defined in the Sonoma County General Plan. The Proposed Project is consistent with the land use designation and development density presented in the Sonoma County

General Plan. As previously stated, the County's General Plan designates the site as –QP - Public/Quasi Public and the Fort Ross SHP, which encompasses the Project Site, is already in use as a California State Historic Park. The Project, the construction of a trail within the park, is not inconsistent with development projections for the area and would not induce population growth. The Project is consistent with the General Plan in that it is consistent with the types, intensity, and patterns of land use envisioned for the site vicinity in the General Plan. As a result, the Project would not conflict with the land use assumptions or exceed the population or job growth projections used by the County to develop the CAP.

The CAP measures are meant to be implemented by responsible entities, as identified for each measure, which provide services to and/or oversee projects within the County. These measures are directed at government action and at commercial, residential, and industrial projects. As such, the CAP measures do not directly apply to the Proposed Project. The Project, the development of a 1.64-mile trail in an existing park, would not conflict with the GHG emission reduction goals of the County CAP. The Project emissions would be mostly attributable to construction activities, as operational GHG emissions would only result from an estimated one daily additional traffic trip above baseline traffic levels to the Fort Ross SHP, as induced by the Kashia Loop Trail Project

As such, the Proposed Project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. This impact is less than significant.

4.8.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.9 Hazards and Hazardous Materials

4.9.1 Regulatory Framework

As defined in Title 22 of the CCR, Division 4.5, Chapter 11, Article 3, hazardous materials are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are commonly used in commercial, agricultural, and industrial applications, as well as residential uses to a limited extent.

Hazardous wastes are any hazardous materials that are discarded, abandoned, or are to be recycled. If improperly handled, hazardous materials and wastes can result in public health hazards if released to the soil or groundwater through airborne releases in vapors, fumes, or dust.

In California, the USEPA has granted most enforcement authority over federal hazardous materials regulations to the California Environmental Protection Agency (Cal EPA). Cal EPA's Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Boards (RWQCBs) signed a Memorandum of Agreement (MOA) in March 2005 aimed to avoid duplication of efforts among the agencies involved in the regulatory oversight of investigation and cleanup of hazardous wastes. Under the MOA, either DTSC or the RWQCB is assigned to be the oversight agency at the beginning of the investigation and cleanup process.

The Sonoma County Hazardous Materials Unit is the Certified Unified Program Agency (CUPA) for Sonoma County. The CUPA oversees compliance with regulations regarding the following:

- Hazardous Materials Release Response Plan and Inventory (Business Plan) Program
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Hazardous Waste Generator and Hazardous Waste Onsite Treatment Program
- Aboveground Storage Tank-Spill Prevention, Control and Countermeasure Program
- Used Oil disposal program
- Household Hazardous Waste disposal program
- Integrated Waste Management Programs/ Recycling program
- Abandoned Vehicles program
- Storm Water- NPDES compliance program
- Asbestos/Lead-based Paint program, and
- Incident Response program.

4.9.1.1 Hazardous Materials Onsite

According to the DTSC EnviroStor database, the nearest hazardous material cleanup site is approximately 9.5 miles south of the Project Site. The types of materials used and stored in Fort Ross SHP that could be hazardous include fluids such as motor vehicle and mechanical equipment fuels, oils, and other lubricants. DPR maintains storage facilities for fuels and lubricant within the park unit. No storage facilities, or other structures or industrial sites that could contain hazardous materials are located at the site of the Proposed Project.

4.9.1.2 Airports

Seven airports exist throughout Sonoma County (Sonoma County General Plan, Air Transportation Element 2005). Of these, the Cloverdale Airport located about 23 air miles east-northeast of the park is the closest airport in the County to the site (Google Earth 2020). The Proposed Project is not within an airport land use zone/plan, or within two miles of a public airport or private air strip.

4.9.1.3 Schools

The closest school, Fort Ross School, is located approximately five miles east of Fort Ross SHP in the town of Cazadero.

4.9.1.4 Fire

The Fort Ross SHP is designated as a State Responsibility Area (SRA) for fire protection. The California Department of Forestry and Fire Prevention (CDF) describes the fire hazard severity for Fort Ross SHP as moderate (CDF 2007). The nearest CDF station is Sea Ranch CDF located 22 miles north of Fort Ross SHP. In addition, small volunteer fire stations are an integral part of emergency services within the park unit. The closest volunteer fire stations to the Project Site are Timber Cove Volunteer Fire Department, Sea Ranch Volunteer Fire Department, and Fort Ross Volunteer Fire Department.

4.9.2 Hazards and Hazardous Materials (IX) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Construction activities associated with the Proposed Project could require the use of certain hazardous materials such as fuels, oils, lubricants, or other fluids associated with the operation and maintenance of vehicles and equipment. Generally, these materials would be contained within vessels engineered for safe storage. Large quantities of these materials would not be stored at or transported to the Project Site; however, spills, upsets, or other construction related accidents could result in an inadvertent release of fuel or other hazardous substances into the environment.

Integration of **SPR HAZ-1** and **SPR HYDRO-1** (See Chapter 2) would ensure that adverse impacts from these incidents remain at a less than significant level.

SPR HAZ-1: Spill Prevention and Response. Prior to the start of onsite construction activities, the contractor will inspect all equipment for leaks and regularly inspect thereafter until equipment is removed from the project site. All contaminated water, sludge, spill residue, or other hazardous compounds will be contained and disposed of outside the boundaries of the site, at a lawfully permitted or authorized destination.

SPR HYDRO-1: Erosion and Sediment Control and Pollution Prevention. Prior to the start of construction involving ground-disturbing activities, the Trail Construction Manager will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for NCRWQCB approval that identifies temporary Best Management Practices (BMPs) (e.g., tarping of any stockpiled materials or soil; use of silt fences, straw bale barriers, fiber rolls, etc.) and permanent (e.g., structural containment, preserving or planting of vegetation) for use in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, trenching, repaving, or other ground-disturbing activities. The SWPPP will include BMPs for hazardous waste and

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contaminated soils management and a Spill Prevention and Control Plan (SPCP), as appropriate.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

During the Project, hazardous substances could be released to the environment from construction-related vehicle or equipment fluid spills or leaks. Integration of Project requirements **SPR HAZ-1** and **HYDRO-1** listed above (See Chapter 2) would ensure that the risk to onsite workers, the public, and the environment remains at a less than significant level.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

As noted in the Environmental Setting above, there are no schools within 0.25 miles of the Project Site. No impact.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

No part of Fort Ross SHP is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5. No areas within the Project Site are currently restricted or known to have hazardous materials present. No impact.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project is not located within an airport land use zone/plan, within two miles of a public airport, or in the vicinity of a private air strip. Therefore, the Project would not result in a safety hazard to people residing or working in the area. No impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Construction activities associated with the proposed project would occur primarily west of State Highway 1 and away from any access routes in/out of the park. Therefore, the potential impact would be less than significant for impacting emergency response/evacuation plans.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Project Site is in a rural setting with no structures in the immediate vicinity and is designated by the state as within a moderate fire hazard zone. Nevertheless, construction equipment that could become hot with extended use would be in close proximity to flammable vegetation. Improperly outfitted exhaust systems or friction between metal parts and/or rocks could generate sparks, resulting in a fire. Integration of **PSR's HAZ-2 through HAZ-6**, Wildfire Avoidance and Response (See Chapter 2) would ensure that impacts from wildfire remain less than significant.

- PSR HAZ-2: Spill Prevention and Response.** Prior to the start of onsite construction activities, the trail construction manager will prepare a Spill Prevention and Response Plan (SPRP) as part of the Storm Water Pollution Prevention Plan (SWPPP) for approval to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of vehicle fluids or other potential contaminants. This plan will include (but not be limited to):
- a map that delineates construction staging areas, where refueling, lubrication, and maintenance of equipment will occur;
 - a list of items required in a spill kit onsite that will be maintained throughout the life of the project;
 - procedures for the proper storage, use, and disposal of any solvents or other chemicals used in the restoration process; and
 - identification of lawfully permitted or authorized disposal destinations outside of the project site.
- PSR HAZ-3: Wildfire Avoidance and Response.** Prior to the start of construction, the trail construction manager will develop a Fire Safety Plan for State Parks approval. The plan will include the emergency calling procedures for both the California Department of Forestry and Fire Protection (CDF) and local fire department(s).
- PSR HAZ-4: Wildfire Avoidance and Response.** All heavy equipment will be required to include spark arrestors or turbo chargers (which eliminate sparks in exhaust) and have fire extinguishers onsite. Construction crews will park vehicles in an areas without flammable material, such as dry grass or brush. At the end of each workday, construction crews will park heavy equipment over a non-combustible surface to reduce the chance of fire.
- PSR HAZ-5: Wildfire Avoidance and Response.** DPR personnel will have a State Park radio at the Park, which allows direct contact with CDF and a centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.
- PSR HAZ-6: Wildfire Avoidance and Response.** Under dry conditions, a filled water truck and/or fire engine crew will be onsite during activities with the potential to start a fire.

4.9.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.10 Hydrology and Water Quality

4.10.1 Environmental Setting

The Project is located in the North Coast River Watershed Management Area of the North Coast Hydrologic Region (California Department of Water Resources [DWR] 2009). The only principal named drainages in the Fort Ross SHP are Kolmer Gulch and Fort Ross Creek. These streams have small

watersheds that drain directly into the Pacific Ocean. They are separated by a continuous ridgeline from the more substantial South Fork of the Gualala River to the east that parallels the coastline before turning west and flowing into the ocean at the town of Gualala.

Fort Ross SHP is located within the Fort Ross Terrace Groundwater Basin (DWR 2010). This basin consists of a series of discontinuous, uplifted marine terraces along the coastline within Mendocino and Sonoma counties. Precipitation in this basin ranges from approximately 32 to 44 inches per year.

The Project is not located within a 100-year flood zone, as determined by the Federal Emergency Management Agency (FEMA, 2010). All streams in the Project Area are subject to an increase in surface water flows from precipitation and runoff during storm events.

The Project Area falls under the jurisdiction of the North Coast RWQCB, which regulates water quality in the region and provides water quality standards and management criteria as required by the CWA. These standards and criteria are identified in the 2007 Water Quality Control Plan (Basin Plan) for the North Coast Region. The Project would comply with all applicable water quality standards as specified in the North Coast RWQCB Basin Plan. This Project would not involve the development or rehabilitation of sewage or water systems.

4.10.2 Hydrology and Water Quality (X) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Proposed Project involves the rehabilitation or construction of trail segments within Fort Ross SHP. Proposed trail work includes but is not limited to minor trail realignments, trail surfacing, boardwalk, and new trail section construction. As described in the Environmental Setting above, this Project does not involve the development or rehabilitation of sewage or water systems. Proposed ground-disturbing activities could temporarily produce sediments that contaminate nearby surface waters; however, existing trail segments with poor drainage would be improved to reduce erosion or sedimentation problems. Other temporary impacts to water quality could result from releases of fuels or other fluids from equipment during the construction process. A Storm Water Pollution Prevention Plan (SWPPP) would be required for this Project since the total area of surface disturbance exceeds one acre. The SWPPP would include DPR-approved BMPs. Incorporation of **SPR HYD-1** through **HYD-4** as well as trail Design Standards into the Project would ensure the potential for adverse impacts to surface waters remain at a less than significant level.

PSR HYD-1: Erosion and Sediment Control and Pollution Prevention

Prior to the start of construction involving ground-disturbing activities, DPRT [insert who] will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for NCRWQCB approval that identifies temporary Best Management Practices (BMPs) (e.g., tarping of any stockpiled materials or soil; use of silt fences, straw bale barriers, fiber rolls, etc.) and permanent (e.g., structural containment, preserving or planting of vegetation) for use in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, trenching, repaving, or other ground-disturbing activities. The SWPPP will include BMPs for hazardous waste and contaminated soils management and a Spill Prevention and Control Plan (SPCP), as appropriate.

PSR HYD-2: Erosion and Sediment Control and Pollution Prevention. The project will comply with all applicable water quality standards as specified in the NCRWQCB Basin Plan.

PSR HYD-3: Erosion and Sediment Control and Pollution Prevention. All construction activities will be suspended during heavy precipitation events (i.e., at least 1/2-inch of precipitation in a 24-hour period) or when heavy precipitation events are forecast.

PSR HYD-4: Erosion and Sediment Control and Pollution Prevention. If construction activities extend into the rainy season or if an un-seasonal storm is anticipated, the contractor will properly winterize the site by covering (tarping) any stockpiled materials or soils and by constructing silt fences, straw bale barriers, fiber rolls, or other structures around stockpiles and graded areas. All erosion control measures must be wildlife friendly and will not pose a threat for species to become entangled in netting.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

As described in the Environmental Setting above, this Project would have no effect on groundwater supplies or recharge from surface flows. No impact.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Less than significant impact.

- i) Existing drainage patterns within the Project Area would not be altered in a manner that would significantly increase erosion or siltation. Existing trail segments with poor drainage would be improved to reduce erosion or sedimentation problems. Incorporation of SPR **HYD-1** (above) into the Project would ensure sediment laden runoff produced by construction activities remains at a less than significant level.
- ii) The drainage patterns would not be altered in a manner that would significantly increase the rate or amount of surface runoff or result in onsite or offsite flooding. No impact.
- iii) The Proposed Project will comply with DPR Trail Design Standards and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. No stormwater drainage system is planned in association with identified trail improvements. Therefore, there is a less than significant impact from this project.
- iv) As discussed in the Environmental Setting above, The Project Site is not located in a FEMA 100-year flood zone. The Proposed Project would neither place structures nor change the landscape in a way that would impede flows. No impact.

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Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Some portions of the trail are located in areas that could be inundated by either a seiche or a tsunami. Some Project locations could be subject to mudflows or landslides during severe weather events. However, these are existing conditions and Project implementation would not introduce potential new pollutants to the park. Therefore, a less than significant impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

As described in a) above, temporary impacts to water quality could result from ground-disturbing activities that produce sediments and through releases of fuels or other fluids from equipment during the construction process. The Project will not conflict with or obstruct implementation of a water quality control plan. Incorporation of SPR **HYD-1** (see Section 2 *Project Description and Hazards and Hazardous Materials* above) into the Project would reduce any adverse impacts to surface waters to a less than significant impact.

4.10.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.11 Land Use and Planning

4.11.1 Environmental Setting

Sonoma County consists of ±1,025,000 acres (1,500 square miles). State and federal agencies, including the U.S. Bureau of Land Management (BLM), and DPR, are responsible for managing over 120,000 acres, encompassing approximately 12 percent of the total area within the County (EPS 2003). The County's coastline extends for more than 55 miles with approximately half of the coast in some form of government ownership.

Sonoma County directly administrates land use and planning policies within its boundaries with the exception of state, federal and tribal lands. The County divides itself into nine areas for planning purposes defined as Planning Areas/City Urban Service Areas. Fort Ross SHP is located in the rural Sonoma Coast

Planning Area. The majority of the planning area (2,970 acres) is designated for long-term natural open space. Land use and development in the Coastal Zone is governed by the Sonoma County Local Coastal Plan. This is a standalone policy document integrating the General Plan goals, objectives, and policies with those necessary to comply with the California Coastal Act. While the park is not subject to the Sonoma County General Plan, it is subject to the Coastal Plan/Land Use Plan, adopted by Sonoma County and certified by the CCC on December 12, 2001.

In 1972, voters passed the Proposition 20, "Coastal Protection Act" initiative. In part, it established as State policy a goal of creating the California Coastal Trail (CCT), a hiking, bicycle, and equestrian trail system along or near the entire length of the California coast. The Coastal Act of 1976 required coastal jurisdictions to identify a local alignment for the CCT in their Local Coastal Programs. In 2001, the California Legislature passed Senate Bill 908, directing the Coastal Conservancy to determine what was necessary to complete the State's CCT. The result was the report: "Completing the California Coastal Trail" to State Legislature. Today, the CCT in Sonoma County is only 32 percent complete. (Kortum 2008).

The "Sonoma Coastal Trail" as it is referred to in the Sonoma Coastal Program, is designed to provide opportunities for both hikers and bicyclists. It identifies Highway 1 as the parallel alignment that bicyclists will generally use, where it has wider paved shoulders. Hikers will utilize a trail on the coastal terrace, the beach, the uplands, and the ridge road, and will use Highway 1 where no other viable alternatives exist. Responsibility for trail maintenance should be placed with the State except where the trail passes through lands maintained for public recreation uses by other governmental entities.

The DPR Resource Management and General Development Plan for Fort Ross SHP (DPR 1975), identified a series of interpretive and recreational trails throughout the park. Trails noted on the Plan appear to be primarily beach access trails leading to "open hiking areas."

No HCPs protecting specific plant and animal species have been adopted for Fort Ross SHP. Trail construction does require a coastal permit for all new accessways from the State Coastal Commission.

4.11.2 Land Use and Planning (XI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Proposed Project would not divide an established community because none exist within the boundaries of Fort Ross SHP. Therefore, there would be no impact.

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The primary plans that pertain to the Project are the Fort Ross SHP Resource Management Plan and General Development Plan. No Project elements are in conflict with FRSHP Resource Management plan or General Development Plan.

FRSHP as noted above is located within the California Coastal Zone. Development projects within the Coastal Zone require a Coastal Development Permit. Sonoma County has a LCP certified by the Coastal Commission and assumes responsibility for issuing CDPs. DPR designed the Project for consistency with the LCP and as noted in Section 2.9, it will acquire necessary permits prior to implementing any Project components.

4.11.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.12 Mineral Resources

4.12.1 Environmental Setting

Though various minerals have been mined in Sonoma County during the past century, mining operations at the current time consist almost exclusively of the extraction and processing of rock, sand, and earth products for use in construction and landscaping. Sandstone was historically quarried in what is now SPSP and was used in the construction of San Francisco's streets and buildings during the mid-1800s.

No other significant mineral resources have been identified within the boundaries of the park units and no other known past mining activities have occurred at Fort Ross SHP. DPR policy does not permit the commercial extraction of mineral resources due to impacts to resources and in accordance with PRC § 5001.65.

4.12.2 Mineral Resources (XII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

There are no known mineral resources or locally important mineral resources located within the Fort Ross SHP. Furthermore, the Project would not change land use activities on the site and would therefore not result in the loss of availability of any mineral resources. As stated in the Environmental Setting above, under PRC § 5001.65, mining within any unit of the State Park System is prohibited. No impact.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

See discussion (a) above. No impact.

4.12.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.13 Noise

4.13.1 Environmental Setting

Noise is generally defined as sound that is loud, disagreeable, or unexpected. The selection of a proper noise descriptor for a specific source is dependent on the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the average hourly noise level (in L_{eq}) and the average daily noise levels/community noise equivalent level (in $L_{dn}/CNEL$). The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA "weighting" added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn} .
- **Community Noise Equivalent Level (CNEL)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the

hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Federal Highway Administration [FHWA] 2011). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed (FHWA 2011).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2008), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. [WEAL] 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (Caltrans 2002). The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc [HMMS] 2006).

4.13.1.1 Sensitive Noise Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The Project Site is located within a State Historic Park (Fort Ross). The Project area is largely devoid of noise-sensitive receptors; however, the Fort Ross visitor center is the nearest consistently occupied noise-sensitive receptor. The visitor center is located approximately 455 feet northeast of the nearest point of the proposed trail.

4.13.1.2 Existing Ambient Noise Environment

The Project Site is impacted by typical noise sources for historic parks. Traffic noise generated by people visiting the park and generated from Old Highway 1 to the north (as close as approximately 50 feet away from the proposed trail at the nearest point) are the dominant noise sources affecting the area.

4.13.1.3 Vibration Fundamentals

Ground vibration can be measured several ways to quantify the amplitude of vibration produced. This can be through peak particle velocity (PPV) or root mean square velocity. These velocity measurements measure maximum particle at one point or the average of the squared amplitude of the signal, respectively. Vibration impacts on people can be described as the level of annoyance and can vary depending on an individual's sensitivity. Generally, low-level vibrations may cause window rattling but do not pose any threats to the integrity of buildings or structures.

4.13.1.4 Local Noise Standards

The Project is the construction of a trail within Fort Ross SHP. The proposed 1.64-mile Kashia Loop Trail is a combination of new trail construction (1.25 miles) and trail use of existing Old Highway 1 (0.39 miles). The Project is anticipated to generate approximately one vehicle trip above current levels. The County's General Plan Noise Element establishes policies and thresholds aimed at protecting noise-sensitive land uses from elevated noise generated by operational transportation and non-transportation sources. The County's Municipal Code does not contain noise standards for operation. Neither the General Plan nor the County's Municipal Code promulgate construction noise standards or exemptions.

The applicable General Plan policies and thresholds are as follows:

Policy NE-1a: Designate areas within Sonoma County as noise impacted if they are exposed to existing or projected exterior noise levels exceeding 60 dB Ldn, 60 dB CNEL, or the performance standards of Table 4.13-1.

Policy NE-1c: Control non-transportation-related noise from new projects. The total noise level resulting from new sources shall not exceed the standards in Table 4.13-1 as measured at the exterior property line of any adjacent noise-sensitive land use. Limit exceptions to the following:

- (1) If the ambient noise level exceeds the standard in Table 4.13-1, adjust the standard to equal the ambient level, up to a maximum of 5 dBA above the standard, provided that no measurable increase (i.e., ± 1.5 dBA) shall be allowed.*

- (2) *Reduce the applicable standards in Table 4.13-1 by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises, such as pile drivers and dog barking at kennels.*
- (3) *Reduce the applicable standards in Table 4.13-1 by 5 decibels if the proposed use exceeds the ambient level by 10 or more decibels.*
- (4) *For short term noise sources which are permitted to operate no more than six days per year, such as concerts or race events, the allowable noise exposures shown in Table 4.13-1 may be increased by 5 dB. These events shall be subject to a noise management plan including provisions for maximum noise level limits, noise monitoring, complaint response and allowable hours of operation. The plan shall address potential cumulative noise impacts from all events in the area.*
- (5) *Noise levels may be measured at the location of the outdoor activity area of the noise sensitive land use, instead of the exterior property line of the adjacent noise sensitive land use where:*
 - (a) *the property on which the noise sensitive use is located has already been substantially developed pursuant to its existing zoning, and*
 - (b) *there is available open land on those noise sensitive lands for noise attenuation.*

This exception may not be used on vacant properties which are zoned to allow noise sensitive uses.

Table 4.13-1. Maximum Allowable Exterior Noise Exposures for Non-transportation Noise Sources		
Hourly Noise Metric¹, dBA	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
L ₅₀ (30 minutes in any hour)	50	45
L ₂₅ (15 minutes in any hour)	55	50
L ₀₈ (4 minutes 48 seconds in any hour)	60	55
L ₀₂ (72 seconds in any hour)	65	60

Source: Sonoma County General Plan 2020 Noise Element

Notes: The sound level exceeded n% of the time in any hour. For example, the L₅₀ is the value exceeded 50% of the time or 30 minutes in any hour; this is the median noise level.

Policy NE-1f: Require development projects that do not include or affect residential uses or other noise sensitive uses to include noise mitigation measures where necessary to maintain noise levels compatible with activities planned for the project site and vicinity.

4.13.2 Noise (XIII) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

4.13.2.1 Project Construction Noise

Construction noise associated with the Proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., building construction, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (e.g., dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Neither the Sonoma County Municipal Code nor the General Plan promulgate construction noise thresholds. Project construction is anticipated to occur over the course of approximately six to eight months and would occur along the proposed 1.64-mile trail route, within the 3,386-acre Fort Ross SHP. Visitors to the park, park employees, and construction workers would be the primary receptors exposed to Project construction noise, as the Project Site is located in a rural area away from urban development, including residential areas. There are no external noise-sensitive receptors in the immediate vicinity of the Project Site. However, the Fort Ross visitor center, located approximately 455 feet northeast of the nearest trail point and approximately 658 feet from the center of the Project Site, is the location where visitors and employees are likely to be most concentrated.

For comparison purposes, Project construction noise is compared against the construction-related noise level threshold established in the *Criteria for a Recommended Standard: Occupational Noise Exposure* prepared in 1998 by the National Institute for Occupational Safety and Health (NIOSH). A division of the US Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction-related noise level threshold starts at 85 dBA for more than eight hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per

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day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors. Since this construction-related noise level threshold represents the energy average of the noise source over a given time period, the noise level is expressed in L_{eq} .

To estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptor, the construction equipment noise levels were calculated using the Roadway Noise Construction Model. Consistent with the recommendations of the FTA (2018), construction noise is modeled from the center of the Project Site. The anticipated short-term construction noise levels generated for the necessary equipment is presented in Table 4.13-2. As shown in Table 4.13-2, the predicted maximum eight-hour noise levels at the nearest sensitive receptor could potentially reach approximately 60.8 dBA L_{eq} , which is below the NIOSH threshold of 85 dBA.

Table 4.13-2. Construction Average (dBA) Noise Levels at Nearest Receptor			
Equipment	Estimated Exterior Construction Noise Level @ Nearest Residence (dBA L_{eq})	NIOSH Construction Noise Standards (dBA L_{eq})	Exceeds Standard at Nearest Residence?
Site Preparation			
Graders (1)	58.6	85	No
Rubber Tired Dozers (1)	55.3	85	No
Tractor/ Loader/ Backhoes (1)	51.2	85	No
Combined Site Preparation Equipment	60.8	85	No
Grading			
Graders (1)	58.6	85	No
Rubber Tired Dozer (1)	55.3	85	No
Tractors/Loaders/Backhoes (1)	51.2	85	No
Combined Grading Equipment	60.8	85	No

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Appendix H for Model Data Outputs.

Notes: Construction equipment used during construction derived from CalEEMod 2016.3.2. CalEEMod is designed to calculate air pollutant emissions from construction activity and contains default construction equipment and usage parameters for typical construction projects based on several construction surveys conducted in order to identify such parameters. The distance to the nearest sensitive receptor was calculated from the center of the Project Site (approximately 658 feet). Building construction, paving and architectural coating are assumed to occur simultaneously.

As shown, no individual piece of construction equipment or cumulative construction equipment would exceed the NOISH threshold of 85 dBA at the closest sensitive receptor. As noted above, this is an extremely conservative analysis, as the proposed trail construction will not involve the majority of the equipment included in the model.

Therefore, Project construction activities would not expose persons to and generate noise levels in excess of NOISH standards. **SPR NOI-1** through **NOI-4** will ensure impacts resulting from construction noise will remain at a less than significant level.

SPR NOI-1: Noise Exposure. Internal combustion engines used for project implementation will be equipped with a muffler of a type recommended by the manufacturer. . Equipment and trucks used for Project-related activities will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts, etc.) whenever necessary.

SPR NOI-2: Noise Exposure. The contractor will locate stationary noise sources and staging areas as far from potential sensitive noise receptors, as possible. If they must be located near potential sensitive noise receptors, stationary noise sources will be muffled or shielded, and/or enclosed within temporary sheds

SPR NOI-3: Noise Exposure. Construction activities will generally be limited to the daylight hours, Monday – Friday. If work during weekends or holidays is required, no work will occur on those days before 7:00 a.m. or after 7:00 p.m. (check contract docs for time restrictions).)

SPR NOI-4: Noise Exposure. Internal combustion engines used for any purpose at the job site will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for construction will utilize the best available noise control techniques (e.g. engine enclosures, acoustically-attenuating shields, or shrouds, intake silencers, ducts) whenever necessary.

4.13.2.2 Project Operational Onsite Noise

The main operational noise sources associated with the Proposed Project would be that produced by additional visitors to Fort Ross, generated from the Proposed Project. As mentioned previously, based on the ITE Trip Generation Manual trip generation rate for State Parks, the Project is anticipated to generate approximately one vehicle trip per day (ITE 2002). One vehicle is estimated to bring anywhere from one to eight additional visitors per day. This increase in visitors to the Project Site would not be expected to result in a perceptible increase in noise. The Project would not exceed the County noise standards promulgated by the General Plan. As such, a less than significant impact would occur. No mitigation is necessary.

4.13.2.3 Project Operational Traffic Noise

Project operation would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the Project area. According to Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013), doubling of traffic on a roadway is necessary in order to result in an increase of 3 dB (a barely perceptible increase). Highway 1 is the coastal highway that connects the coastal region of Sonoma County. Based on the ITE Trip Generation Manual trip generation rate for State Parks, the Project is anticipated to generate approximately one vehicle trip per day (ITE 2012). This amount of additional traffic would not result in a doubling of traffic on the major roadways that surround the Project Site or the

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roadways that connect to Highway 1 and allow public access to the Project Site. Thus, the Project's contribution to existing traffic noise would not be perceptible. As such, operational traffic noise would be less than significant.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

4.13.2.4 Project Construction

Construction operations have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. The ground vibration levels associated with various types of construction equipment are summarized in Table 4.13-3, which shows ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels.

Table 4.13-3. Typical Construction Equipment Vibration Levels	
Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Large Bulldozer*	0.089
Caisson Drilling*	0.089
Loaded Trucks	0.076
Jackhammer*	0.035
Small Bulldozer/Tractor*	0.003

*Note, This type of heavy equipment is not anticipated for the proposed project; however, it was used to present an extremely conservative analysis.

Source: FTA 2018; Caltrans 2020

The County does not regulate vibration associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans' (2020) recommended standard of 0.2 inch-per-second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings.

It is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at the point closest to the nearest structure. The nearest structure of concern from the nearest point of the proposed trail is the Fort Ross visitor center, approximately 455 feet to the northeast. Based on the vibration levels presented in Table 4.13-3, ground vibration generated by heavy-duty

equipment would not be anticipated to exceed approximately 0.089 inch per second PPV at 25 feet. Thus, even with using the extremely conservative model, the structure located at 455 feet distant would not be negatively affected.

4.13.2.5 Project Operations

Project operations would not include the use of any stationary equipment that would result in excessive groundborne vibration levels. The Project will have a less than significant impact in this area.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No Impact.

The Charles M. Schulz Sonoma County Airport is approximately 23 miles east of the Project Site. The Project is not located within the vicinity of a private airstrip or an airport land use plan. Therefore, the Project would not expose people constructing or utilizing the trail to excessive noise levels. Thus, no impact would occur with implementation of the Proposed Project.

4.13.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.14 Population and Housing

4.14.1 Environmental Setting

Sonoma County had a population of 484,470 in 2008. Between 2000 and 2008, the County's population grew at a rate of 0.5 percent (Sonoma County Permit and Resource Management Department (PRMD), 2009). Fort Ross SHP is located in the Sonoma Coast/Gualala planning basin, which is the most sparsely populated of the nine planning regions in Sonoma County. In 1980, the 5,400 residents of this region mostly lived in various small villages; outside these small settlements, the population is limited.

The closest residential area is the Timber Cove community, located north of Fort Ross SHP (between Fort Ross SHP and Salt Point State Park). The closest unincorporated town is Jenner (11 miles to the south) and the closest incorporated city is Sebastopol (36 miles inland). Adjacent properties are ranchlands, and open space to the east. Housing within the park boundaries is limited to an intermittently used employee cabin near Call House at Fort Ross SHP. The Fort Ross SHP is a historic and recreational facility; the development of permanent housing is not a planned use of the park.

4.14.2 Population and Housing (XIV) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project proposes the construction of a new loop trail approximately 1.26 linear miles long and will not propose any elements that would induce population growth in the area. Therefore, no impact would occur.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

No housing would be moved or removed for the Project. No persons would be displaced either temporarily or permanently. No impact.

4.14.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.15 Public Services

4.15.1 Environmental Setting

Public services include fire and police protection, schools, parks, and other public facilities. Fort Ross SHP is located along State Highway 1, approximately 26 miles south of Gualala, 22 miles north of Bodega Bay and 25 miles northwest of Guerneville. The Project Site benefits from existing public services such as fire and law enforcement protection.

4.15.1.1 Police Services

DPR rangers assigned to Fort Ross SHP are Peace Officer Standards and Training-certified law enforcement officers and provide year-round law enforcement within park unit boundaries. The Sonoma County Sheriff's Substation in Guerneville, about 25 miles southeast of Fort Ross SHP, serves the coastal

areas of Sonoma County. The Sonoma County Sheriff would assist DPR with any emergency and law enforcement issues within the boundaries of the parks. The California Highway Patrol (CHP) serves as the primary law enforcement presence on interstates, state routes, and county roads. The CHP staffs a station in Santa Rosa, approximately 45 miles southeast of the Fort Ross SHP. The CHP would provide assistance along public roadways in the vicinity of the park unit.

4.15.1.2 Fire Services

CDF has primary jurisdiction for fire suppression in SRAs, including units of the State Park System (CDF 2009). The nearest CDF station is Sea Ranch CDF, 22 miles from Fort Ross SHP. In addition, small volunteer fire stations are an integral part of emergency services within the park unit. The closest volunteer fire stations to the Project Site are Timber Cove Volunteer Fire Department, Sea Ranch Volunteer Fire Department, and Fort Ross Volunteer Fire Department (Sonoma County Permit and Resource Management Department).

4.15.1.3 Schools

Fort Ross Elementary, located seven miles away, is the closest school to the Project Site.

4.15.1.4 Parks and Other Public Facilities

Many parks and recreational facilities that serve local residents and visitors are located throughout Sonoma County. Sonoma Coast State Park is located approximately 5.5 miles south of Fort Ross; Salt Point State Park is located approximately eight miles north of Fort Ross; and Tomales Bay State Park is located approximately 62 miles south of the Project Site. Palm Drive Hospital, an emergency medical facility, is located in the town of Sebastopol approximately 37 miles southeast of the project site.

4.15.2 Public Services (XV) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Fire Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other Public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Less than significant impact.

4.15.2.1 Fire Protection

No components of the Proposed Project would contribute to a substantial increase of visitation and the level of required public services is expected to remain relatively static; however, use of construction equipment in the vicinity of flammable vegetation at the Project Sites could present an increased risk of fire that could result in additional demands on CDF and local fire response teams. Any impact on services would be temporary and nothing in the Project scope would contribute to the need for an increase in the level of fire protection after construction is complete.

Integration of SPR **HAZMAT-2**, Wildfire Avoidance and Response (See Section 2) would reduce the potential impact to fire protection services to a less than significant level.

4.15.2.2 Police Services

As noted in the Environmental Setting, DPR rangers with law enforcement authority patrol Fort Ross SHP with emphasis on public use areas. DPR rangers have full law enforcement authority and only require assistance from local police as backup for unusual situations. No additional demands on rangers or local police are expected as a result of this Project. No impact.

4.15.2.3 Parks

There would be no impacts to schools, other parks, or other public facilities, as a result of the Proposed Project. No impact.

4.15.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.16 Recreation

4.16.1 Environmental Setting

Fort Ross SHP is located on the Sonoma Coast, between the communities of Gualala and Jenner. DPR's mission is to "provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation" (DPR 2004).

DPR has installed trails within Fort Ross SHP since it became part of the State Park System in 1909. Some existing trails segments are located on unsustainable grades, adjacent to precipitous cliffs, or bisect environmentally sensitive areas. Where out-and-back park trails end abruptly at a terminal point rather than forming a loop or interconnected trail complex, visitors could cut across undisturbed areas to another park trail forming volunteer trails. Volunteer trails are not designed or located to DPR standards and use of these trails could cause damage to natural and cultural resources from trampling and erosion.

The following are the Siting and Design Standards for the CCT as identified by the California Coastal Commission.

4.16.1.1 Coastal Commission

- The trail should be sited and designed to be located along or as close to the shoreline as is physically and aesthetically feasible. Where it is not feasible to locate the trail along the shoreline due to natural landforms or legally authorized development that prevents passage at all times, inland bypass trail segments located as close to the shoreline as possible should be utilized. Shoreline trail segments that may not be passable at all times should be augmented by inland alternative routes. Special attention should be given to identifying any segments that may need to be incorporated into water-crossing structures and that necessarily must be placed within Caltrans right-of-way.
- The CCT should be designed and located to minimize impacts to environmentally sensitive habitat areas and prime agriculture lands to the maximum extent feasible.
- Where appropriate, trail access should be limited to pass and repass. Where necessary to prevent disturbance to sensitive species, sections of the trail may be closed on a seasonal basis.
- Alternative trail segments shall be provided where feasible. For situations where impact avoidance is not feasible, appropriate mitigation measures should be identified, including but not limited to use of boardwalks, reducing width of trails, protective fencing, and drainage measures along edges of agricultural land.
- The CCT should be located to incorporate existing oceanfront trails and paths and support facilities of public shoreline parks and beaches to the maximum extent feasible.
- The CCT should be designed to avoid being located on roads with motorized vehicle traffic where feasible. In locations where it is not possible to avoid siting the trail along a roadway, the trail should be located off of the pavement and within the public right-of-way, and separated from traffic by a safe distance or by physical barriers that do not obstruct or detract from the scenic views and visual character of their surroundings. In locations, where the trail must cross a roadway, safe under- or over-crossings or other alternative at grade crossings should be considered in connection with appropriate directional and traffic warning signage.
- To maximize access to the CCT, adequate support facilities, such as parking areas and trailheads should be provided.

4.16.2 Recreation (XVI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

This Project would complement existing recreational use of the Sonoma Coast generally and the park in particular. The Proposed Project would include a formal trail and interpretative signage.

According to the Sonoma Coast Economic Development Board, Visitor Center Report 2018, the entire Sonoma Coast area provides recreation opportunities to over two million visitors annually with approximately 32,000 walk-in visitors to the Fort Ross SHP Visitor Center. The Proposed Project is not expected to create much (if any increase) to the existing visitor numbers but may divert users from other areas of the park or otherwise facilitate lengthier stays at the park. The interpretive signs may be a valued experience for school trips; however, the fort already gets field trip visitors due to its rich history. The Proposed Project will be ADA-compliant, making the Project area more accessible than under current conditions. However, it is not expected to result in increased use of adjacent facilities to a level that would result in physical degradation of those facilities. Implementation of **PSR CULT-2** requiring a Cultural Monitoring Plan would ensure potential impacts on cultural resources remain at a less than significant level.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Proposed Project is in fact a recreational facility located within an ecologically and culturally sensitive location. However, it was sited specifically to avoid, and has been designed to minimize resources so as avoid such adverse physical effects on the environment. Refer to the Biological Resources and Cultural Resources Sections above for specific discussions about the Project's potential effect those resources. The proposed project will create a formal trail in an area that currently has a number of volunteer trails and will return informal trails to natural conditions. The proposed construction of recreational trails on the Project Site has the potential to adversely affect the environment by impacting wetlands, special-status species, and spreading invasive plant species. **PSRs BIO-1** through **BIO-12** and **SPR CUL-1** through **CUL-**

3 as outlined in Chapter 2, as well as **SPR TCRL-1** through **PSR RCR-4** and would ensure any potential impacts remain at a less than significant level.

4.16.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.17 Transportation

4.17.1 Environmental Setting

The Proposed Project is located within the boundaries of Fort Ross SHP, in the Sonoma Coast/Gualala Basin region. This region does not have an extensive highway network due to its remote location in the county and very low population density. The major highways are Highway 1, Highway 116, Bodega Highway, and the Bohemian Highway and either two- or one-lane rural roadways. Daily busses connect the small communities along Highway 1 to Sebastopol and Santa Rosa.

Highway 1 provides primary vehicular access to park units along the coast. Highway 1, also known as the Pacific Coast Highway, is a regional attraction in itself, drawing visitors from throughout the state. Highway 1 is a two-lane highway that provides access to over 15 miles of State Park coastline that includes 29 designated parking lots (approximately 880 parking spaces) and numerous uncounted highway turnouts used for parking.

Table 4.17-1 shows visitor levels from 2015 through 2017.

Table 4.17-1. Park Visitorship	
Year	Visitors
2015	22,000
2016	22,610
2017	31,654

Source: Sonoma County Economic Development Center – Visitor Center Report 2015 to 2017

Park usage along the Sonoma Coast fluctuates between two to three million visitors per year (Sonoma County 2001). This is reflective of current visitation counts. The vast majority of park visitors are drawn to the various beaches and shoreline access points.

The Circulation and Transit Element of the County's General Plan 2020 identifies a countywide highway system goal to provide travel demand at acceptable levels of service in keeping with the character of rural and urban communities (Sonoma County 2008). Highway 1 north of Jenner experiences heavy weekend traffic as a result of steep, winding grades; the presence of heavy vehicles (including recreational vehicles); presence of coastal development and tourist attractions. There are many sightseeing trips using this scenic road. Weekday traffic volumes are relatively low but weekend congestion from visitor traffic is common; nevertheless, it is considered to have adequate levels of service (Sonoma County PRMD 2009).

4.17.2 Transportation (XVII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The proposed project is a pedestrian facility and does not conflict with any program, plan, ordinance, or policy addressing the circulation system. As noted in the Environmental Setting above, weekday traffic volumes on Highway 1 are relatively low but weekend congestion from visitor traffic is common; nevertheless, it is considered to have adequate flow (Sonoma County PRMD 2009). As stated above in 4.16.2, the Proposed Project is not expected to create much (if any) increase to the existing number of daily/yearly visitors to the park, but instead is expected to appeal to users or groups who are already visiting the park. Therefore, the Proposed Project will not conflict with any circulation plan or ordinance by contributing individually or cumulatively to congestion on any area road or highway. Additionally, the proposed project is a pedestrian trail and will comply with the goals of the California Coastal Trail. Therefore, the proposed project will have a less than significant impact. No mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Section 15064.3. of the CEQA Guidelines (Determining the Significance of Transportation Impacts) describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. Anticipated construction activities that would take place during Project construction may result in a temporary increase in VMT as a result of the movement of construction personnel, equipment, and materials to and from the Project Site; however, these impacts are temporary in nature and will not substantially increase the existing VMT associated with Fort Ross SHP. As stated above, the Proposed Project is not expected to create much (if any) increase to the existing number of daily/yearly visitors to the park and therefore would not increase VMT. Therefore, the impact is less than significant. No mitigation is required.

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Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project includes a new trail located within the Fort Ross SHP (directly off Highway 1) and does not involve any improvements to the roadways located within the park or along Highway 1. Additionally, the site would not cause any incompatible uses with existing conditions. No impact would occur, and no mitigation is required.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project would not result in a change in availability of emergency access nor create demand for additional points of emergency access. No impact would occur, and no mitigation is required.

4.17.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.18 Tribal Cultural Resources

This section describes the affected environment and regulatory setting for Tribal Cultural Resources (TCRs) in the Project Area. The following analysis of the potential environmental impacts related to TCRs is derived primarily from the following sources:

- *Archaeological Survey and Site Boundary Testing for the Kashia Loop Trail, Fort Ross State Historic Park, Sonoma County, California*. Report prepared by Far Western Anthropological Research Group (FWARG) 2019;
- Ethnographic overviews of the Kashia or Southwestern Pomo (Barrett 1908; Dowdall 1995; Kniffen 1939; Milliken 1995);
- Confidential tribal consultation conducted under DPR's departmental policy (DN No. 2007-05) and Governor's Executive Order (EO) B-10-11 between DPR and eight California Native American tribes on the California Native American Heritage Commission's (NAHC's) list of interested tribes for the region, and

- Confidential tribal consultation record conducted under Assembly Bill (AB) 52.

4.18.1 Environmental Setting

4.18.1.1 Ethnographic, Religious, and Cultural Context

According to FWAR (2019), the Project Area lies within the traditional territory of the Kashia Band of Pomo Indians of the Stewarts Point Rancheria, a federally recognized tribe historically referred to as the Kashaya or Southwestern Pomo. A map from Barrett (1908) shows several Pomo villages along this stretch of coast, with the community of “Meteni” in the general vicinity of the current Project area at Fort Ross. Pomo tribelets were small groups that each controlled a territory typically encompassing an entire drainage system, around 150 square miles or less. Village populations varied but the central settlement might consist of 200 to 400 people. Seasonal camps were placed near food sources like salmon streams or shellfish beds.

Coastal people relied primarily on the ocean for their food supply. Fish and mollusks were two of the most important foods. The vegetable food came from the seeds, roots and bulbs of the grasses and flowering and bulbous plants of the coastal shelf and from the oaks of the adjacent mountains. The coast was used from spring through summer, with winter settlements located further inland. During the warm season, shellfish and marine fish were caught, and deer were hunted on the terrace. Women gathered roots from the wet meadows on coastal terraces, including wild celery, onion, and potato. In late spring and early summer, the coastal terrace was burned to promote edible forbs and seeds and inhibit colonization by the closed-cone pine forest.

Milliken (2010) developed a Contact-Period Native California Community Distribution Model that represents the sociopolitical landscape of native California at the time of first Spanish contact, from the 1770s to 1830s. The current Project Area at Fort Ross is within Milliken’s Russian Gulch region, with the main Pomo tribelet or rancheria identified as Tsubatcemali. Population density for this area is estimated at 2.21 persons per square mile at contact; similar population densities are estimated for adjacent territories north and south.

The Fort Ross settlement was founded in 1812 and inhabited by Russians, Alaska Natives (from the Aleutian Islands, Kodiak Island, Kenai Peninsula, and Prince William Sound), local Native Americans (Kashia Pomo, Central Pomo, Southern Pomo, and Coast Miwok), and Creoles (mixed Russian and Native). The colony’s population was anywhere between 300 and 500 individuals, usually with fewer than 100 of any one group. The Russians were primarily males, while women were mostly local Natives (Schwartz 1977). In the late 1840s, Charles Meyer began recreating the ranching and farming economy at the fort with the help of some Native Californians, mainly Kashaya Pomo. A census provided to Mariano Vallejo by William Benitz in January 1848 lists 148 Indians working on the ranch.

4.18.2 Regulatory Setting

4.18.2.1 Assembly Bill 52

Effective July 1, 2015, AB 52 amended CEQA to require that: 1) a lead agency provide notice to those California Native American tribes that requested notice of projects proposed by the lead agency; and 2)

for any tribe that responded to the notice within 30 days of receipt with a request for consultation, the lead agency must consult with the tribe. Topics that may be addressed during consultation include TCRs, the potential significance of project impacts, type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

Section 21073 of the PRC defines California Native American tribes as “a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004.” This includes both federally and non-federally recognized tribes.

Section 21074(a) of the PRC defines TCRs for the purpose of CEQA as:

- 1) Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - a. included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR); and/or
 - b. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or
 - c. a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria a and b also meet the definition of an Historical Resource under CEQA, a TCR may also require additional consideration as an Historical Resource. TCRs may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies provide tribes that requested notification an opportunity to consult at the commencement of the CEQA process to identify TCRs. Furthermore, because a significant effect on a TCR is considered a significant impact on the environment under CEQA, consultation is used to develop appropriate avoidance, impact minimization, and mitigation measures.

In accordance with Section 21082.3(c)(1) of the PRC, “... information, including, but not limited to, the location, description, and use of the tribal cultural resources, that is submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with subdivision (r) of Section 6254 of, and Section 6254.10 of, the Government Code, and subdivision (d) of Section 15120 of Title 14 of the CCR, without the prior consent of the tribe that provided the information.” Therefore, the details of tribal consultation summarized herein are provided in a confidential administrative record and not available for public disclosure without written permission from the tribes.

4.18.2.2 Department of Parks and Recreation Policy 2007-05

In November 2007, DPR issued Policy 2007-05, which sets forth an internal procedure for consultation with Native California Indians regarding activities that affect matters relating to their heritage, sacred sites, and cultural traditions. The intent of Policy 2007-05 is to consult with both federally and non-federally recognized tribes or groups of Native California Indian people.

Policy 2007-05 outlines steps for DPR to engage in open, respectful, ongoing consultation with appropriate Native California Indian tribes or groups in the proper management of areas, places, objects, or burials associated with their heritage, sacred sites, and traditional cultural properties or cultural traditions in the State Park System. It vests the District superintendent of each park district with the primary responsibility for Native American consultation. Under Policy 2007-05, there are nine areas of activity in which consultation is required:

1. Acquisition of properties where cultural sites are present;
2. During the General Plan process and/or development of Management Plans;
3. Planning, design, and implementation of capital outlay and other public works and development projects;
4. Issues of concern identified by the tribes;
5. Plant and mineral gathering by Native people;
6. Access to Native California Indian ceremonial sites;
7. Archaeological permitting;
8. Mitigation of vandalism and development of protective measures at Native California Indian sites; and
9. When using the Native voice in presenting the story of Native California Indian people in park units.

The Policy outlines detailed procedures that guide the consultation process, from initiation to conclusion. Consultation is initiated when DPR contacts tribes from the NAHC's list of tribes for the affected area. Consultation is concluded when:

- the parties to the consultation come to a mutual resolution concerning the appropriate measures for preservation or mitigation; or
- either California State Parks or the tribe, acting in good faith and after reasonable effort, concludes that the parties are at an impasse and resolution cannot be reached concerning the appropriate measure(s) of preservation or mitigation.

When a mutual resolution is reached, an MOA may be written and the Project may proceed by implementing the measures agreed upon. If an impasse is reached, written documentation of all efforts

and alternatives shall be forwarded to the Departmental Preservation Officer (DPO) for review. The DPO may recommend mitigation or preservation measures for the project, alternatives to the project, abandonment of the project, or proceeding with the project as planned and shall forward their justified recommendation to the Director for the final measures regarding the project.

4.18.2.3 Executive Order B-10-11

EO B-10-11 was signed by California Governor Edmond G. Brown Jr. on September 9, 2011. It affirms that the State of California has an important relationship with California Native American Tribes and recognizes the right of these Tribes to exercise sovereign authority over their members and territory.

Under EO B-10-11, the State of California was required to adopt and implement mutually beneficial policies and engage in meaningful consultation between the State of California and the Tribes as sovereign nations, including both federally recognized tribes and other California tribes.

EO B-10-11 established the position of Governor's Tribal Advisor within the Office of the Governor. The Tribal Advisor is responsible for overseeing and implementing effective government-to-government consultation between the administration and Tribes on policies that affect California tribal communities. The Tribal Advisor serves as a direct link between the Tribes and the Governor of the State of California and facilitates communication and consultations between the Tribes, the Office of the Governor, state agencies, and agency tribal liaisons.

Under EO B-10-11, it is State policy for every state agency and department subject to the Governor's executive control to encourage communication and consultation with California Indian Tribes. Agencies and departments permit elected officials and other representatives of tribal governments to provide meaningful input into the development of legislation, regulations, rules, and policies on matters that may affect tribal communities.

4.18.3 Summary of Tribal Consultation Under EO B-10-11 and DPR Policy 2007-05

Tribal consultation mandated under the regulatory framework of EO B-10-11 is specific to California state agencies, and tribal consultation mandated by DPR Policy 2007-05 is specific to DPR itself. Neither of these two rules mandate identification of TCRs, which are specific to AB 52. However, information gathered from tribal consultation under DN 2007-05 and/or EO B-10-11 can help inform the likelihood for TCRs to occur in the Project Area.

DPR has been in continued consultation with seven tribes on the NAHC's list of tribes for the Project Area, including the following:

- Federated Indians of Graton Rancheria (FIGR);
- Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia);
- Mishewal-Wappo Tribe of Alexander Valley (Mishewal-Wappo);
- Cloverdale Rancheria of Pomo Indians of California (Cloverdale Rancheria);
- Dry Creek Rancheria Band of Pomo Indians (Dry Creek Rancheria);

- _Lytton Rancheria of California, and (Lytton Rancheria);
- Middletown Rancheria.

Native American consultation has continued throughout the course of the Project under these policies. TCRs were never discussed specifically in consultation with any tribe; however, Fort Ross is located on the tribal lands of the Kashia and the ethnographic village of Metini. DPR has determined that the entirety of Metini is a TCR, and Metini encompasses the entire Project Area. The cemetery at Fort Ross has descendants of Federated Indians of Graton Rancheria (FIGR) buried there, and DPR has similarly determined the Fort Ross cemetery is a TCR; however, the current Project does not involve the cemetery.

DPR was successful in consulting with FIGR and Kashia. Other tribes that responded to the project were Cloverdale Rancheria, Lytton Rancheria, and Middletown Rancheria. In July 2019 Cloverdale responded deferring to the Kashia for the proposed project. In June 2019 Lytton responded and had no issues with the project, and Dry Creek never responded. Consultation with FIGR is summarized under Section 4.18.4 *Summary of Tribal Consultation Under AB 52*. A summary of tribal consultation with Kashia is provided below.

4.18.3.1 Kashia Band of Pomo Indians of Stewarts Point Rancheria

Consultation between DPR and Kashia has occurred since the beginning of Project planning. Kashia representatives have participated in most of the field meetings to work out trail details, provided constructive input, and walked all the iterations of the trail alignment.

Numerous field meetings were held to discuss the trial alignment, resources concerns, and construction methods with the Project team members. These meetings were held on August 1, September 22, and November 11, 2018, and July 16, 2019. Lorin Smith, the Kashia Tribal Historic Preservation Officer (THPO) at the time attended most of these field visits.

As a result, Kashia requested avoidance of all identified archaeological sites, supported minimal testing for site boundary delineation, and requested there be no further excavations to formally determine site significance. DPR has designed the trail alignment to largely avoid all known remnants of tribal cultural artifacts associated with TCRs.

On December 16, 2019 Kashia provided State Parks with a letter supporting the Kashia Loop Trail Project and expressing gratitude for the collective effort to help protect the many culturally important resources at Metini. The letter also requested the following protections: installation of fencing along the trail (in specific areas to keep people on the trail), relocation of interpretive stops away from sensitive areas, and development of a five-year (semi-annual) monitoring plan.

Although TCRs were never discussed specifically during consultation between DPR and Kashia, and although Kashia did not request consultation under AB 52, Fort Ross is located on the tribal lands of the Kashia and the village of Metini, a TCR. DPR's consulting relationship with Kashia is ongoing.

4.18.4 Summary of Tribal Consultation Under AB 52

AB52 consultation requirements went into effect on July 1, 2015, for all projects that had not already published a Notice of Intent to Adopt a Negative Declaration or MND or published a Notice of Preparation of an EIR (Section 11 [c]) before that date. At the time DPR was ready to initiate CEQA review, it had received written requests to receive Project notices from four California Native American Tribes which identified themselves as being traditionally and culturally affiliated with the lands subject to DPR jurisdiction:

- Federated Indians of Graton Rancheria (FIGR);
- Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia);
- Middletown Rancheria of Pomo Indians of California (Middletown Rancheria); and
- Mishewal-Wappo Tribe of Alexander Valley (Mishewal-Wappo).

On August 14, 2018, DPR determined that it had a complete Project description and it was ready to begin review under CEQA. DPR mailed initial notification letters to FIGR, Kashia, Middletown Rancheria, and Mishewal Wappo with an invitation to consult on the Project. DPR requested responses to the offer to consult within 30 days of the receipt of the letter. A second round of letters was sent on June 12, 2019, and DPR again requested responses to the offer to consult within 30 days of the receipt of the letter.

- FIGR was the only tribe to respond to the August 14, 2018, letter requesting consultation, but the consultation they requested was not directed at the Project specifically. The tribe sent another letter on July 23, 2019, stating FIGR's concerns are with the interpretive element of the Project and with any work in the Fort Ross Cemetery. The tribe expressed desire to consult and collaborate on the Project.
- Kashia received DPR's invitation to consult under AB 52 after they had already been involved with the Project planning as part of ongoing consultation under DN 2007-05 or EO B-10-11, as it is standard protocol for DPR to engage Kashia from beginning of all projects at Fort Ross.
- Middletown Rancheria tribe responded on September 05, 2018, to the letter sent by DPR on August 23, 2018, and requested the tribe be contacted in the event of inadvertent discoveries during Project work. The tribe did not request formal consultation pursuant to AB 52. No further consultation efforts were pursued after receiving this message.
- Mishewal-Wappo did not respond to DPR's attempts to initiate consultation pursuant to AB 52.

DPR's correspondence and consultation with FIGR is summarized below.

4.18.4.1 Federated Indians of Graton Rancheria

Upon receipt of DPR's initial August 14, 2018, consultation letter, FIGR sent a letter requesting government-to-government consultation regarding various issues and concerns at the park with DPR's Department Historic Preservation Officer (DHPO). During consultation, FIGR did not request field visits or

meetings related to the development of the Kashia Loop Trail; the tribe's main concern was with any work in the cemetery, which is not a part of the current Project.

On July 23, 2019, DPR received a letter from the tribe stating there are no concerns with the Kashia Loop Trail project. The tribe stated that the Kashia Loop Trail does not seem related to the tribal groups affiliated to FIGR; however, the tribe has an interest in the interpretive element of the project. Subsequent phone conversations between DPR and FIGR's THPO Buffy McQuillen provided clarity with respect to the tribe's interest in the Project's interpretive element. DHPO Leslie Hartzell has been designated to work with FIGR on the design of the interpretive element.

On June 12, 2020 via phone conversation, THPO Buffy McQuillen stated the tribe defers to the Kashia for Project work in the park, with the exception of the Fort Ross Cemetery, where descendants of FIGR tribal members are buried.

No TCRs were identified by FIGR inside the current Project Area during consultation. Although the cemetery at Fort Ross has descendants of the tribe buried there, and the DPR considers the Fort Ross cemetery a TCR pursuant to criteria set forth subdivision (c) of PRC § 5024.1, the cemetery is not a part of the current Project.

4.18.4.2 Tribal Cultural Resources

Information about potential impacts to TCRs was drawn from:

1. existing ethnographic maps and information about pre-contact lifeways and settlement patterns;
2. information on archaeological site records obtained from the California Historical Resource Information System and archaeological field survey and site testing conducted by FWARG in 2019; and
3. the tribal consultation record under DN No. 2007-05, Governor's Executive Order B-10-11, and AB52.

4.18.4.3 Ethnographic Information

Ethnographic sources indicate the Project Area is in the traditional territory of the Kashia or South Western Pomo. A map from Barrett (1908) shows several Pomo villages along this stretch of coast, with the community of "Meteni" mapped in the general vicinity of the Project Area. The current Project Area at Fort Ross is within Milliken's (2010) Russian Gulch region, with the main Pomo tribelet or rancheria identified as Tsubatcemali. Tsubatcemali is mapped several miles southeast of Fort Ross on Barrett's 1908 map.

4.18.4.4 Archaeological Site Records

The entire Project Area was subjected to an archaeological survey and records search review. Seven Native American archaeological sites and three Native American isolated artifacts were identified within the Project Area:

- CA-SON-228/H, a multicomponent site (pre-contact and historic-period) with artifact scatter and structural remains;
- CA-SON-1453, a pre-contact site with fire features and artifact scatter;
- CA-SON-1454/H, a multicomponent site with an artifact scatter, rock art, a timber chute and wharf remains;
- CA-SON-1888, a pre-contact shell midden site;
- CA-SON-1889, a pre-contact shell midden site;
- FR-13, a pre-contact shell midden site;
- FR-22, a pre-contact site with fire features and artifact scatter;
- FR-3, isolated pre-contact artifact;
- FR-5, isolated pre-contact artifact;
- FR-12, isolated pre-contact artifact.

The Sacred Lands File Search with the NAHC did not identify sacred sites in the project area. DPR has determined that the seven archaeological sites have cultural value to a California Native American tribe as defined in PRC § 21074, and are eligible for listing in the CRHR as defined in PRC § 5020.1(k), and are therefore considered TCRs. FWARG, in consultation with Kashia, conducted archaeological testing along the peripheries of several of these resources located nearest to the trail alignment. FWARG determined the Native American sites do not extend into the current trail alignment. FWARG and DPR developed avoidance measures for the seven sites. The isolated artifacts are not themselves considered TCRs, but represent the tangible, physical remains of TCRs, and will be avoided by all Project activities.

4.18.4.5 Tribal Consultation Results

Kashia and FIGR both identified Fort Ross as a traditional place of cultural importance during consultation, and DPR considers Fort Ross itself, including the entire Project Area, to be significant pursuant to criteria set forth in subdivision (c) of PRC § 5024.1. This conclusion is supported by archaeological and ethnographic research indicating that it is the location of the ethnographic Kashaya village of “Meteni”, or Metini as identified by Kashia. Consultation and collaboration are ongoing between DPR and both FIGR and Kashia under DN No. 2007-05 and EO B-10-11. During consultation, the Project design was subject to many revisions to lessen impacts to the physical remains of TCRs, as follows.

FWARG and DPR developed protective measures and project requirements to lessen or maintain impacts to Native American cultural resources (physical expressions of TCRs) to less than significant levels. Kashia requested avoidance of all identified archaeological sites and supported the minimal testing for site boundary delineation so the archaeological resources could be avoided. Kashia also requested installation of fencing along the trail in specific areas to keep people on the trail, relocation of interpretive stops away from sensitive areas, and development of a five-year (semi-annual) monitoring plan.

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As a result of continued consultation with Kashia during the planning phases, fencing along the parts of the trail was incorporated into the final Project design plans. Along 180 LF of trail construction from Interpretive Stop A-2 to Interpretive Stop A-10, a symbolic fencing barrier will be installed on one side of the trail to discourage off-trail travel into sensitive resources. The symbolic fencing barrier consists of 0.5-inch vinyl coated wire rope supported approximately 32 inches above ground by vertical metal anchors (5/8-inch diameter.). Anchors are placed at 15-foot intervals and driven into the ground approximately 36 inches.

FIGR's concerns with the current Project are related to the development of the interpretive panels, not with TCRs within the current Project Area.

4.18.5 Tribal Cultural Resources (XVIII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria © forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The ethnographic location of Metini encompasses the entire Project Area and is considered a TCR. Additionally, all seven Native American sites are considered TCRs, and the isolates are considered elements of Metini. The boundaries of the seven sites have been tested for presence/absence of cultural material and project plans have been designed to avoid impacts where feasible. Project plans have

fencing installed at areas along the trail to encourage visitors to stay on the trail near areas of sensitive resources. Finally, PSRs have been incorporated to avoid significant impacts to TCRs by avoiding the physical and tangible elements of the TCRs (seven sites and three isolates) that could occur as a result of the Project. This will be accomplished through both avoidance and the establishment of ESAs near areas of trail construction.

Further, measures have been developed that address potential impacts to TCRs by extending tribal members from Kashia and any other interested Native American tribe the opportunity to participate in pre-construction meetings, give contractor awareness training about TCRs, participate in installation of avoidance measures, and monitor aspects of the Project near known tangible physical elements associated with Metini. Additionally, development of a five-year monitoring plan will assure the tribal representatives can monitor the trail twice a year to assure TCRs continue to be protected.

Finally, excavations that occur in association with development of the Project could affect unknown TCRs buried on the property, and if so, the resulting damage to the resources could be considered a significant impact. However, with implementation of **PSRs TRC-1** through **TRC-3** listed below and **PSRs CUL-1** through **PSR CUL-3** included in the cultural section, the potential impact on known TCRs is considered less than significant.

PSR TCR-1: Tribal Coordination. The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned within or near site CA-SON-1454/H.

PSR TCR-2: Avoidance of TCRs. In coordination with Project Requirement **PSR CUL-1** through **PSR CUL-3**, at least three weeks in advance of Project construction, the Construction Manager will notify California State Parks Archaeologist, the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date. Kashia will be provided given an opportunity to monitor trail construction during earth moving work.

Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment.

The following avoidance measures shall be implemented, in coordination with the implementation of avoidance measures for cultural resources under **PSR CUL-1** through **PSR CUL-3**:

- An ESA shall be established a minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east.
- An ESA shall be established a minimum of 15 feet (4.6 meters) around the site boundaries of SON-1453, SON-1889, SON-1454/H, and FR-13.
- FR-22, FR-3, FR-5, and FR-12 will be avoided by all project activity.

A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation.

Any potential TCRs or any discoveries including human remains that are observed in any location will be subject to the decision process in CUL-2 and subsequent consultation between the monitoring tribe(s) and DPR to evaluate and, if necessary, treat the discovery to the satisfaction of DPR.

PSR TCR-3: Interpretive Signage. DPR will develop the interpretive signage for the Kashia Loop Trail Project in consultation with the Federated Indians of Graton Rancheria.

4.18.6 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.19 Utilities and Service Systems

4.19.1 Environmental Setting

The following utilities and service systems are available at Fort Ross SHP for park visitors and DPR personnel. Most utilities and services within the park unit are concentrated at locations such as the Visitor Center and its public restrooms, day use areas and at park residences.

4.19.1.1 Water Service

Water service to Fort Ross SHP is provided exclusively by a DPR-owned spring-fed pond and treatment facility within the park. The existing water supply system at Fort Ross includes existing water treatment building, well, evaporation pond (1.3-acre feet) and storage tanks.

4.19.1.2 Wastewater

Sewage treatment is provided via an existing septic system. The Fort Ross SHP septic system consists of a leach field located south of the visitor center and on the west side of the unnamed creek near the Call House. This field services the Call House, the visitor center, and a small staff cabin. Inside the fort compound are two pit toilets (holding tanks) that are frequently pumped by a private contractor. The final septic system, a leach field, is located at the Archery Camp east of Highway 1 and serves the kitchen and the restrooms at the camp.

4.19.1.3 Solid Waste

DPR park personnel collect trash waste from day use facilities and park residences and transport it to large bins where it is removed.

4.19.1.4 Other Service Systems

PG&E supplies electricity; Verizon provides phone service.

4.19.2 Utilities and Service Systems (XIX) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Proposed Project will not require new use, construction, or relocation of the following facilities: water, wastewater, stormwater drainage, electrical power, natural gas, or telecommunications. Therefore, the Project will have no impact on these services/facilities. No mitigation is required.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The water supply at Fort Ross SHP is adequate to meet existing demand. Although the Project could slightly increase usage of the trail and consequently the park, overall water use is not expected to change as a result of this Project. No impact would occur, and no mitigation is required.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

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As described in the Environmental Setting, DPR utilizes septic systems and leach fields for the treatment and removal of wastewater from the public at Fort Ross SHP. DPR would not install wastewater facilities as part of the Proposed Project. During construction of the Proposed Project, a temporary portable toilet may be needed during construction activities. Wastewater generated at the portable toilets would be contained in holding tanks and transported for disposal at approved offsite locations. No impact. No mitigation is required.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Project does not have a solid waste component and would not increase solid waste disposal needs for either park unit. Trucks provided by DPR and/or its Contractor would remove debris from Project-related activities. No impact would occur, and no mitigation is required.

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

No impact.

The Proposed Project will comply with all federal, state, and local management and reduction statutes and regulations related to solid waste. No impact would occur, and no mitigation is required.

4.19.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.20 Wildfire

4.20.1 Environmental Setting

Typically, the California fire season extends from spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in the air. These conditions, when combined with high winds and years of drought, increase the potential for wildfire to occur. CDF provides wildland fire protection services on private, non-federal lands for the purpose of life, property, and resource protection. The U.S. Forest Service and BLM provide wildland fire protection

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services on federal lands in Federal Responsibility Areas for watershed and resource protection. Some areas are also identified as Local Responsibility Areas.

4.20.2 Wildfire (XX) Environmental Checklist and Discussion

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Project Site is located in an isolated location away from urbanized areas or private structures within a moderate fire hazard severity zone in an SRA. Work will be within areas that are mostly open grasslands with low-lying vegetation. However, equipment that could become hot with extended use would be in close proximity to flammable vegetation (under dry conditions). Improperly outfitted exhaust systems or friction between metal parts and rocks could cause sparks. Under dry conditions, which frequently occur in California, any sparks could ignite vegetation and cause a fire. Integration of Project Requirement HAZ- Wildfire Avoidance and Response (see Chapter 2) would ensure that impacts related to wildfire remain less than significant.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

As described above, the Project is located within a moderate fire hazard severity zone in an SRA. The project does not involve construction of structures. The trail would be constructed of non-flammable materials such as decomposed granite. The Project will have a minimal impact on the vegetation and trees currently found along the alignment. Therefore, the Proposed Project would not expose visitors to increased wildfire risk. Impacts are less than significant.

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If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

See discussion above. New infrastructure is not proposed that would exacerbate existing fire risk or result in temporary or ongoing impacts. Maintenance of the Project Area would be similar to existing conditions and impacts would be less than significant.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

As state above, the Proposed Project is not located in an SRA classified as very high fire hazard. The Proposed Project would not create a new source of exposure for people or structures to significant risks including flooding or landslides as a result of runoff, post-fire slope instability or drainage changes. Therefore, the impact is considered less than significant. No mitigation is required.

4.20.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.21 Mandatory Findings of Significance

4.21.1 Mandatory Findings of Significance (XXI) Environmental Checklist and Discussion

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

The Proposed Project was evaluated for potential significant adverse impacts to the natural environment. The Project Area supports certain special-status animal species and natural communities. DPR has determined that the Proposed Project would have the potential to degrade the quality of the habitat and/or reduce the number or restrict the range of rare or endangered animals including Behren's silverspot butterfly, California Giant Salamander, California red-legged frog, Foothill Yellow-legged Frog, Northwestern pond turtle, Red-Bellied Newt, nesting birds and sensitive bat species. The Project also would have the potential to degrade water quality by causing erosion, sedimentation, and release of pollutants, such as vehicle fluids and elevated metal concentrations into the environment. In addition the site is rich with example of California history and prehistory and the project has been designed to avoid these resources. However, full integration of all Project requirements (listed in sections above as well as in Chapter 5) into this Project would reduce those impacts, both individually and cumulatively, to a less than significant level.

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

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The Proposed Project has been designed to minimize or avoid impacts to known resources and will not further contribute to cumulatively considerable impacts. The Project will create a designated ADA-compliant trail and remove and restore volunteer trails within the area back to their natural conditions. Therefore, the Proposed Project actions will not have impact that are considered cumulatively considerable when combined with other projects within the area in relation to existing conditions.

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Less than significant impact.

Most Project-related environmental effects have been determined to pose a less than significant impact on humans. However, possible impacts from fugitive dust (Air Quality), earthquakes (Geology and Soils), construction accidents, spills, and wildfire (Hazards and Hazardous Waste), and construction-generated noise (Noise) and traffic control (Transportation/Traffic), though temporary in nature, have the potential to result in significant adverse effects on humans. These potential impacts would remain at less than significant levels if all Project requirements are fully integrated into this project.

SECTION 5.0 SUMMARY OF PROJECT REQUIREMENTS

DPR will implement the following project requirements to reduce project impacts from the Fort Ross State Historic Park Kashia Loop Trail.

5.1 General

SPR GEN -1: Prior to the start of onsite construction work, Construction Manager will consult with the Project Manager to identify all resources that must be protected.

5.2 Aesthetics

SPR AES-1: Turnpike Construction. Materials used in turnpike construction will be native rock materials, with emphasis on aggregate material that blends with soils native to the respective turnpike locations.

5.3 Agricultural Resources

No project requirements or mitigation measures are necessary.

5.4 Air Quality

SPR AIR-1: Fugitive Dust and Ozone

- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- All construction areas (dirt/gravel roads and surrounding dirt/gravel area) will be watered at least twice daily during dry, dusty conditions.
- All trucks hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All construction-related equipment and engines will be maintained in proper tune (according to manufacturer's specifications), and in compliance with all State and federal requirements.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points.
- Excavation and grading activities will be suspended if sustained winds exceed 25 miles mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads.

- Earth or other material that has been transported onto paved roadways by trucks, construction equipment, erosion, or other project-related activity will be promptly removed.

SPR AIR-2: Fugitive Dust and Ozone. During dry, dusty conditions, all active construction areas will be lightly sprayed with water to reduce dust without causing runoff

SPR AIR-3: Fugitive Dust and Ozone

- All trucks or light equipment hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.
- All gasoline-powered equipment will be maintained according to manufacturer's specifications, and in compliance with all State and federal requirements

SPR AIR-4: Fugitive Dust and Ozone. Paved streets adjacent to the Park shall either be swept or washed at the end of each day, or as required, to remove excessive accumulations of silt and/or mud that could have resulted from project-related activities.

SPR AIR-5: Fugitive Dust and Ozone. Excavation and grading activities will be suspended when sustained winds exceed 20 miles per hour (mph), instantaneous gusts exceed 30 mph, or when dust occurs from remediation related activities where visible emissions (dust) cannot be controlled by watering or conventional dust abatement controls.

5.5 Biological Resources

SPR BIO-1: Special-Status Plant Species. The following shall be conducted prior to initiation of project construction:

- Conduct pre-construction special-status plant surveys following agency protocols within the Project impact areas.
- Establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones should be maintained until the completion of construction.
- Clothing, vehicles, and equipment, including shoes and the undercarriage and tires/tracks, should be cleaned prior to entering the Project area to avoid the introduction and spread of invasive plant species.
- Any materials used for the Project, such as fill dirt or erosion control materials, should be from weed-free locations or certified weed free.
- Dust generation should be kept to a minimum near special-status plant occurrences

PSR BIO-2: Behren's Silverspot Butterfly

- A DPR-approved biologist will conduct surveys for the larval host plants (western dog violet) in areas that will be impacted by the Project. Surveys will be conducted prior

to Project implementation and when the plants were in a phenological stage favorable for positive identification (i.e., during the species blooming period).

- Locations of larval host plants located within areas of potential construction impacts will be flagged by a DPR-approved biologist and an exclusion zone with a radius of 10 feet around the plant(s) will be established prior to the start of construction activities. If avoidance of host plant habitat is not possible, construction in those areas will not be allowed from April 1 through July 31 in order to protect pupae or larvae during the primary feeding season.

PSR BIO-3: California Giant Salamander Habitat. The following shall be conducted prior to initiation of project construction:

- ADPR-approved personnel will conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat onsite. If CGS are found during a survey, salamanders should be moved from the work area to the nearest CDFW-approved relocation site. Barrier fencing would be used to exclude CGS from work areas after the survey/relocation is complete.
- During construction within or near stream habitat, only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment. An onsite biological monitor will inspect work areas daily for CGS.

PSR BIO-4: Foothill Yellow-Legged Frog

- A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of foothill yellow-legged frog (FYLF) within and near stream habitat onsite. It would include protection measures to insure that this species and other sensitive resources would not be impacted to a significant level by project activities.
- Prior to the beginning of construction a DPR-approved biologist shall install barrier fencing to exclude FYLF habitat from work areas.
- A DPR-approved biologist or biological monitor will conduct pre-construction surveys for FYLF. If FYLF is located within the project area, they will be relocated outside the work area by a CDFW or DPR-approved biologist.
- Periodic surveys for sensitive biological resources would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion.
- Only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) shall be used.

PSR BIO-5: California Red-Legged Frog

- Construction personnel will be instructed and trained by a USFWS or DPR-approved biological monitor in the life history of the California red-legged frog (CRLF) and its habitat, and trained in the appropriate protocol to follow in the event that a CRLF is found onsite.
- Prior to the beginning of construction, a DPR-approved biologist shall install barrier fencing to exclude CRLF habitat from work areas. A DPR-approved biological monitor will be onsite during all activities within 50 feet of onsite streams to ensure there are no impacts to individual CRLF that might potentially move through the project area during dispersal.
- Immediately prior to the start of work each morning, a USFWS or DPR-approved biological monitor will conduct a visual inspection of the construction zone in those areas within 50 feet of onsite stream habitat.
- If a CRLF is found, start of work at that project location will not begin until the species moves out of the site on its own accord or is relocated by a USFWS or DPR biologist authorized to handle CRLF.
- Work will be confined to daylight hours to avoid activities during periods when CRLF are known to be active.

PSR BIO-6: Red-Bellied Newt. The following shall be conducted prior to initiation of project construction:

- DPR-approved personnel would be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) within or near stream habitat onsite. If red-bellied newts are found near the construction site, newts would be moved from the work area to the nearest CDFW-approved relocation site as described in the Project's LSAA. Barrier fencing should be used to exclude red-bellied newt from work areas after the survey/relocation is complete.
- Where habitat for red-bellied newt habitat is identified, only wildlife friendly erosion control materials would be used (no monofilament plastic mesh or line) for erosion control to reduce the risk of entrapment during construction.
- A DPR-approved biological monitor would inspect work areas daily for red-bellied newt

PSR BIO-7: Northwestern Pond Turtle

- A pre-construction training session conducted by a DPR-approved biologist will be provided for construction personnel. This training will discuss sensitive biological resources that could occur within or adjacent to project areas, including the potential presence of northwestern pond turtle. It would include protection measures to insure

that these species and other sensitive resources would not be impacted to a significant level by project activities.

- Prior to the beginning of construction, a DPR-approved biologist or biological monitor will conduct pre-construction surveys for these aquatic species. If the species is located within the project areas they will be relocated outside the work area by the DPR-approved biologist or biological monitor.
- Periodic surveys for sensitive biological resources would be conducted by a district environmental scientist or DPR-approved biological monitor, at their discretion.

PSR BIO-8: Nesting Bird. The following shall be conducted prior to initiation of project construction:

- Surveys for active raptor nests would be conducted within a 500-foot radius of project areas.
- The surveys would be conducted within 7 days prior to the beginning of construction at each work site. If nesting raptors are found, no construction would occur within a 500-foot radius of the nest tree between March 1 and August 31, or until the young have fledged and the young would no longer be impacted by project activities (as determined by a DPR-approved biologist).
- Surveys for active migratory bird nests would be conducted within a 100-foot radius of the project area 7 days prior to commencement of construction at each work site. If active nests are located, all construction disturbance activities within a 100-foot radius of the nest tree would be postponed until the end of the breeding season (August 31) or until the young have fledged and the young are no longer impacted by project activities (as determined by a DPR-approved biologist)

PSR BIO-9: Bats. The following shall be conducted prior to initiation of project construction:

- For work activities conducted during the bat maternity season (i.e., February 1 through September 31), a bat specialist will conduct a survey for bats within 100 feet of the project area where trees are present. If bat roosts are observed, a buffer area with a 100-foot radius will be established around the roost in which no work activities would be allowed to occur until the breeding season is completed.
- If work activities have to be conducted near known bat roosts, only those activities that the bat specialist determines could occur without significant impacts to bats will be conducted within 100 feet of the bat roost during the bat maternity season.

PSR BIO-10: Sonoma Tree Vole. The following shall be conducted prior to initiation of project construction:

- A DPR-approved biologist would conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction) where suitable Douglas fir and bishop pine trees would be removed. .

- If Sonoma tree vole or their nests are found during surveys, a no-disturbance buffer around nest trees should be established. If avoidance is not possible, additional measures should be determined in consultation with CDFW.

PSR BIO-11: American Badger

- A DPR-approved biologist will conduct pre-construction surveys for American badger denning habitat in appropriate grassland locations.
- If badger dens are located within 50 feet of the project area, then these sites will be mapped and fenced off prior to the start of construction activities, and completely avoided during the breeding season of June 1 through October 15.

PSR BIO-12: Jurisdictional Water and Wetlands Best Management Practices. The following BMPs shall be implemented:

- To control sedimentation during construction and after project implementation, appropriate erosion control best management practices (i.e., installation of straw wattle, jute netting, etc.) shall be implemented to minimize adverse effects on jurisdictional areas in the vicinity of the Project.
- Project activities within the jurisdictional areas shall occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies. Deviations from this work window can be made with permission from the relevant regulatory agencies.
- During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site. In addition, all Project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them.
- Any substances which could be hazardous to aquatic species resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering jurisdictional areas.
- All refueling, maintenance, and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.

5.6 Cultural Resources

PSR CUL-1: ESA.

- In coordination with TCR-1, the ESAs will be clearly delineated on construction plans and noted for avoidance. At least three weeks in advance of Project construction, the Construction Manager will notify State Parks Archaeologist and the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date.
- Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment.
- A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation.
- ESAs shall be established for each site as follows:
 - A minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east;
 - A minimum of 15 feet (4.6 meters) around the site boundaries of CA-SON-1453, CA-SON-1889, CA-SON 1454/H, and FR-13;
 - A minimum of four (1.2 meters) to 6 feet (1.8 meters) around selected features of F11, to be determined at the pre-construction meeting between the construction manager, project foremen, construction crews, and State Parks Archaeologist.
 - The Parks Archaeologist will be notified when construction begins and will inspect the construction area on a periodic basis to ensure that the ESAs have not been breached. The Parks Archaeologist will be present for removal of the ESA flagging and/or fencing post-construction.
- The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned near sites CA-SON-228/H, -1453, -1454/H, and -1889.

PSR CUL-2: Unanticipated Discovery. In the event of a potential post-review discovery, inadvertent effect, or ESA violation (e.g., ground-disturbing work occurs outside of delineated areas), all work will stop within 100 feet of the location of the discovery, effect, or violation. The Parks Archaeologist will notify the Kashia Pomo and other Native American groups (if not

already onsite). Evaluation and treatment options would be determined in direct communication with each party, as applicable.

If subsurface deposits believed to be cultural or human in origin are discovered during construction and the find includes human remains, or remains that are potentially human, a qualified professional archaeologist, in coordination with the Parks Archaeologist, shall ensure reasonable protection measures are taken to protect the discovery from further disturbance (Assembly Bill [AB] 2641).

The archaeologist shall notify the Sonoma County Coroner (as per § 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, then the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work cannot resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

PSR CUL-3: Cultural Monitoring Plan. A comprehensive Cultural Monitoring Plan will be implemented for the Project and will include both construction and long-term post-construction monitoring. Monitoring will be conducted by a California State Parks Archaeologist and a Native American representative affiliated with the area.

Construction Monitoring will be implemented at the discretion of the California State Park archaeologist and will focus on those locations where trail construction is adjacent to archaeological sites (CA-SON-228/H, -1453, -1454/H, and 1889). The California State Parks Archaeologist with assistance from a Tribal Representative, will monitor other construction activities as deemed necessary.

The long-term post-construction monitoring plan entails walking the Kashia Loop Trail at least two times per year, including a buffer on either side of the trail to assess potential impacts from increased use of the terrace on archaeological sites. This shall be done over a five-year period. If impacts are noted, DPR in collaboration with Kashia will take steps to minimize these impacts with the development of an action plan, which identifies treatments appropriate for the noted impacts.

5.7 Energy

No project requirements or mitigation measures are necessary.

5.8 Geology and Soils

SPR GEO-1: Erosion Control BMPs. DPR will implement Best Management Practices to be used in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, or trenching.

BMPs must always be in place including, but not limited to, covering (tarping) any stockpiled materials or soils and constructing silt fences, straw bale barriers, wildlife-friendly fiber rolls, or other structures around stockpiles and disturbed areas.

SPR GEO-2: Debris Slide/Flow. No track-mounted or heavy-wheeled vehicles will be driven through wet areas during the rainy season or when soils are saturated to avoid compaction and/or damage to soil structure.

5.9 Greenhouse Gas Emissions

No project requirements or mitigation measures are necessary.

5.10 Hazards and Hazardous Materials

SPR HAZ-1: Spill Prevention and Response. Prior to the start of onsite construction activities, the construction manager will inspect all equipment for leaks and regularly inspect thereafter until equipment is removed from the project site. All contaminated water, sludge, spill residue, or other hazardous compounds will be contained and disposed of outside the boundaries of the site, at a lawfully permitted or authorized destination.

SPR HAZ-2: Spill Prevention and Response. Prior to the start of onsite construction activities, the construction manager will prepare a Spill Prevention and Response Plan (SPRP) as part of the Storm Water Pollution Prevention Plan (SWPPP) for the construction approval to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of vehicle fluids or other potential contaminants. This plan will include (but not be limited to);

- a map that delineates construction staging areas, where refueling, lubrication, and maintenance of equipment will occur;
- a list of items required in a spill kit onsite that will be maintained throughout the life of the project;
- procedures for the proper storage, use, and disposal of any solvents or other chemicals used in the restoration process; and identification of lawfully permitted or authorized disposal destinations outside of the project site.

- SPR HAZ-3: Wildfire Avoidance and Response.** Prior to the start of construction, the construction manager will develop a Fire Safety Plan for State Parks approval. The plan will include the emergency calling procedures for both the California Department of Forestry and Fire Protection (CDF) and local fire department(s).
- SPR HAZ-4: Wildfire Avoidance and Response.** All heavy equipment will be required to include spark arrestors or turbo chargers (which eliminate sparks in exhaust) and have fire extinguishers on-site.
- Construction crews will park vehicles in an areas without flammable material, such as dry grass or brush. At the end of each workday, construction crews will park heavy equipment over a non-combustible surface to reduce the chance of fire.
- SPR HAZ-5: Wildfire Avoidance and Response.** DPR personnel will have a State Park radio at the Park, which allows direct contact with CalFire and a centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.
- SPR HAZ 6: Wildfire Avoidance and Response.** Under dry conditions, a filled water truck and/or fire engine crew will be onsite during activities with the potential to start a fire.

5.11 Hydrology and Water Quality

- SPR HYD-1: Erosion and Sediment Control and Pollution Prevention.** Prior to the start of construction involving ground-disturbing activities, DPR will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for NCRWQCB approval that identifies temporary Best Management Practices (BMPs) (e.g., tarping of any stockpiled materials or soil; use of silt fences, straw bale barriers, fiber rolls, etc.) and permanent (e.g., structural containment, preserving or planting of vegetation) for use in all construction areas to reduce or eliminate the discharge of soil, surface water runoff, and pollutants during all excavation, grading, trenching, repaving, or other ground-disturbing activities. The SWPPP will include BMPs for hazardous waste and contaminated soils management and a Spill Prevention and Control Plan (SPCP), as appropriate.
- SPR HYD-2: Erosion and Sediment Control and Pollution Prevention.** The project will comply with all applicable water quality standards as specified in the NCRWQCB Basin Plan.
- SPR HYD-3: Erosion and Sediment Control and Pollution Prevention.** All construction activities will be suspended during heavy precipitation events (i.e., at least 1/2-inch of precipitation in a 24-hour period) or when heavy precipitation events are forecast.
- SPR HYD-4: Erosion and Sediment Control and Pollution Prevention.** If construction activities extend into the rainy season or if an un-seasonal storm is anticipated, the contractor will properly winterize the site by covering (tarping) any stockpiled materials or soils and by constructing silt fences, straw bale barriers, fiber rolls, or other structures around

stockpiles and graded areas. All erosion control measures must be wildlife friendly and will not pose a threat for species to become entangled in netting.

5.12 Land Use and Planning

No project requirements or mitigation measures are necessary.

5.13 Mineral Resources

No project requirements or mitigation measures are necessary.

5.14 Noise

SPR NOI-1: Noise Exposure. Internal combustion engines used for project implementation will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for Project-related activities will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts) whenever necessary.

SPR NOI-2: Noise Exposure. The contractor will locate stationary noise sources and staging areas as far from potential sensitive noise receptors, as possible. If they must be located near potential sensitive noise receptors, stationary noise sources will be muffled or shielded, and/or enclosed within temporary sheds.

SPR NOI-3: Noise Exposure. Construction activities will generally be limited to the daylight hours, Monday – Friday. If work during weekends or holidays is required, no work will occur on those days before 7:00 a.m. or after 7:00 p.m. (check contract docs for time restrictions).

SPR NOI-4: Noise Exposure. Internal combustion engines used for any purpose at the job site will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for construction will utilize the best available noise control techniques (e.g. engine enclosures, acoustically-attenuating shields, or shrouds, intake silencers, ducts) whenever necessary.

5.15 Population and Housing

No project requirements or mitigation measures are necessary.

5.16 Public Services

No project requirements or mitigation measures are necessary.

5.17 Recreation

No project requirements or mitigation measures are necessary.

5.18 Transportation/Traffic

No project requirements or mitigation measures are necessary.

5.19 Tribal Cultural Resources

PSR TRC-1: Tribal Cultural Resources. The Kashia Pomo and any other interested Native American groups should be informed well before construction about proposed Project Activities that are planned within or near site CA-SON-1454/H.

PSR TRC-2: Tribal Cultural Resources. Avoidance of TCRs. In coordination with Project Requirement **PSR CUL-1** through **PSR CUL-3**, at least three weeks in advance of Project construction, the Construction Manager will notify California State Parks Archaeologist, the Kashia Band of Pomo Indians of Stewarts Point Rancheria (Kashia) of the beginning construction date. Kashia will be provided given an opportunity to monitor trail construction during earth moving work.

Prior to construction, a meeting will be held between the construction manager, project foremen, construction crews, representatives of the Kashia, representatives of any other interested Native American Groups, and a State Parks Archaeologist to discuss the ESAs and fence installation along certain portions of the trail alignment.

The following avoidance measures shall be implemented, in coordination with the implementation of avoidance measures for cultural resources under Project Requirement **PSR CUL-1** through **PSR CUL-3**:

- An ESA shall be established a minimum of six feet (1.8 meters) around the site boundary of CA-SON-228/H where the trail is constrained by the park boundary on the north and Old Highway 1 on the northeast and east;
- An ESA shall be established a minimum of 15 feet (4.6 meters) around the site boundaries of SON-1453, SON-1889, SON-1454/H, and FR-13;
- FR-22, FR-3, FR-5, and FR-12 will be avoided by all project activity.
- A State Parks Archaeologist, or a qualified professional archaeologist, will work with the contractor to install temporary fencing and/or flagging around the ESAs at least 7 calendar days prior to initiating any work in the area. The contractor will contact the Parks archaeologist no less than 14 calendar days prior to the installation date of ESA fencing. No less than one week prior to the installation date, the archaeologist will contact Kashia and offer the opportunity for a tribal member to participate in the ESA fence installation.
- Any potential TCRs or any discoveries including human remains that are observed in any location will be subject to the decision process in CUL-2 and subsequent consultation between the monitoring tribe(s) and DPR to evaluate and, if necessary, treat the discovery to the satisfaction of DPR.

PSR TCR-3: Interpretive Signage. DPR will develop the interpretive signage for the Kashia Loop Trail Project in consultation with the Federated Indians of Graton Rancheria.

5.20 Utilities and Service Systems

No project requirements or mitigation measures are necessary.

SECTION 6.0 LIST OF PREPARERS

6.1 Department of Parks and Recreation (Lead Agency)

Brad Michalk, Statewide CEQA Coordinator, Northern Service Center

Dionne Gruver, Senior Archeologist, Northern Service Center

Bill Maslach, Senior Park and Recreation Specialist Sonoma-Mendocino District

Brendan O'Neil, Senior Biologist Sonoma-Mendocino District

Gary Shannon, Trail Design

6.2 ECORP Consulting, Inc.

CEQA Documentation/Air Quality/Biological Resources/Cultural Resources/Greenhouse Gas/Noise

Chris Stabenfeldt, AICP, Program Manager

Amberly Morgan, Senior Environmental Planner

Matteo Rodriquez, Assistant Environmental Planner

Tom Scofield, Senior Biologist

Hannah Stone, Biologist

Thea Fuerstenberg, Senior Archaeologist

Seth Meyer, Air Quality and Noise Specialists

Laura Hesse, Technical Editor

6.3 Far Western

Jeffrey Rosenthal, M.A., RPA

Patricia Mikkelsen, M.A., RPA

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SECTION 8.0 LIST OF APPENDICES

Appendix A – Criteria Air Pollutants, ECORP Consulting, Inc. 2020

Appendix B – Biological Resources Assessment, ECORP Consulting, Inc. 2020

Appendix C – Botanical Survey Report, California State Park (William Maslach) 2020

Appendix D - Update to the Wetland Delineation and Botanical Survey Reports for the Fort Ross Cultural Trail Project, William Maslach, California State Parks

Appendix E – CONFIDENTIAL REPORT – Archaeological Survey and Site Boundary Testing for the Kashia Loop Trail, Fort Ross State Historic Park, Sonoma County, California, Far Western Anthropological Research Group, Inc. 2019.

Appendix F – Project Fuel Consumption, ECORP Consulting, Inc. 2020.

Appendix G – Emissions Modeling Outputs, ECORP Consulting, Inc. 2020.

Appendix H – Roadway Construction Noise Model, ECORP Consulting, Inc. 2020.

APPENDIX A

Criteria Air Pollutants, ECORP Consulting, Inc. 2020

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

Fort Ross Cultural Trail

Sonoma-North Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	75
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - The current PGE CO2 intensity factor is 290 lb/Mwh.

Land Use - 1.25 mi. of new trail plus cultural stops. Additional area included to account for all soil disturbance.

Construction Phase - The Project consists of site preparation and grading, anticipated to occur over several months.

Vehicle Trips - Institute of Transportation Engineers' 9th Edition Trip Generation Manual- State Parks generate 0.65 trips per acre daily. 100% primary trips & trip length is to nearest City- Santa Rosa.

Energy Use -

Solid Waste - 15 lbs. of trash per day is anticipated to be generated by trail use. 15 lbs./day * 365 days= 5475 lbs/ year = 2.7 tons/yr.

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	3168
tblConstructionPhase	NumDays	4.00	43.00
tblConstructionPhase	NumDays	2.00	45.00
tblGrading	AcresOfGrading	16.13	1.50
tblGrading	AcresOfGrading	22.50	1.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	2.70
tblVehicleTrips	HO_TL	0.00	45.00
tblVehicleTrips	HO_TTP	0.00	100.00
tblVehicleTrips	HS_TL	0.00	45.00
tblVehicleTrips	HW_TL	0.00	45.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	0.02
tblVehicleTrips	SU_TR	0.00	0.02
tblVehicleTrips	WD_TR	0.00	0.02

2.0 Emissions Summary

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6056	17.4530	7.9520	0.0182	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,767.3961	1,767.3961	0.5423	0.0000	1,780.9523
Maximum	1.6056	17.4530	7.9520	0.0182	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,767.3961	1,767.3961	0.5423	0.0000	1,780.9523

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6056	17.4530	7.9520	0.0182	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,767.396 1	1,767.396 1	0.5423	0.0000	1,780.952 3
Maximum	1.6056	17.4530	7.9520	0.0182	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,767.396 1	1,767.396 1	0.5423	0.0000	1,780.952 3

[illegible]

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	8.4600e-003	0.0550	0.1648	5.9000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		59.6221	59.6221	2.0500e-003		59.6734
Total	0.0440	0.0550	0.1719	5.9000e-004	0.0489	5.9000e-004	0.0495	0.0131	5.6000e-004	0.0137		59.6375	59.6375	2.0900e-003	0.0000	59.6898

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	8.4600e-003	0.0550	0.1648	5.9000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		59.6221	59.6221	2.0500e-003		59.6734
Total	0.0440	0.0550	0.1719	5.9000e-004	0.0489	5.9000e-004	0.0495	0.0131	5.6000e-004	0.0137		59.6375	59.6375	2.0900e-003	0.0000	59.6898

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	4/30/2021	5	45	
2	Grading	Grading	5/1/2021	6/30/2021	5	43	

Acres of Grading (Site Preparation Phase): 1**Acres of Grading (Grading Phase): 1.5****Acres of Paving: 1.61****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2929	0.0000	5.2929	2.8990	0.0000	2.8990			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041		1,666.5174	1,666.5174	0.5390		1,679.9920
Total	1.5558	17.4203	7.5605	0.0172	5.2929	0.7654	6.0583	2.8990	0.7041	3.6031		1,666.5174	1,666.5174	0.5390		1,679.9920

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

3.2 Site Preparation - 2021**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603
Total	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2929	0.0000	5.2929	2.8990	0.0000	2.8990			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920
Total	1.5558	17.4203	7.5605	0.0172	5.2929	0.7654	6.0583	2.8990	0.7041	3.6031	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

3.2 Site Preparation - 2021**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603
Total	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603

3.3 Grading - 2021**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5536	0.0000	4.5536	2.4867	0.0000	2.4867			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869		1,365.0648	1,365.0648	0.4415		1,376.1020
Total	1.2884	14.3307	6.3314	0.0141	4.5536	0.6379	5.1915	2.4867	0.5869	3.0736		1,365.0648	1,365.0648	0.4415		1,376.1020

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

3.3 Grading - 2021**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603
Total	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5536	0.0000	4.5536	2.4867	0.0000	2.4867			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020
Total	1.2884	14.3307	6.3314	0.0141	4.5536	0.6379	5.1915	2.4867	0.5869	3.0736	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

3.3 Grading - 2021**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603
Total	0.0498	0.0327	0.3916	1.0100e-003	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		100.8787	100.8787	3.2600e-003		100.9603

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.4600e-003	0.0550	0.1648	5.9000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		59.6221	59.6221	2.0500e-003		59.6734
Unmitigated	8.4600e-003	0.0550	0.1648	5.9000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		59.6221	59.6221	2.0500e-003		59.6734

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	1.40	1.40	1.40	22,932	22,932
Total	1.40	1.40	1.40	22,932	22,932

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

5.0 Energy Detail

Historical Energy Use: N

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Unmitigated	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

7.0 Water Detail

Fort Ross Cultural Trail - Sonoma-North Coast County, Summer

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

Fort Ross Cultural Trail

Sonoma-North Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	75
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - The current PGE CO2 intensity factor is 290 lb/Mwh.

Land Use - 1.25 mi. of new trail plus cultural stops. Additional area included to account for all soil disturbance.

Construction Phase - The Project consists of site preparation and grading, anticipated to occur over several months.

Vehicle Trips - Institute of Transportation Engineers' 9th Edition Trip Generation Manual- State Parks generate 0.65 trips per acre daily. 100% primary trips & trip length is to nearest City- Santa Rosa.

Energy Use -

Solid Waste - 15 lbs. of trash per day is anticipated to be generated by trail use. 15 lbs./day * 365 days= 5475 lbs/ year = 2.7 tons/yr.

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	3168
tblConstructionPhase	NumDays	4.00	43.00
tblConstructionPhase	NumDays	2.00	45.00
tblGrading	AcresOfGrading	16.13	1.50
tblGrading	AcresOfGrading	22.50	1.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	2.70
tblVehicleTrips	HO_TL	0.00	45.00
tblVehicleTrips	HO_TTP	0.00	100.00
tblVehicleTrips	HS_TL	0.00	45.00
tblVehicleTrips	HW_TL	0.00	45.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	0.02
tblVehicleTrips	SU_TR	0.00	0.02
tblVehicleTrips	WD_TR	0.00	0.02

2.0 Emissions Summary

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6117	17.4608	7.9305	0.0181	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,760.2136	1,760.2136	0.5421	0.0000	1,773.7654
Maximum	1.6117	17.4608	7.9305	0.0181	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,760.2136	1,760.2136	0.5421	0.0000	1,773.7654

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6117	17.4608	7.9305	0.0181	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,760.2136	1,760.2136	0.5421	0.0000	1,773.7654
Maximum	1.6117	17.4608	7.9305	0.0181	5.3951	0.7661	6.1612	2.9261	0.7048	3.6309	0.0000	1,760.2136	1,760.2136	0.5421	0.0000	1,773.7654

[illegible]

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	8.0900e-003	0.0600	0.1540	5.6000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		56.4757	56.4757	1.9900e-003		56.5254
Total	0.0436	0.0600	0.1611	5.6000e-004	0.0489	5.9000e-004	0.0495	0.0131	5.6000e-004	0.0137		56.4910	56.4910	2.0300e-003	0.0000	56.5417

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	8.0900e-003	0.0600	0.1540	5.6000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		56.4757	56.4757	1.9900e-003		56.5254
Total	0.0436	0.0600	0.1611	5.6000e-004	0.0489	5.9000e-004	0.0495	0.0131	5.6000e-004	0.0137		56.4910	56.4910	2.0300e-003	0.0000	56.5417

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	4/30/2021	5	45	
2	Grading	Grading	5/1/2021	6/30/2021	5	43	

Acres of Grading (Site Preparation Phase): 1**Acres of Grading (Grading Phase): 1.5****Acres of Paving: 1.61****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction**3.2 Site Preparation - 2021****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2929	0.0000	5.2929	2.8990	0.0000	2.8990			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041		1,666.5174	1,666.5174	0.5390		1,679.9920
Total	1.5558	17.4203	7.5605	0.0172	5.2929	0.7654	6.0583	2.8990	0.7041	3.6031		1,666.5174	1,666.5174	0.5390		1,679.9920

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

3.2 Site Preparation - 2021**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734
Total	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2929	0.0000	5.2929	2.8990	0.0000	2.8990			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920
Total	1.5558	17.4203	7.5605	0.0172	5.2929	0.7654	6.0583	2.8990	0.7041	3.6031	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

3.2 Site Preparation - 2021**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734
Total	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734

3.3 Grading - 2021**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5536	0.0000	4.5536	2.4867	0.0000	2.4867			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869		1,365.0648	1,365.0648	0.4415		1,376.1020
Total	1.2884	14.3307	6.3314	0.0141	4.5536	0.6379	5.1915	2.4867	0.5869	3.0736		1,365.0648	1,365.0648	0.4415		1,376.1020

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

3.3 Grading - 2021**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734
Total	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5536	0.0000	4.5536	2.4867	0.0000	2.4867			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020
Total	1.2884	14.3307	6.3314	0.0141	4.5536	0.6379	5.1915	2.4867	0.5869	3.0736	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

3.3 Grading - 2021**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734
Total	0.0559	0.0405	0.3700	9.4000e-004	0.1022	7.3000e-004	0.1029	0.0271	6.8000e-004	0.0278		93.6963	93.6963	3.0900e-003		93.7734

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.0900e-003	0.0600	0.1540	5.6000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		56.4757	56.4757	1.9900e-003		56.5254
Unmitigated	8.0900e-003	0.0600	0.1540	5.6000e-004	0.0489	5.6000e-004	0.0495	0.0131	5.3000e-004	0.0136		56.4757	56.4757	1.9900e-003		56.5254

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	1.40	1.40	1.40	22,932	22,932
Total	1.40	1.40	1.40	22,932	22,932

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

5.0 Energy Detail

Historical Energy Use: N

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Unmitigated	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0355	7.0000e-005	7.1700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

7.0 Water Detail

Fort Ross Cultural Trail - Sonoma-North Coast County, Winter

7.1 Mitigation Measures Water**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

APPENDIX B

Biological Resources Assessment ECORP Consulting, Inc. 2020

Biological Resources Assessment

Fort Ross State Historic Park Kashia Loop Trail Project

Sonoma County, California

Prepared for:

California Department of Parks and Recreation

October 13, 2020



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LIST OF ACRONYMS AND ABBREVIATIONS

ACE	Areas of Conservation Emphasis
BA	Biological assessment
BCC	Birds of conservation concern
BMP	Best management practices
BO	Biological opinion
BRA	Biological Resources Assessment
CCA	California Coastal Act of 1976
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California giant salamander
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRLF	California red-legged frog
CRPR	California Rare Plant Rank
CWA	Clean Water Act
ESA	Endangered Species Act
ESHAs	Environmentally sensitive habitat areas
FYLF	Foothill yellow-legged frog
IPaC	Information, Planning and Consultation
LCP	Local Coastal Program
MBTA	Migratory Bird Treaty Act
MMP	Mitigation and monitoring plan
mph	Miles per hour
MSL	Mean sea level

LIST OF ACRONYMS AND ABBREVIATIONS

NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary high-water mark
Project	Fort Ross State Historic Park Kashia Loop Trail
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Application
SNRC	Spade Natural Resources Consulting
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WBWG	Western Bat Working Group

1.0 INTRODUCTION

At the request of the California Department of Parks and Recreation, ECORP Consulting, Inc. has conducted a Biological Resources Assessment (BRA) for the proposed Fort Ross State Historic Park Kashia Loop Trail (Project) in Sonoma County, California. The purpose of the assessment was to collect information on the biological resources present or with the potential to occur in the Project Study Area, assess potential biological impacts related to Project activities, and identify potential mitigation measures to inform the Project's California Environmental Quality Act (CEQA) documentation for biological resources.

1.1 Project Location

The 2.82-acre Study Area is in the Fort Ross State Historic Park located in Sonoma County, 11 miles northwest of the town of Jenner on State Route 1 (SR-1, 19005 Coast Highway One, Jenner, California 95450, Figure 1. *Project Location and Vicinity*). The Study Area is bounded by SR-1 to the northeast and the Pacific coast to the south and west. The Study Area corresponds to the unsectioned Muniz Land Grant within the "Plantation, California" and the "Fort Ross, California" 7.5-minute quadrangles (U.S. Geological Service [USGS] 1977, 1978, respectively). The approximate center of the Study Area is located at latitude (NAD83) 38.515682° and longitude (NAD83) -123.251692° within the Gualala-Salmon Watershed (Watershed #18010109) (Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016).

1.2 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitats and sensitive habitats such as wetlands, riparian communities, and Sensitive Natural Communities within the Study Area.

This assessment includes information generated from assessment-level and determinate surveys of the Study Area, including special-status plant surveys and an aquatic resources delineation. This assessment does not include determinate field surveys for wildlife species.

This assessment includes a preliminary analysis of impacts on biological resources anticipated to result from the Project, as presently defined. The mitigation recommendations presented in this assessment are based on the preliminary impact analysis, a review of existing literature, the results of site reconnaissance surveys, and the technical studies described above. These surveys and technical studies are discussed in detail in Sections 3.0 (Methods) and 4.0 (Results).

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of the CEQA Guidelines;

- are identified as a species of special concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as birds of conservation concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" [California Rare Plant Rank (CRPR) 1 and 2] ", "plants about which more information is needed" (i.e., species with a CRPR of 3), or "plants of limited distribution – a watch list" (i.e., species with a CRPR of 4);
- are plants listed as rare under the California Native Plant Protection Act (NPPA, California Fish and Game Code, § 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, §§ 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

Only species that fall into one of the above-listed groups were considered for this assessment. While other species (i.e., special-status lichens, California Natural Diversity Database- (CNDDDB-) tracked species with no special status) are sometimes found in database searches or within the literature, these species were not included within this analysis.

1.3 Project Description

The Project is a proposed pedestrian interpretive trail route totaling approximately 2.97 miles. The Project encompasses the integration of new trail construction (approximately 1.34 miles), and existing road and trail routes (approximately 1.63 miles). The Project would include construction or redesign of interpretive stopping points, wood bridges, and a wood boardwalk.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The ESA protects plants and animals that are listed as endangered or threatened by the USFWS and the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code 1538). Under Section 7 of ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued

existence of the species. Section 10 of ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan is developed.

Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify Critical Habitat for listed species. If direct and/or indirect effects will occur to Critical Habitat that appreciably diminish the value of Critical Habitat for both the survival and recovery of a species, the adverse modifications will require formal consultation with USFWS or NMFS. If adverse effects are likely, the applicant must conduct a biological assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat to establish and justify an "effect determination." The federal agency reviews the BA; if it concludes that the project may adversely affect a listed species or its habitat, it prepares a BO. The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat.

Critical Habitat and Essential Habitat

Critical Habitat is defined in Section 3 of the ESA as:

1. the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and
2. specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features essential to the conservation of the species (16 USC 1533). Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential lifecycle needs of the species (areas on which are found the primary constituent elements). Primary constituent elements are the physical and biological features essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

1. Space for individual and population growth and for normal behavior
2. Food, water, air, light, minerals, or other nutritional or physiological requirements
3. Cover or shelter
4. Sites for breeding, reproduction, or rearing (or development) of offspring
5. Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized under the MBTA, USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of non-game birds in § 3800, migratory birds in § 3513, and birds of prey in § 3503.5 of the California Fish and Game Code.

2.1.3 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into “Waters of the United States” without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b). The USEPA also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.2 State or Local Regulations

2.2.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) protects species of fish, wildlife, and plants listed by the State as endangered or threatened. Species identified as candidates for listing may also receive protection. Section 2080 of the California ESA prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California ESA allows for take incidental to otherwise lawful projects under permits issued by CDFW.

2.2.2 Fully Protected Species

The State of California first began to designate species as “fully protected” prior to the creation of the federal and the California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. Fully protected species are identified in the California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish.

These sections of the California Fish and Game Code provide that fully protected species may not be taken or possessed at any time, including prohibition of CDFW from issuing incidental take permits for fully protected species under the California ESA. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit and may allow incidental take for lawful activities carried out under an approved Natural Community Conservation Plan within which such species are covered.

2.2.3 Native Plant Protection Act

The NPPA of 1977 (California Fish and Game Code §§ 1900-1913) was established with the intent to “preserve, protect and enhance rare and endangered plants in this state.” The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as “endangered” or “rare.” The NPPA prohibits the take of plants listed under the NPPA, but the NPPA contains a number of exemptions to this prohibition that have not been clarified by regulation or judicial rule. In 1984, the California ESA brought under its protection all plants previously listed as endangered under NPPA. Plants listed as rare under NPPA are not protected under the California ESA, but are still protected under the provisions of NPPA. The Fish and Game Commission no longer lists plants under NPPA, reserving all listings to the California ESA.

2.2.4 California Fish and Game Code Special Protections for Birds

In addition to protections contained within the California ESA and California Fish and Game Code § 3511 described above, the California Fish and Game Code includes a number of sections that specifically protect certain birds.

Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the California Fish and Game Commission or a mitigation plan approved by CDFW for mining operations.

Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

Section 3503.5 protects birds of prey (which includes eagles, hawks, falcons, kites, ospreys, and owls) and prohibits the take, possession, or destruction of any birds and their nests.

Section 3505 makes it unlawful to take, sell, or purchase egrets, ospreys, and several exotic nonnative species, or any part of these birds.

Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

2.2.5 Lake or Streambed Alteration Agreements

Section 1602 of the California Fish and Game Code requires individuals or agencies to provide a Notification of Lake or Streambed Alteration to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, proposed measures to protect affected fish and wildlife resources. The final proposal mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alteration Agreement. .

2.2.6 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, with any region that could affect the water of the state” (Water Code 13260(a)). Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code 13050 (e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

2.2.7 California Environmental Quality Act

In accordance with CEQA Guidelines § 15380, a species or subspecies not specifically protected under the federal or California ESAs or NPPA may be considered endangered, rare, or threatened for CEQA review purposes if the species meets certain criteria specified in the Guidelines. These criteria include definitions similar to definitions used in the ESA, California ESA, and NPPA. Section 15380 was included in the CEQA Guidelines primarily to address situations in which a project under review may have a significant effect on a species that has not been listed under the ESA, California ESA, or NPPA, but that may meet the definition of endangered, rare, or threatened. Animal species identified as SSC by CDFW, and plants identified by the CNPS as rare, threatened, or endangered may meet the CEQA definition of rare or endangered.

Species of Special Concern

SSC are defined by CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under the federal ESA, California ESA, or California Fish and Game Code, but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not State) threatened or endangered, or meets the State definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for State threatened or endangered status.
- SSC are typically associated with habitats that are threatened.

Depending on the policy of the lead agency, projects that result in substantial impacts to SSC may be considered significant under CEQA.

U.S. Fish and Wildlife Service Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA.” To meet this requirement, USFWS published a list of BCC (USFWS 2008) for the U.S. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS’ highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

Sensitive Natural Communities

The CDFW maintains the *California Natural Community List* (CDFW 2019a), which provides a list of vegetation alliances, associations, and special stands as defined in the *Manual of California Vegetation* (Sawyer et al. 2009), along with their respective state and global rarity ranks. Natural communities with a state rarity rank of 1, 2, or 3 are considered sensitive natural communities. Depending on the policy of the lead agency, impacts to sensitive natural communities may be considered significant under CEQA.

California Rare Plant Ranks

The CNPS maintains the *Inventory of Rare and Endangered Plants of California* (CNPS 2020), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of

six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private-sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the CNDDb. The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere.
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere.
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere.
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere.
- Rare Plant Rank 3 – a review list of plants about which more information is needed.
- Rare Plant Rank 4 – a watch list of plants of limited distribution.

Additionally, CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 1 through 3, with 1 being the most threatened and 3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat).
- Threat Rank 0.2 – Moderately threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat).
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Factors such as habitat vulnerability and specificity, distribution, and condition of occurrences are considered in setting the Threat Rank; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2020).

Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, 2, and 3 are typically considered significant under CEQA Guidelines § 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 4 and at the discretion of the CEQA lead agency.

California Oak Woodlands Conservation Act

The California Oak Woodlands Conservation Act was passed in 2001; this act provides funding for conservation and protection of California oak woodlands and requires that a lead agency analyze the potential effects of the project and whether or not the project may have a significant effect on the environment. If it is determined that the project may have significant effects on oak woodlands, this act requires mitigation for the conversion of oak woodlands. The law applies to all oak woodlands except those dominated by black oak.

CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant. Assessment of "impact significance" to populations of non-listed species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, § 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines, which provides examples of impacts that would normally be considered significant.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant under CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.2.8 California Coastal Act

The California Coastal Commission (CCC) regulates development activities within the coastal zone pursuant to the California Coastal Act of 1976 (CCA). In general, the coastal zone is defined as the area that extends three miles seaward and approximately 1,000 feet inland. The California State Legislature finds and declares that the basic goals of the CCA are to:

- a) protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
- b) assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the State;
- c) maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners;
- d) assure priority for coastal-dependent and coastal-related development over other development on the coast; and
- e) encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Section 30231 of the CCA requires the maintenance and restoration (if feasible) of the biological productivity and quality of wetlands appropriate to maintain optimum populations of marine organisms and for the protection of human health.

Section 30233 of the CCC limits the filling of wetlands to identified high priority uses, including certain boating facility, public recreational piers, restoration, nature study, and incidental public services. Any wetland fill must be avoided unless there is no feasible environmentally damaging alternative, and authorized fill must be fully mitigated.

Section 30240 of the CCC requires environmentally sensitive habitat areas (ESHAs) to be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. An ESHA is defined as any area in which plant or animal life or their habitats are especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Public Resources Code § 30107.5). As such, projects requiring a coastal development permit are required to identify areas that may qualify as ESHAs and the CCC must determine whether the project violates the ESHA requirements of the Coastal Act.

CCC One-Parameter Wetland Definition

Section 30121 of the CCA defines the term “wetland” as:

Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

The CCC’s regulations (California Code of Regulations [CCR] Title 14) establish a one-parameter definition that only requires evidence of a single parameter to establish wetland conditions:

Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such Wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577).

2.2.9 Sonoma County Local Coastal Program

Under the CCA, cities and counties along the California Coast are responsible for preparing a Local Coastal Program (LCP), which consists of a Local Coastal Plan and an Implementation Plan. The current LCP for Sonoma County was written in 1981, amended in 2001, and is currently being updated by Sonoma County. The LCP serves as a conservation and development planning document for the coastal zone of Sonoma County. The CCA encourages the productive maintenance and protection of marine resources and ESHAs, such as wetlands. The pending updated LCP will provide a modern, up-to-date, and easy-to-use document with digital maps, and will focus on new information, changed conditions, and policies in

these key areas: agricultural resources, public access, sea level rise, biotic resources, geologic hazards, and water quality.

2.2.10 Sonoma County Tree Ordinance

Chapter 26D: *Heritage or Landmark Trees* of the Sonoma County Code of Ordinances (2020) requires a tree permit for the removal or damage of a heritage or landmark tree. Heritage trees are defined as a tree or grove of trees so designated by the Sonoma County Board of Supervisors because of historical interest or significance. A Landmark Tree is defined as a tree or grove of trees so designated by the Sonoma County Board of Supervisors because of its outstanding characteristics in terms of size, age, rarity, shape, or location. A tree may be nominated for heritage or landmark status by the Director of the Planning Department. The Planning Director must receive written approval from the property owner that the tree or trees may be designated as a heritage or landmark tree (Sonoma County 2020).

3.0 METHODS

3.1 Literature Review

The following resources were queried to determine the special-status species that had been documented within or in the vicinity of the Study Area:

- CDFW CNDDDB data for the "Plantation, California" and "Fort Ross, California" 7.5-minute USGS quadrangles and the 10 surrounding USGS quadrangles (CDFW 2020a).
- USFWS Information, Planning, and Consultation System (IPaC) Resource Report List for the Study Area (USFWS 2020).
- CNPS' electronic *Inventory of Rare and Endangered Plants of California* for the "Plantation, California" and "Fort Ross, California" 7.5-minute USGS quadrangles and the 10 surrounding USGS quadrangles (CNPS 2020).
- Sonoma County Breeding Bird Atlas (Madrone Audubon Society 2020).
- eBird (eBird 2020).

The results of the database queries are included in Attachment A.

3.2 Field Surveys Conducted

The following field surveys were conducted and technical reports prepared to assess and document biological resources within the Study Area:

- Botanical Surveys and Report (Spade Natural Resources Consulting [SNRC] 2018, Attachment B1)
 - Draft Aquatic Resources Delineation and Report (ECORP 2020, Attachment B2)
1. Site reconnaissance conducted by ECORP in conjunction with the Aquatic Resources Delineation

The results of these surveys have been incorporated into this BRA; copies of the technical reports are included as Attachment B.

The Aquatic Resources Delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, version 2.0 (Regional Supplement) (USACE 2010).

The botanical surveys were conducted in accordance with guidelines promulgated by CDFW (SNRC 2018; CDFW 2018).

3.3 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review and field observations, a list of special-status species that are considered to have the potential to occur within the Study Area was generated (Table 3 in Section 4.6). Each of the species that were considered as potentially occurring within the Study Area or vicinity was evaluated based on the following criteria:

- **Present** - Species was observed during field surveys or is known to occur within the Study Area based on documented occurrences within the CNDDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur, and/or the species is not known to occur within the vicinity of the Study Area based on CNDDDB records and other available documentation.
- **Absent** - No suitable habitat (including soils and elevation requirements), and/or the species is not known to occur within the Study Area or the vicinity of the Study Area based on CNDDDB records and other documentation or determinate field surveys.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The Study Area is located on a coastal terrace characterized by gently rolling terrain situated at an elevational range of approximately 50 - 150 feet above mean sea level in the North Coast Subregion of the Northwestern California floristic region of California (Baldwin et. al. 2012). The climate along the coast is heavily influenced by the Pacific Ocean, which brings summertime fog, low clouds, winter storms, and seasonally variable winds. Summer temperatures are mild (average 64°F), with frequent low clouds and fog that provide important moisture to vegetation during the dry season. Prevailing summer winds are from the northwest, averaging 10 - 15 miles per hour (mph), with gusts as high as 50 to 60 mph. Winter storms often batter the coastline with strong, moisture-laden, southerly winds. These winter storms, from November through April, account for nearly all the average annual rainfall that varies between 30 and 38 inches. Winter temperatures are moderate, with averages ranging from highs in the 50's to lows in the 40's.

The Study Area is primarily composed of coastal prairie with intermittent stands of bishop pine (*Pinus muricata*) and rock outcrops. Coastal scrub is present along the southeastern edge of the Study Area. Several drainages and other aquatic resources are found onsite. The area supports many diverse natural plant communities, including communities that may be considered Sensitive Natural Communities or may be protected under the CCA. Vegetation communities and aquatic resources are described in detail in Sections 4.2 and 4.5, respectively. The diversity of habitat types found within Study Area support a wide range of common species, are known to support multiple special-status plant species, and have the potential to support special status wildlife species.

Land uses include developed areas for the Fort Ross Historic State Park, which are found east of the Study Area, and year-round grazing by cattle within the coastal prairie outside of the developed areas.

4.2 Vegetation Communities

Twenty-one vegetation communities were mapped within the vicinity of the Study Area during the 2018 botanical survey. The vegetation community mapping was updated by the California State Parks in 2020 (California State Parks 2020). Vegetation communities are depicted in Figure 2. *Vegetation Communities Overview*. The vegetation mapping encompasses a larger area than the Study Area. Only 13 of the 21 mapped vegetation communities are present within the Study Area (Figure 3. *Vegetation Communities, Sheets 1-5*). The 13 vegetation communities are listed below, followed by the State rarity rank for each ranked community. A question mark (?) following the rank indicates the rank is estimated by CDFW rather than calculated due to insufficient sampling. Vegetation communities with ranks of S1, S2, or S3 are considered Sensitive Natural Communities.

- *Anthoxanthum odoratum* Semi-Natural Alliance
- *Baccharis pilularis* Shrubland Alliance (S5)
- *Carex obnupta* Herbaceous Alliance (S3)
- *Danthonia californica* Herbaceous Alliance (S3)
- *Danthonia pilosa* Provisional Semi-Natural Association
- *Deschampsia cespitosa* Herbaceous Alliance (S4?)
- *Festuca bromoides* Semi-Natural Association
- *Iris douglasiana* patch
- *Juncus balticus* Herbaceous Alliance (S4)
- *Lasthenia californica* Herbaceous Alliance (S4)
- *Lupinus arboreus* Semi-Natural Alliance (S4)
- *Pinus muricata* Forest Alliance (S3?)
- Rocky Outcrop Special Feature

All vegetation communities are described in the Botanical Survey Report (SNRC 2018, Attachment B1). Seven of the 13 vegetation communities within the Study Area may be considered Sensitive Natural Communities and/or communities that are protected under the CCA. Descriptions for these seven communities are included in the following sections as summarized in the Botanical Survey Report (SNRC 2018, Attachment B1).

4.2.1 *Anthoxanthum odoratum* - *Deschampsia cespitosa* wet meadow

This plant community occurred mostly in the drier areas in the northeastern portion of the Study Area and along the non-grazed east side of the road at the east side of the Study Area. Sweet vernal grass (*Anthoxanthum odoratum*) was the dominant grass with rattlesnake grass (*Briza maxima*), Douglas iris (*Iris douglasiana*), English plantain (*Plantago lanceolata*), California blackberry (*Rubus ursinus*), blue eyed grass (*Sisyrinchium bellum*), colonial bentgrass (*Agrostis capillaris*), and spring vetch (*Vicia sativa*) present.

4.2.2 *Carex obnupta* Herbaceous Alliance (S3)

This plant community occurred in an area along a stream in the northwestern portion of the Study Area and was thickly vegetated with slough sedge (*Carex obnupta*).

4.2.3 *Danthonia californica* Herbaceous Alliance (S3)

This plant community occurred along much of the southern and western edge of the Study Area in relatively flat areas and was dominated by California oatgrass (*Danthonia californica*). Other species present included brome fescue (*Festuca bromoides*), rattail fescue (*Festuca myuros*), small quaking grass (*Briza minima*), seaside lupine (*Lupinus variicolor*), miniature lupine (*L. bicolor*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), meadow barley (*Hordeum brachyantherum*), English plantain, silver hairgrass (*Aira caryophyllea*), and common rush (*Juncus patens*). Coyote thistle (*Eryngium armatum*), Johnny nip (*Castilleja ambigua*), Johnny tuck (*Triphysaria eriantha* ssp. *rosea*), yellow beak owl's clover (*Triphysaria versicolor*) and California goldfields (*Lasthenia californica* ssp. *californica*) were present in lower-lying areas.

4.2.4 *Deschampsia cespitosa* Herbaceous Alliance

This plant community was present through the middle of the southern part of the Study Area, dominated by tufted hairgrass (*Deschampsia cespitosa*). Other species present in relatively drier areas included California blackberry, brome fescue, English plantain, rough cat's ear, hairy woodrush (*Luzula comosa*), purple velvet grass (*Holcus lanatus*), Douglas iris, purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*), sheep sorrel, and sweet vernal grass. Harlequin lotus (*Hosackia gracilis*), golden eyed grass (*Sisyrinchium californicum*), smooth cat's ear (*Hypochaeris glabra*), Harford's sedge (*Carex harfordii*), wonder woman sedge (*C. gynodynamis*), low bulrush (*Isolepis cernua*), and brown headed rush (*Juncus phaeocephalus* var. *phaeocephalus*) were present in somewhat wetter areas. Occurrences of coyote thistle, low bulrush, toad rush (*Juncus bufonius*), pennyroyal (*Mentha pulegium*), and deceiving sedge (*Carex saliniformis*) were found in low spots within this grassland.

4.2.5 *Juncus balticus* Herbaceous Alliance

This plant community was present in the northwestern portion of the Study Area, dominated by Baltic rush (*Juncus balticus*). Other species present included coyote brush (*Baccharis pilularis*), sheep sorrel, Pacific reedgrass (*Calamagrostis nutkaensis*), Henderson's angelica (*Angelica hendersonii*), wonder woman sedge, split awn sedge (*C. tumulicola*), California blackberry, harlequin lotus, purple stemmed checkerbloom, California horkelia (*Horkelia californica*), California buttercup (*Ranunculus californicus*), sweet vernal grass, purple velvet grass, Douglas iris, and changing forget me not (*Myosotis discolor*).

4.2.6 *Lasthenia californica* Herbaceous Alliance

This plant community occurred along a drainage near the southwestern point of the Study Area. Predominant vegetation included California goldfields, California oatgrass, meadow barley, and coyote thistle. Other vegetation present included Johnny tuck, purple everlasting (*Gamochaeta ustulata*), yellow hairgrass (*Aira praecox*), short leaved evax (*Hesperivax sparsiflora* var. *brevifolia*), and a very significant population of purple stemmed checkerbloom. While *Lasthenia californica* Herbaceous Alliance is not a Sensitive Natural Community, this area could also be considered a less abundant Association within the *Danthonia californica* Herbaceous Alliance, which has a rare ranking. Because it is also habitat for two rare plants and likely a significant resource for native pollinators it could also be considered to provide an "especially valuable" role in the ecosystem and may meet the definition for ESHA as discussed in Section 2.2.6.

4.2.7 *Pinus muricata* Forest Alliance (S3?)

Bishop pine-dominated forest stands occurred in three locations in the northern portion of the Study Area. Bishop pine forest in this area is in decline due to drought and disease. Understory vegetation included coyote brush, cascara buckthorn (*Frangula purshiana*), western sword fern (*Polystichum munitum*), California blackberry, strongly climbing morning glory (*Calystegia purpurata* ssp. *purpurata*), California ponysfoot (*Dichondra donelliana*), Pacific sanicle (*Sanicula crassicaulis*), little false Solomon's seal (*Maianthemum stellatum*), California huckleberry (*Vaccinium ovatum*), coast manroot (*Marah oreganus*), common bedstraw (*Galium aparine*) and Douglas iris.

A stream flows through the southernmost stand of Bishop pine forest. The following plants were observed in the understory at a location just below the road: pink flowering currant (*Ribes sanguineum* var. *glutinosum*), thimbleberry (*Rubus parviflorus*), giant chain fern (*Woodwardia fimbriata*), cow parsnip (*Heracleum maximum*), seep monkeyflower (*Erythranthe guttata*), coast rush (*Juncus hesperus*), miner's lettuce (*Claytonia perfoliata*), orchard grass (*Dactylis glomerata*), western sword fern, California blackberry, coastal burnweed (*Senecio minimus*), giant horsetail (*Equisetum telmateia*), California bee plant (*Scrophularia californica*), coast hedge nettle (*Stachys chamissonis*), cascara buckthorn, common bedstraw, slender foot sedge (*Carex leptopoda*), pennyroyal, broadleaf forget me not (*Myotis latifolia*), chickweed (*Stellaria media*), sweet vernal grass, bull thistle (*Cirsium vulgare*), field mustard (*Brassica rapa*) and Italian thistle (*Carduus pycnocephalus*).

4.3 Wildlife

4.3.1 Wildlife Observations

Wildlife species detected in the vicinity of the Study Area during the August 22 and 23, 2018, and August 21, 2020 reconnaissance-level site visits are listed in Attachment C.

4.3.2 Wildlife Corridors/Movement

The Study Area consists of coastal prairie with intermittent stands of bishop pine forest, rocky outcrops, and patches of coastal brambles and coyote brush scrub. The Study Area is minimally developed with trails, roads, historic structures, and infrastructure associated with the Park. The Study Area is bounded by SR-1 on the north, the Pacific coast on the south, and surrounded by mostly undeveloped lands. Several intermittent and ephemeral drainages bisect the Study Area.

The Study Area includes land with CDFW's Areas of Conservation Emphasis (ACE) connectivity Rank 1 (limited connectivity opportunity) in the southeast portion of the Study Area and ACE Rank 3 (Connections with implementation flexibility) in the northeast portion of the Study Area (CDFW 2020b). Areas with ACE Rank 1 have limited or no connectivity importance. Areas with ACE Rank 3 have important connectivity but have not yet been identified as a priority wildlife movement corridor.

The Study Area has the potential to serve as a movement corridor for terrestrial species, although SR-1 may limit north-south movement of non-avian wildlife in the vicinity of the Study Area and human presence within the park may limit wildlife use. The intermittent and ephemeral drainages are unlikely to provide important movement corridors for aquatic species due to the lack of perennial water and due to the steep coastal bluffs creating a natural barrier for anadromous species.

4.4 Soils

According to the Web Soil Survey (NRCS 2019a), five soil units, or types, have been mapped within the Study Area (Figure 4. *Natural Resources Conservation Service Soil Units*). These are:

- KnE – Kneeland loam, 15 to 30 percent slopes;
- KnF – Kneeland loam, 30 to 50 percent slopes;
- RrC – Rohnerville loam, 0 to 9 percent slopes;

Rohnerville loams are formed in alluvium derived from sedimentary rock and make up the majority of the Study Area. Kneeland loams are formed in residuum weathered from sedimentary rock and are found in the northwest portion of the Study Area. None of these soil types contain hydric elements (NRCS 2019b).

No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity.

4.5 Potential Waters of the U.S.

An aquatic resources delineation of Waters of the U.S. was conducted for the vicinity of the Study Area as per USACE guidelines (Attachment B2). The aquatic resources delineation encompasses a larger area than the Study Area. A total of 0.086-acre and 63 linear feet of potential Waters of the U.S. have been mapped within the Study Area (Figure 5. *Aquatic Resources Delineation*, Sheets 1-5). Each of these features is described below, and a summary of the potential Waters of the U.S. acreages by feature is presented in Table 1.

Table 1. Potential Waters of the U.S.		
Type	Acreage ¹	Linear Feet
Wetlands		
Seasonal Wetland Swale	0.027	Not Applicable
Wet Meadow	0.052	Not Applicable
Other Waters		
Ephemeral Drainage	0.004	34
Intermittent Drainage	0.003	29
Total²	0.086	63

¹ Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

² Summation of individual wetland type acreages may not equal the reported total due to error incurred by rounding.

4.5.1 Wetlands

Seasonal Wetland Swale

Seasonal wetland swales are generally linear wetland features that convey stormwater runoff, but do not exhibit an ordinary high-water mark (OHWM), and support a predominance of hydrophytic vegetation, hydric soil, and wetland hydrology. These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation into the growing season.

Dominant plant species identified within the seasonal wetland swale at the sample points included coyote thistle, velvet grass, perennial cat's-ear (*Hypochaeris radicata*), soft rush (*Juncus effusus*), and Kentucky bluegrass (*Poa pratensis*). The vegetation within the seasonal wetland swale was considered hydric, as the dominance test indicator was met. Dominant plant species identified within the adjacent uplands included sweet vernal grass, perennial cat's-ear, Douglas iris, Bishop pine, California blackberry, and purple awned wallaby grass (*Rytidosperma penicillatum*).

Wet Meadow

The wet meadow mapped onsite is a level to sloped wetland feature that likely remains saturated for prolonged periods into the growing season. It may support small areas of standing water during the wet season but is more likely to maintain soil saturation from a combination of direct precipitation, surface runoff, and subsurface flows from upslope sources.

Dominant plant species observed within the wet meadow included tufted hairgrass, sweet vernal grass, soft rush, and velvet grass.

4.5.2 Other Waters

Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features typically convey runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year. Two ephemeral drainages were mapped within the Project.

The ephemeral drainages mapped within the Project did not meet hydrophytic vegetation or hydric soil criteria as wetlands but were delineated in the field by the presence of an OHWM at vegetation breaks on the eroded banks and water marks.

Intermittent Drainage

Intermittent drainages are linear features that exhibit a bed and bank and an OHWM. Intermittent drainages differ from ephemeral drainages in that they flow for longer duration, typically weeks or months following rainfall events and are often influenced by sub-surface flows. This usually results in greater quantities and duration of flow relative to ephemeral drainages.

The intermittent drainages mapped within the Project were delineated due to the presence of an OHWM, which was identified in the field by water marks.

Potential CCC Jurisdictional Waters

The aquatic resources delineation for the Project also identified resources that may be regulated under the CCA (Figure 5. *Aquatic Resources Delineation*, Sheets 1-5). A total of 0.137-acre of potential CCC jurisdictional waters have been mapped for the Study Area, including approximately 0.051-acre that meets the CCC definition for one-parameter wetlands. A summary of the potential CCC jurisdictional waters is presented in Table 2.

Table 2. Potential CCC Jurisdictional Waters ¹		
Type	Acreage	Linear Feet
Seasonal Wetland Swale	0.027	Not Applicable
Wet Meadow	0.052	Not Applicable
CCC One-Parameter Wetland	0.051	Not Applicable
Ephemeral Drainage	0.0044	34
Intermittent Drainage	0.003	29
Total²:	0.137	63

¹Acreages and linear footage represent a calculated estimation and are subject to modification following the CCC verification process.

²Summation of individual wetland type acreages may not equal the reported total due to rounding.

4.6 Evaluation of Potentially Occurring Special-Status Species

Table 3 lists all the special-status plant and wildlife species (as defined in Section 1.3) identified in the literature review as potentially occurring within the Study Area. Included in this table are the listing status for each species, a brief habitat description, and a determination on the potential to occur within the Study Area. Following the table are brief descriptions and discussions of special-status species that are known to occur in the Study Area (from the literature review), were found to occur in the Study Area during the 2018 field surveys, or are considered to potentially occur within the Study Area (as defined in Section 3.3).

Table 3. Potentially Occurring Special-Status Species						
Plants						
Blasdale's bent grass (<i>Agrostis blasdalei</i>)	–	–	1B.2	Sandy or gravelly soil close to rocks, often in nutrient-poor soil with sparse vegetation in coastal bluff scrub, coastal dunes and coastal prairie communities (0' – 493').	May–July	Potential to occur. Observed during 2018 botanical surveys growing along bluff edge outside of the proposed trail alignment (SNRC 2018).
Sonoma alopecurus (<i>Alopecurus aequalis</i> var. <i>sonomensis</i>)	FE	–	1B.1	Wet areas, marshes, and riparian banks with other wetland species in freshwater marsh, marsh and swamp, riparian scrub, and wetland communities (1' – 112').	May–July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Napa false indigo (<i>Amorpha californica</i> var. <i>napensis</i>)	–	–	1B.2	Openings in broadleafed upland forest, chaparral, and cismontane woodland communities (393' – 6,561').	April- July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Baker's manzanita (<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>)	–	CR	1B.1	Often on serpentine in broadleafed upland forest, ultramafic, and chaparral communities (246' – 985').	February-April	Absent. No suitable habitat in Study Area.
Cedars manzanita (<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i>)	–	CR	1B.2	Serpentine seeps in chaparral and closed-cone coniferous forest (607' – 2,493').	February–May	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Rincon Ridge manzanita (<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>)	–	–	1B.1	Highly restricted to red rhyolites in Sonoma County in chaparral and cismontane woodland communities (246' - 1,213').	February-April (May)	Absent. No suitable habitat in Study Area.
Watershield (<i>Brasenia schreberi</i>)	–	–	2B.3	Freshwater marshes and swamps (98' – 7,218').	June– September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
The Cedar's fairy-lantern (<i>Calochortus raichei</i>)	–	–	1B.2	On serpentine; usually on shaded slopes but also on barrens and talus in chaparral, closed-cone coniferous forest, and ultramafic communities (656' – 1,607').	May-August	Absent. No suitable habitat in Study Area.
Coastal bluff morning-glory (<i>Calystegia purpurata</i> ssp. <i>saxicola</i>)	–	–	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, and north coast coniferous forest (0' – 345')	(March) April- September	Present. Found during 2018 special-status plant surveys growing throughout drier portions of Study Area (SNRC 2018).
Swamp harebell (<i>Campanula californica</i>)	–	–	1B.2	Mesic sites in bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and freshwater swamps, and north coast coniferous forest (3' – 1,329')	June-October	Potential to occur. Found during 2018 special-status plant survey in two locations outside but near the Study Area (SNRC 2018).
California sedge (<i>Carex californica</i>)	–	–	2B.2	Meadows, drier areas of swamps, and marsh margins in bog and fen, closed-cone coniferous forest, coastal prairie, freshwater marsh, marsh and swamp, meadow and seep, and wetland communities (295' – 1,100').	May-August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Bristly sedge (<i>Carex comosa</i>)	–	–	2B.1	Coastal prairie, marshes and swamps including lake margins, and in valley and foothill grassland (0' – 2,051').	May–September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Deceiving sedge (<i>Carex saliniformis</i>)	–	–	1B.2	Mesic sites in coastal prairie, coastal scrub, meadow and seep, and marsh and swamp (coastal salt) communities (9' – 755').	May-June (July)	Potential to occur. Found during 2018 special-status plant surveys growing along several wet depressions outside but near the Study Area (SNRC 2018).
Rincon Ridge ceanothus (<i>Ceanothus confusus</i>)	–	–	1B.1	Volcanic or serpentine soils in closed-cone coniferous forest, chaparral, and cismontane woodland communities (246' – 3,494').	February-June	Absent. No suitable habitat in Study Area.
Holly-leaved ceanothus (<i>Ceanothus purpureus</i>)	–	–	1B.2	Volcanic, rocky slopes in chaparral and cismontane woodland communities (393' – 2,100').	February-June	Absent. No suitable habitat in Study Area.
Dwarf soaproot (<i>Chlorogalum pomeridianum</i> var. <i>minus</i>)	–	–	1B.2	Serpentine soils within chaparral (1,001' – 3,281').	May-August	Absent. No suitable habitat in Study Area.
Woolly-headed spineflower (<i>Chorizanthe cuspidata</i> var. <i>villosa</i>)	–	–	1B.2	Sandy soils in coastal dunes, coastal prairie, and coastal scrub communities (9' – 197').	May-July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Sonoma spineflower (<i>Chorizanthe valida</i>)	FE	CE	1B.1	Sandy soil in coastal prairie (32' – 1,000').	June-August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Greene's narrow-leaved daisy (<i>Erigeron greenei</i>)	–	–	1B.2	Serpentine and volcanic substrates, generally in chaparral (262' – 345').	May-September	Absent. No suitable habitat in Study Area.
Serpentine daisy (<i>Erigeron serpentinus</i>)	–	–	1B.3	Serpentine seeps in chaparral (393 – 1,312).	May-August	Absent. No suitable habitat in Study Area.
Supple daisy (<i>Erigeron supplex</i>)	–	–	1B.2	Usually in grassy sites in coastal bluff scrub and coastal prairie communities (32' - 165').	May-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
The Cedars buckwheat (<i>Eriogonum cedrorum</i>)	–	–	1B.3	Sandy soil in coastal prairie communities (1,197' - 1,804').	June-September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Snow Mountain buckwheat (<i>Eriogonum nervulosum</i>)	–	–	1B.2	Dry serpentine outcrops, balds, and barrens in chaparral communities (984' - 6,907').	June-September	Absent. No suitable habitat in Study Area.
Bluff wallflower (<i>Erysimum concinnum</i>)	–	–	1B.2	Coastal bluff scrub, coastal dunes, and coastal prairie (0' - 607').	February-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Coast fawn lily (<i>Erythronium revolutum</i>)	–	–	2B.2	Mesic sites and streambanks in bogs and fens, broadleafed upland forest, and north coast coniferous forest communities (0' - 5,250').	March-July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Minute pocket moss (<i>Fissidens pauperculus</i>)	–	–	1B.2	Damp soil, dry streambeds, and stream banks in north coast coniferous forest and redwood communities (32' - 3,360').	Wet season	Potential to occur. Suitable habitat is present, and non-vascular plants may not have been targeted in 2018 surveys.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Blue coast gilia (<i>Gilia capitata</i> ssp. <i>chamissonis</i>)	–	–	1B.1	Coastal dunes and coastal scrub (6' - 657').	April-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Pacific gilia (<i>Gilia capitata</i> ssp. <i>pacifica</i>)	–	–	1B.2	Coastal bluff scrub, openings in chaparral, coastal prairie, and valley and foothill grassland (16' – 5,463').	April–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Woolly-headed gilia (<i>Gilia capitata</i> ssp. <i>tomentosa</i>)	–	–	1B.1	Rocky outcrops and serpentine soils in coastal bluff scrub, and valley and foothill grassland (32' - 722').	May-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Dark-eyed gilia (<i>Gilia millefoliata</i>)	–	–	1B.2	Coastal dunes (6' - 99').	April-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Congested-headed hayfield tarplant (<i>Hemizonia congesta</i> ssp. <i>congesta</i>)	–	–	1B.2	Grassy valleys and hills, often in fallow fields, sometimes along roadsides, in valley and foothill grassland (66' – 1,837').	April–November	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Short-leaved evax (<i>Hesper-evax sparsiflora</i> var. <i>brevifolia</i>)	–	–	1B.2	Sandy bluffs and flats in coastal bluff scrub, coastal dunes, and coastal prairie (0' - 705').	March-June	Present. Found during 2018 special-status plant surveys growing mostly near rocky outcrops near the coastal terrace, including within the Study Area.
Pygmy cypress (<i>Hesperocyparis pygmaea</i>)	–	–	1B.2	On podzol-like blacklock soil in pygmy cypress plant community (98'-1,969').		Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Thin-lobed horkelia (<i>Horkelia tenuiloba</i>)	–	–	1B.2	Mesic, sandy openings of broad-leaved upland forest, chaparral, valley and foothill grassland (164' – 1,640').	May–July (August)	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Small ground-cone (<i>Kopsiopsis hookeri</i>)	–	–	2B.3	Open woods, shrubby places, generally on <i>Gaultheria shallon</i> in north coast coniferous forest (295' – 2,904').	April–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Baker's goldfields (<i>Lasthenia californica</i> ssp. <i>bakeri</i>)	–	–	1B.2	Openings in closed-cone coniferous forest, coastal scrub, marsh and swamp, and meadow and seep (196' – 1,707').	April–October	Potential to occur. Found during 2018 special-status plant surveys growing in the western edge of the botanical survey area outside but near the Study Area (SNRC 2018).
Perennial goldfields (<i>Lasthenia californica</i> ssp. <i>macrantha</i>)	–	–	1B.2	Coastal bluff scrub, coastal dunes, and coastal scrub (0' – 1,542').	January–November	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Marsh pea (<i>Lathyrus palustris</i>)	–	–	2B.2	Moist coastal areas in bog and fen, coastal prairie, coastal scrub, lower montane coniferous forest, marsh and swamp, north coast coniferous forest, and wetland communities (1' – 329').	March–August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Jepson's leptosiphon (<i>Leptosiphon jepsonii</i>)	–	–	1B.2	Usually volcanic soils of chaparral, cismontane woodland, valley and foothill grasslands (328' – 1,640').	March–May	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Rose leptosiphon (<i>Leptosiphon rosaceus</i>)	–	–	1B.1	Coastal bluff scrub (0' - 328')	April-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Crystal Springs lessingia (<i>Lessingia arachnoidea</i>)	–	–	1B.2	Grassy slopes on serpentine, sometimes on roadsides in cismontane woodland, coastal scrub, and valley and grassland communities (295' - 657').	July-October	Absent. No suitable habitat in Study Area.
Coast lily (<i>Lilium maritimum</i>)	–	–	1B.1	Historically in sandy soil often on raised hummocks or bogs, today found mostly in roadside ditches in broadleaf upland forest, closed-cone coniferous forest coastal prairie, coastal scrub, marsh and swamp, and north coast coniferous forest communities (14' - 1,608').	May-August	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Tidestrom's lupine (<i>Lupinus tidestromii</i>)	FE	CE	1B.1	Coastal dunes (0' – 328').	April–June	Absent. No suitable habitat in Study Area.
White-flowered rein orchid (<i>Piperia candida</i>)	–	–	1B.2	Broadleafed upland forest, lower montane coniferous forest, and north coast coniferous forest, sometimes on serpentinite soils (98' - 4,298').	(March) May-September	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Point Reyes checkerbloom (<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>)	–	–	1B.2	Freshwater marshes near the coast in freshwater marsh, marsh and swamp, and wetland communities (9' - 247').	April-September	Absent. No suitable habitat in Study Area.
Marin checkerbloom (<i>Sidalcea hickmanii</i> ssp. <i>viridis</i>)	–	–	1B.1	Rhyolitic substrates in chaparral communities (164' - 1,410').	May-June	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Purple-stemmed checkerbloom <i>(Sidalcea malviflora ssp. purpurea)</i>	–	–	1B.2	Broadleaf upland forest and coastal prairie communities (49' - 279').	May-June	Present. Found during 2018 special-status plant surveys growing in native grassland throughout the Study Area including within the proposed trail alignment.
Hoffman's bristly jewelflower <i>(Streptanthus glandulosus ssp. hoffmanii)</i>	–	–	1B.3	Moist, steep rocky banks, sometimes in serpentine soils in chaparral, cismontane woodland, ultramafic, and valley and foothill grassland communities (393' – 1,558').	March-July	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Three peaks jewelflower <i>(Streptanthus morrisonii ssp. elatus)</i>	–	–	1B.2	Serpentine soils in chaparral (295' – 2,674').	June-September	Absent. No suitable habitat in Study Area.
Dorr's Cabin jewelflower <i>(Streptanthus morrisonii ssp. hirtiflorus)</i>	–	–	1B.2	Only known from serpentine barrens at the head of Austin Creek in Sonoma County; may occur in chaparral, closed-cone coniferous forest, and ultramafic communities (606' – 2,691').	June	Absent. No suitable habitat in Study Area.
Morrison's jewelflower <i>(Streptanthus morrisonii ssp. morrisonii)</i>	–	–	1B.2	Only known from serpentine outcrops in the Austin Creek area in Sonoma County, in chaparral and ultramafic communities (393' – 1,919').	May, August-September	Absent. No suitable habitat in Study Area.
Two-fork clover <i>(Trifolium amoenum)</i>	FE	–	1B.1	Coastal bluff scrub and valley and foothill grassland communities and is sometimes associated with serpentinite soils (16' – 1,362').	April-June	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Santa Cruz clover <i>(Trifolium buckwestiorum)</i>	–	–	1B.1	Gravelly sites and on the margins of broadleaved upland forest, cismontane woodland, and coastal prairie (344' – 2,001').	April–October	Absent. Suitable habitat is present, but species was not observed during 2018 surveys (SNRC 2018).
Invertebrates						
Western bumble bee <i>(Bombus occidentalis)</i>	-	CC	-	Primarily nests underground in open grassland and scrub habitats from the California coast east to the Sierra Cascade and south to Mexico.	March - September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)
Gualala roach <i>(Lavinia symmetricus parvipinnis)</i>	–	–	SSC	Aquatic habitat. Found only in the Gualala River and Austin Creek in Sonoma County.	Year round	Absent. Study Area is outside of known range for this species.
Behren's silverspot butterfly <i>(Speyeria zerene behrensi)</i>	FE	–	–	Restricted to Pacific side of the Coast from the city of Mendocino in Mendocino County to Salt Point State Park in Sonoma County. Inhabits coastal terrace prairie habitat. Food plant is <i>Viola adunca</i> .	April - August	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Myrtle's Silverspot butterfly (<i>Speyeria zerene myrtleae</i>)	FE	–	–	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Inhabits coastal dunes. Larval food plant thought to be <i>Viola adunca</i> .	April - August	Absent. Study Area is outside of known range for this species. Silverspot butterfly populations near Fort Ross appear to have intermediates between the Behren's and Myrtle's (<i>S. z. myrtleae</i>) silverspot butterfly. The intermediates are proposed to be a new subspecies, but the USFWS currently considers all intermediates north of the Russian River to be Behren's (USFWS 2015).
California freshwater shrimp (<i>Syncaris pacifica</i>)	FE	CE	–	Aquatic habitat. Endemic to Marin, Napa, and Sonoma counties. Found in low elevation, low gradient streams where riparian cover is moderate to heavy. Found in shallow pools away from main streamflow in areas with undercut banks and exposed roots in the winter and with leafy branches touching the water in summer.	Year round	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Fish						
Tidewater goby (<i>Eucyclogobius newberryi</i>)	FE	–	–	Aquatic habitat. Found in shallow, brackish or salty water in coastal lagoons, estuaries, marshes, and still-water lower stream reaches from the mouth of the Smith River in Del Norte County to northern San Diego County. Absent from areas with steep coastlines and streams that do not form lagoons or estuaries.	Year round	Absent. No suitable habitat in Study Area.
Gualala roach (<i>Lavinia symmetricus parvipinnis</i>)	–	–	SSC	Aquatic habitat. Found only in the Gualala River and Austin Creek in Sonoma County.	Year round	Absent. Study Area is outside of known range for this species.
Coho salmon (central California coast ESU) (<i>Oncorhynchus kisutch</i> pop. 4)	FE	CE	–	Aquatic habitat. Requires beds of loose, silt-free, coarse gravel for spawning. Needs cover, cool water and sufficient dissolved oxygen.	September – January (adult spawning)	Absent. No suitable habitat in Study Area.
Steelhead (Central California coast DPS) (<i>Oncorhynchus mykiss irideus</i> pop. 8)	FT	–	–	Aquatic habitat. Undammed rivers, streams, and creeks from the Russian River to Aptos Creek in Santa Cruz County and drainages of San Francisco and San Pablo bays.	September – March (adult spawning)	Absent. No suitable habitat in Study Area.
Longfin smelt (<i>Spirinchus thaleichthys</i>)	FC	CT	–	Freshwater and seawater estuaries.	Year round	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Amphibians						
California giant salamander (<i>Dicamptodon ensatus</i>)	–	–	SSC	Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes. Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County and east to Napa County.	Year round	Potential to occur. May occur in intermittent drainage habitat on site. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a).
Foothill yellow-legged frog - Northwest/North Coast clade (<i>Rana boylei</i>)	-	-	SSC	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May - October	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a).
California red-legged frog (<i>Rana draytonii</i>)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1- November 1	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a).

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Red-bellied newt (<i>Taricha rivularis</i>)	–	–	SSC	Terrestrial habitat. Juveniles generally stay underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate. Found in coastal drainages from Humboldt County south to Sonoma County, inland to Lake County with an isolated population in Santa Clara County.	January – April	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)
Reptiles						
Northwestern pond turtle (<i>Actinemys marmorata</i>)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April- September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)
Green sea turtle (<i>Chelonia mydas</i>)	FT	-	-	Marine habitats with adequate supply of seagrasses and algae.	Year round	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Birds						
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	May-August	Low Potential. Marginally suitable habitat in Study Area.
Great blue heron (<i>Ardea herodias</i>)	-	-	CDFS	Colonial nester; prefers to nest in vegetation on islands or in swamps but may also be found in upland habitats in trees, bushes, on the ground and on artificial structures. Foraging habitat is widely diverse and includes swamps, coastlines, estuaries, beaches, pastures, cultivated fields, and riparian areas.	February-July	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Black turnstone <i>(Arenaria melanocephala)</i>	-	-	BCC	Breeding range includes coastal Alaska. Wintering range is coastal southern Alaska to Mexico. Wintering habitat includes coastal habitats, including rocky shorelines, reefs, sea stacks, and headlands with rock or gravel substrates, mud and sandflats, estuaries, sandy beaches, jetties, rip-rap, piers, pilings, booms, and sewage treatment ponds.	August-April (Migrant/Wintering in California)	Absent. No suitable habitat in Study Area.
Marbled murrelet <i>(Brachyramphus marmoratus)</i>	FT	CE	-	Nesting occurs in forested or rocky areas on islands and coastal mainland from Alaska south to Central California (Monterey County); nests in coastal forests, sea-facing talus slopes, and cliffs. Most nest in trees, with a few on the ground, under vegetation, or in cavities on rock scree slopes or cliffs.	March-October	Absent. No suitable habitat in Study Area.
Rhinoceros auklet <i>(Cerorhinca monocerata)</i>	-	-	CDFW WL	Nests in burrows on undisturbed, forested and unforested islands; may also nest in cliff caves on the mainland. Found in off-shore islands and rocks along the California coast.	March-September	Absent. No suitable habitat in Study Area.
Wrentit <i>(Chamaea fasciata)</i>	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Potential. Suitable habitat is present in the Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Western snowy plover (<i>Charadrius nivosus nivosus</i>)	FT	-	BCC, SSC	Nests on the ground, on open sandy coastal beaches, barrier islands, barrens shores of inland saline lakes, on river bars, and man-made ponds such as wastewater ponds, dredge spoils, and salt evaporation ponds.	March-September	Absent. No suitable habitat in Study Area.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Potential. Suitable habitat is present in the Study Area.
White-tailed kite (<i>Elanus leucurus</i>)	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential. Suitable habitat is present in the Study Area.
Tufted puffin (<i>Fratercula cirrhata</i>)	-	-	SSC	This open-ocean bird nests along the coast on islands, islets, or (rarely) mainland cliffs. Birds burrow into sod or earth on island cliffs or grassy island slopes.	May-October	Absent. No suitable habitat in Study Area.
Red-throated loon (<i>Gavia stellata</i>)	-	-	BCC	Breeding ranges includes western Canada to Alaska and from the Yukon Territory to Newfoundland. Winters in Pacific Coastal waters from southern Alaska to Baja California.	October-April	Absent. This species does not nest in the region of the Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Black oystercatcher <i>(Haematopus bachmani)</i>	-	-	BCC	Nests along the Pacific Coast from Baja California to Alaska. Rocky shorelines are favored nesting habitat but may also nest on a variety of substrates ranging from mixed sand and gravel beaches to rocky headlands. Typical nesting sites include sand and pebble beaches, shell beaches, cobble beaches, gravel outwashes, exposed rocky shoreline, wave-cut platforms, and offshore boulders.	April-August	Absent. No suitable habitat in Study Area.
Purple finch <i>(Haemorhous purpureus)</i>	-	-	BCC	In California, purple finch breeding range includes Klamath Mountains south along Coast Range into San Bernardino County, along the western slopes of the Cascade-Sierra Nevada axis from Shasta County south to Kern County. Nest in moist cool coniferous forests, mixed coniferous-deciduous forest, edges of bogs, riparian corridors, and to a lesser deciduous forests, orchards, ornamental plantations, pastures and lawns with scattered conifers, shrubs, hedgerows and developed areas.	April-September	Potential. Suitable habitat is present in the Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Osprey (<i>Pandion haliaetus</i>)	-	-	CDFW WL	Nesting habitat requires close proximity to accessible fish, open nest site free of mammalian predators, and extended ice-free season. The nest in large trees, snags, cliffs, transmission/communication towers, artificial nest platforms, channel markers/ buoys.	March- September	Potential. Suitable habitat is present in the Study Area.
Bryant's savannah sparrow (<i>Passerculus sandwichensis alaudinus</i>)	-	-	SSC	Resident coastally from Humboldt Bay south to Point Conception; breeding habitat includes tidal saltmarsh, adjacent ruderal areas, and upland grassy slopes of the coastal fog belt.	Nests March- August	Potential. Suitable habitat is present in the Study Area.
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	Delisted	Delisted	CFP	Nests on rocky offshore islands along Pacific Coast of California south to Baja California. Winters throughout coastal California	January- September (nesting); wintering grounds September- April	Absent. No suitable habitat in Study Area.
Double-crested cormorant (<i>Phalacrocorax auritus</i>)	-	-	CDFW WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	April-August	Absent. No suitable habitat in Study Area.
Short-tailed albatross (<i>Phoebastria albatrus</i>)	FE	-	SSC	Nests primarily on Torishima Island in Japan, non-nesters found throughout northern Pacific Ocean, including rarely California and Oregon waters.	Nests in Japan	Absent. No suitable habitat in Study Area and this species does not nest in the region.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Purple martin (<i>Progne subis</i>)	-	-	SSC	In California, breeds along coast range, Cascade-northern Sierra Nevada region and isolated population in Sacramento. Nesting habitat includes montane forests, Pacific lowlands with dead snags. Winters in South America.	May-August	Potential. Suitable habitat is present in the Study Area.
Bank swallow (<i>Riparia riparia</i>)	-	CT	-	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May-July	Absent. No suitable habitat in Study Area.
Allen's hummingbird (<i>Selasphorus sasin</i>)	-	-	BCC	Breeds along narrow coastal band from SW Oregon south to Santa Barbara and Ventura counties. Channel Islands. Migratory subspecies winter in Mexico, and <i>sedentarius</i> resident on Channel Islands and coastal southern California. Breeding occurs in coastal scrub, riparian habitat, mixed evergreen or live oak woodlands.	February -June	Potential. Suitable habitat is present in the Study Area.
Northern spotted owl (<i>Strix occidentalis caurina</i>)	FT	CC	SSC	Found from Marin Co. through coastal ranges north to British Columbia; breeds in old growth mature forest. They use forests with greater complexity and structure.	March-June	Absent. No suitable habitat in Study Area.

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
Mammals						
Pallid bat (<i>Antrozous pallidus</i>)	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2017).	April- September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)
Sonoma tree vole (<i>Arborimus pomo</i>)	-	-	SSC	Feeds almost exclusively on Douglas-fir needles. Will occasionally use needles of grand fir, hemlock or spruce. Known to occur in Douglas-fir, redwood and montane hardwood-conifer forests in the north coast fog belt from Oregon border to Sonoma County.		Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	-	-	SSC	Caves, mines, buildings, rock crevices, trees.	April- September	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)

Table 3. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Federal ESA Status	California ESA Status	Other Status	Habitat Description ¹	Approximate Survey Dates	Potential To Occur On-Site
American badger <i>(Taxidea taxus)</i>	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Potential to occur. Suitable habitat is present and the species has been documented within 10 miles of the Study Area (CDFW 2020a)

¹ Habitat descriptions for plant species are from the CNPS Inventory of Rare and Endangered Plants (CNPS 2020).

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	Federal ESA listed, Endangered.
FT	Federal ESA listed, Threatened.
FC	Candidate for federal ESA listing as Threatened or Endangered.
Delisted	Formally Delisted (delisted species are monitored for 5 years).
BCC	U. S. Fish and Wildlife Service Bird of Conservation Concern (USFWS, 2002).
CE	California ESA or Native Plant Protection Act listed, Endangered.
CT	California ESA or Native Plant Protection Act listed, Threatened.
CR	California ESA or Native Plant Protection Act listed, Rare.
CC	Candidate for California ESA listing as Endangered or Threatened.
CDFW WL	CDFW Watch List
SSC	CDFW Species of Special Concern (CDFW, updated July 2017).
CFP	California Fish and Game Code Fully Protected Species (\$3511-birds, \$4700-mammals, \$5050-reptiles/amphibians).
CDFS	California Department of Forestry and Fire Protection Sensitive Species (\$895.1 of the California Forest Practice Rules).
1B	California Rare Plant Rank/Rare or Endangered in California and elsewhere.
2B	Plants rare, threatened, or endangered in California but more common elsewhere.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

4.6.1 Plants

Fifty-four special-status plant species were identified as having the potential to occur within the Study Area based on the literature review and the results of (Table 3). However, upon further analysis, 19 species were determined to be absent from the Study Area due to the lack of suitable habitat and 28 additional species were determined to be absent due to not being reported as observed in the Botanical Survey Report (SNRC 2018). No further discussion of those species is provided in this assessment. Brief descriptions of the remaining seven species that have been documented or have the potential to occur within the Study Area are presented in the following sections.

Blasdale's Bent Grass

Blasdale's bent grass (*Agrostis blasdalei*) is not listed pursuant to either the federal and/or California ESAs and is designated as a CRPR 1B.2 species. This species is an herbaceous rhizomatous perennial that occurs

in coastal bluff scrub, dunes, and prairie (CNPS 2020). Blasdale's bent grass blooms between May and July and is known to occur at elevations ranging from sea level to 492 feet above mean sea level (MSL) (CNPS 2020). Blasdale's bent grass is endemic to California; its current range includes Mendocino, Monterey, Marin, Santa Cruz, San Mateo, and Sonoma counties (CNPS 2020).

Six occurrences of Blasdale's bent grass have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal bluff scrub and coastal prairie within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in medium to high density along bluff edge (SNRC 2018) outside of the Study Area. Blasdale's bent grass has potential to occur onsite.

Coastal Bluff Morning Glory

Coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*) is not listed pursuant to either the federal and/or California ESAs and is designated as a CRPR 1B.2 species. This species is an herbaceous perennial that occurs in coastal bluff scrub, coastal dunes, coastal scrub, and north coast coniferous forest (CNPS 2020). Coastal bluff morning glory blooms between April and September and is known to occur at elevations ranging from sea level to 344 feet above MSL (CNPS 2020). Coastal bluff morning glory is endemic to California; its current range includes Contra Costa, Lake, Mendocino, Marin, and Sonoma counties (CNPS 2020).

Six occurrences of coastal bluff morning glory have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal bluff scrub, coastal scrub, and Bishop pine forest within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred at relatively low density throughout drier portions of Study Area (SNRC 2018).

Swamp Harebell

Swamp harebell (*Campanula californica*) is not listed pursuant to either the federal and/or California ESAs but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in mesic areas of bogs and fens, closed-cone coniferous forests, coastal prairie, meadows and seeps, and freshwater marshes and swamps (CNPS 2020). Swamp harebell blooms from June through October and is known to occur at elevations ranging from 3 to 1,329 feet above MSL (CNPS 2020). Swamp harebell is endemic to California; its current range includes Mendocino, Marin, Santa Cruz, and Sonoma counties; however, it is presumed extirpated in Santa Cruz County (CNPS 2020).

Nine occurrences of coastal bluff morning glory have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie and mesic areas within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in two locations within the coastal prairie outside of the Study Area (SNRC 2018). Swamp harebell has potential to occur onsite.

Deceiving Sedge

Deceiving sedge is not listed pursuant to either the federal and/or California ESAs and is designated as a CRPR 1B.2 species. This species is an herbaceous perennial rhizome that occurs in mesic sites in coastal prairie and scrub, meadows and seeps, and marshes and swamps, (coastal salt) (CNPS 2020). Deceiving

sedge blooms between May and June and is known to occur at elevations ranging from nine to 755 feet above MSL (CNPS 2020). Deceiving sedge is endemic to California; its current range includes Humboldt, Mendocino, Santa Cruz and Sonoma counties; however, it is presumed extirpated in Santa Cruz County (CNPS 2020).

One occurrence of deceiving sedge has been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie and mesic areas within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred at high density in a relatively narrow range (SNRC 2018) outside of the Study Area. Deceiving sedge has potential to occur onsite.

Minute Pocket Moss

Minute pocket moss (*Fissidens pauperculus*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.2 species. This species is a moss that occurs in damp soils of North Coast coniferous forest (CNPS 2020). Minute pocket moss is known to occur at elevations ranging from 32 to 3,360 feet above MSL (CNPS 2020). The current range of this species in California includes Alameda, Butte, Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Mateo, Sonoma, and Yuba counties.

One occurrence of minute pocket moss has been reported within 10 miles of the Study Area (CDFW 2020a). The damp soils of the bishop pine forest within the Study Area provide suitable habitat for this species. This species was not observed during the 2018 botanical surveys, however, no non-vascular plants were included in the list of observed species so it is likely that the survey only targeted vascular plant species. Minute pocket moss has potential to occur onsite.

Short-leaved Evax

Short-leaved evax is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.2 species. This species is an annual herb that occurs in sandy soils of coastal bluff scrub; coastal dunes, and coastal prairie (CNPS 2020). Short-leaved evax blooms from March through June and is known to occur at elevations ranging from sea level to 706 feet above MSL (CNPS 2020). The current range of this species in California includes Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Francisco, San Mateo, and Sonoma counties; the species is presumed extirpated in San Francisco County (CNPS 2020).

Six occurrences of short-leaved evax have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal bluff scrub and coastal prairie within the Study Area provide suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred in high density in a relatively broad range (SNRC 2018), including within the Study Area.

Purple-Stemmed Checkerbloom

Purple-stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in broadleaved upland forest and coastal prairie (CNPS 2020). Purple-stemmed checkerbloom blooms from May through June and is known to occur at elevations ranging from 49 to 279 feet above MSL (CNPS 2020). Purple-stemmed checkerbloom is endemic to California; the current range

of this species includes Mendocino, Marin, and Sonoma counties; however, there is uncertainty about the distribution or identity of the species in Marin County (CNPS 2020).

Seven occurrences of purple-stemmed checkerbloom have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie within the Study Area provides suitable habitat for this species. This species was observed during the 2018 botanical surveys and occurred scattered throughout the coastal prairie (SNRC 2018), including within the Study Area.

4.6.2 Invertebrates

Five special-status invertebrate species were identified as having potential to occur in the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, three species (Gualala roach (*Lavinia symmetricus parvipinnis*), Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), and California freshwater shrimp [*Syncaris pacifica*]) were considered to be absent from the site due to the lack of suitable habitat or due to the Study Area being outside of the known range. No further discussion of those species is provided within this assessment. A brief description of the remaining species that have the potential to occur within the Study Area is presented below.

Western Bumble Bee

The western bumble bee (*Bombus occidentalis*) is a candidate for listing as endangered under the California ESA. The western bumble bee was once common in the western United States but is now absent across much of its historic range (Xerxes 2018). In California, the species is largely restricted to high elevation sites in the Sierra Nevada although there have been a couple observations on the northern California coast (Xerxes 2018). The species inhabits meadows and grasslands with abundant floral resources, and primarily nests underground in cavities created by ground-dwelling animals although a few nests have been reported aboveground in logs or among railroad ties (Xerxes 2018). Little is known about specific overwintering sites, but bumble bees generally overwinter in soft, disturbed soils or under leaf litter or other debris (Goulson 2010, Williams et al. 2014). The species visits a wide variety of flowering plants, but its short tongue is most suitable for foraging at open flowers with short corollas (Xerxes 2018). The flight period for queens in California is from early February to late November (Thorpe et al. 1983). The flight period for workers and males in California is from early April to early November (Thorpe et al. 1983). Significant threats are posed to the survival of this species by modification or destruction of its habitat, overexploitation, competition, disease, pesticide use, population dynamics and structure, and global climate change (Xerxes 2018).

Three occurrences of the western bumble bee have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie and scrub within the Study Area represents suitable habitat for this species. The western bumble bee has potential to occur onsite.

Behren's Silverspot Butterfly

The Behren's silverspot butterfly (*Speyeria zerene behrensi*) is listed as endangered pursuant to the federal ESA. No critical habitat has been designated for the species. The historic range of the Behren's silverspot butterfly is known from six locations which extended from the area of the City of Mendocino in

Mendocino County south to the area of Salt Point State Park in Sonoma County (USFWS 2015). The species occupies early successional coastal terrace prairie habitat that contains its larval host plant, western early blue violet (*Viola adunca*), and nectar sources for adults (USFWS 2015). Vegetation that provides sheltering habitat can also be important, especially if the sheltering habitat is near violets and nectar sources (USFWS 2015). Most life-history information about the Behren's silverspot butterfly comes from studies of a closely-related subspecies, the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). It is thought that female Behren's silverspot butterflies lay their eggs in the debris and dried stems of the western early blue violet and likely other violets (USFWS 2015). Upon hatching, the caterpillars spin a silk pad upon which they overwinter (USFWS 2015). Caterpillars reemerge in spring and feed upon the western early blue violet (USFWS 2015). During the spring and early summer they pass through five instars before forming a pupa within a chamber of leaves that they draw together with silk (USFWS 2015). The adult butterflies emerge within two weeks and live for approximately three weeks, during which time they feed on nectar and reproduce (USFWS 2015). Depending upon environmental conditions, the flight period of the Behren's silverspot butterfly ranges from early July to October (USFWS 2015).

One occurrence of the Behren's silverspot butterfly has been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie within the Study Area represents suitable habitat for this species. The Behren's silverspot butterfly has potential to occur onsite.

4.6.3 Amphibians

Four special-status amphibians were identified as having potential to occur in the Project area based on the literature review (Table 3). A brief description of these species is presented below.

California Giant Salamander

The California giant salamander (CGS, *Dicamptodon ensatus*) is not listed pursuant to either the California or federal ESAs; however, this species is considered an SSC by CDFW. The CGS is a large (to 17 cm snout-vent length), heavy-bodied salamander of California's central mesic coast forests (Thomson et al. 2016). Adults are terrestrial most of the year and are found under rocks, debris, bark, and other cover near streams. Breeding is aquatic, with adults laying eggs in streams in both spring and fall (Stebbins 2003). Stream-type larvae hatch in winter and may transform into terrestrial adults in the second or third summer. A proportion of paedomorphic adults often remain in aquatic habitat along with young larvae. CGS' occur in the Coast Range from the Point Arena vicinity of Mendocino County, east into Lake and Glenn counties, and south to Santa Cruz County. They occur in wet, cold coniferous forests or oak woodlands with permanent to semi-permanent creeks and streams. Diet presumably consists of a wide variety of arthropods and suitable-sized vertebrates and may feature a high proportion of banana slugs. CGS' can vocalize, and when threatened make a creaking or groaning sound. Although the aquatic larvae can be very common in suitable waters and biomass is often greater than other aquatic vertebrates within a system, terrestrial adults can be elusive, and it has been suggested they are largely subterranean (Fellers et al. 2010).

Eighteen occurrences of CGS have been reported within 10 miles of the Study Area (CDFW 2020a). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. CGS has potential to occur onsite.

Foothill Yellow-Legged Frog (Northwest/North Coast Clade)

Six clades are recognized for foothill yellow-legged frog (FYLF, *Rana boylei*). The clade present within the vicinity of the Study Area is the Northwest/North Coast clade. While the other clades of FYLF have been proposed for listing under the California ESA, the Northwest/North Coast has not been proposed for listing. However, this species is considered an SSC by CDFW. FYLF occurs in the Coast Ranges, from the Oregon border south to the Transverse Mountains in Los Angeles County, west of the Cascade crest in most of northern California, and in the Sierra Nevada foothills south to Kern County, from sea level to 6,000 feet (Stebbins 1985).

FYLFs occupy rocky streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow plant communities. They are rarely found far from water and will often dive into water to take refuge under rocks or sediment when disturbed (Zeiner et al. 1988).

Thirty occurrences of FYLF have been reported within 10 miles of the Study Area (CDFW 2020a). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. FYLF has potential to occur onsite.

California Red-legged Frog

The California red-legged frog (CRLF, *Rana draytonii*) is listed as threatened pursuant to the federal ESA and is considered an SSC by CDFW. The current range and abundance of CRLF is greatly reduced from historic levels, with most remaining populations occurring along the coast from Marin County to Ventura County and in blue oak woodland, foothill pine/oak, and riparian deciduous forests in the foothills of the western slope of the Sierra Nevada (Barry and Fellers 2013).

Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.) are preferred (Hayes and Jennings 1988). Adult CRLFs use dense, shrubby or emergent riparian vegetation near deep [≥ 0.6 to 0.9 meters (2 to 3 feet)], still or slow-moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail (*Typha* sp.) occur adjacent to open water. CRLFs breed from November through April (Jennings and Hayes 1994), and larvae generally metamorphose by mid to late summer. Upland and riparian areas provide important sheltering habitat during summer when CRLFs aestivate in dense vegetation, burrows, and leaf litter.

There is no Critical Habitat for CRLF within the vicinity of the Study Area. Three occurrences of CRLF have been reported within one mile of the Study Area (CDFW 2020a). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. CRLF has potential to occur onsite.

Red-Bellied Newt

The red-bellied newt (*Taricha rivularis*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. The red-bellied newt is one of four species of Pacific newts; those of the genus *Taricha* (Crother et al. 2017). All *Taricha* are endemic to northwestern North America west of the Sierra Nevada/Cascade divide, from Alaska south to southern California (San Diego County) (Stebbins 2003). The red-bellied newt is a California endemic and has the most restricted range of all *Tarichas*. It occurs along coastal California from Sonoma and Lake counties north through Mendocino County to southwestern Humboldt County. An isolated population occurs in the Stevens Creek Watershed of Santa Clara County, 80 miles south of the main distribution of this species (Reilly et al. 2014). In parts of its range, including the Steven's Creek Watershed, red-bellied salamanders co-occur with both coast range newts (*T. torosa*) and rough skinned newts (*T. granulosa*). Red-bellied salamanders are dark brown, dark gray, or black above, bright tomato red ventrally and lack costal grooves and nasolabial grooves (Stebbins 2003). One characteristic that differentiates *T. rivularis* from the other *Taricha* is a dark band of pigment across the vent (Stebbins 2003), which is especially noticeable in breeding males.

This is a species of cold creeks, streams, and rivers in coastal woodlands, and almost exclusively tied to coast redwood (*Sequoia sempervirens*) forests. Breeding season typically starts in February with adults breeding through May in rocky stream substrates of cold, rapidly moving streams. Egg masses averaging 10 eggs are attached to the bottoms of rocks or vegetation in fast moving water (Twitty 1942). Incubation can last from 16–34 days and proceeds quicker in warmer water (Licht and Brown 1967). Larvae tend to be stream type, with reduced external gills, short tail fins, and short toes (Stebbins 2003). Larvae metamorphose in late August at 45–55 mm total length (Stebbins 1951, Stebbins and McGinnis 2012).

Twelve occurrences of red-bellied newt have been reported within 10 miles of the Study Area (CDFW 2020a). The intermittent drainage and adjacent surrounding upland areas within the Study Area represent suitable habitat for this species. Red-bellied newt has potential to occur onsite.

4.6.4 Reptiles

One special-status reptile was identified as having the potential to occur in the Study Area based on the literature review (Table 3). A brief description of this species is presented below.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either the California or federal ESAs; however, this species is considered an SSC by CDFW. The range of the northwestern pond turtle in California extends from the Oregon border southward to the Stockton area in the Central Valley, and the western slope of the Sierra-Cascade (Bury et al. 2012a). The elevational range extends from sea level to 2,000 meters, but it becomes rare at the higher elevations (Stebbins 2003). They can occur in a variety of waters including ponds, lakes, streams, reservoirs, rivers, settling ponds of wastewater treatment plants, and other permanent and ephemeral wetlands (Bury et al. 2012b) within blue oak woodland, foothill pine/oak, chaparral, Ponderosa pine woodland, black oak woodland, and riparian deciduous forests. In streams and other lotic features they generally require slack- or slow-water aquatic

microhabitats (Jennings and Hayes 1994). Western pond turtles also require basking areas such as logs, rocks, banks, and brush piles for thermoregulation (Bury et al. 2012b). They are typically active between March and April through October or November, the timing of which depends on variables such as latitude, elevation, and local climate (Bury et al. 2012b). Western pond turtles have a generalist diet consisting of aquatic invertebrates, carrion, and small vertebrates (Bury 1986, Jennings and Hayes 1994); adults overwinter on land or in the water depending on specific location and habitat (Bury et al. 2012a). If overwintering on land, they may move beyond 1,500 feet upslope to burrow in soil or detritus, particularly in areas near flowing streams and rivers (Reese and Welsh 1997).

Three occurrences of northwestern pond turtle have been reported within 10 miles of the Study Area (CDFW 2020a). The intermittent drainage and surrounding upland habitats represent suitable habitat for this species. Northwestern pond turtle has potential to occur onsite.

4.6.5 Birds

Twenty-eight special-status bird species were identified as having the potential to occur within the Project Area based on the literature review (Table 3). However, upon further analysis and after the site visit, 19 of these species are considered to be absent from the site due to the lack of suitable habitat. No further discussion of these species is provided in this analysis. A brief description of the nine remaining species that have the potential to occur within the Project area is presented below.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is not listed pursuant to either the California or federal ESAs, but it is considered an SSC by the CDFW. The grasshopper sparrow is an uncommon and local summer resident and breeder along the western edge of the Sierra Nevada and most coastal counties south to Baja California (Small 1994, Vickery 2020). This species generally inhabits moderately open grasslands and prairies with patchy bare ground and scattered shrubs (Vickery 2020). Grasshopper sparrows are more likely to occupy large tracts of habitat than small fragments (Samson 1980, Herkert 1994, Vickery et al. 1994 as cited in Vickery 2020). Breeding generally occurs from early May through August. There is a low potential for nesting in the various grassland communities onsite because they are heavily grazed.

Wrentit

The wrentit (*Chamaea fasciata*) is not listed in accordance with either the California or federal ESAs but is designated as a BCC by the USFWS. Wrentit are a sedentary resident along the west coast of North America from the Columbia River south to Baja California (Geupel and Ballard 2020). Wrentit are found in coastal sage scrub, northern coastal scrub, and coastal hard and montane chaparral and breed in the dense understory of Valley oak riparian, Douglas-fir and redwood forests, early-successional forests, riparian scrub, coyote bush and blackberry thickets, suburban parks and larger gardens (Geupel and Ballard 2020). Nesting occurs during March through August. Dense scrub vegetation found in the understory of the Bishop pine forest and in the California blackberry thickets onsite represent potentially suitable nesting habitat for this species.

Olive-Sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) is not listed pursuant to either the California or federal ESAs but is a CDFW SSC and a USFWS BCC. In the western United States, olive-sided flycatchers breed from Washington south throughout California, except the Central Valley, eastern deserts, and mountains of southern California (Small 1994). This species breeds in late-successional coniferous forests including Ponderosa pine woodlands, black oak woodlands, mixed coniferous forests, and Jeffrey pine forests, usually at mid to high elevations (Widdowson 2008). They use edges and clearings surrounding dense forests, foraging primarily on bees and wasps. Nesting occurs during May through August. The Bishop pine forest onsite supports potentially suitable nesting habitat for this species.

White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is not listed pursuant to either the California or federal ESAs; however, the species is fully protected pursuant to § 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 2020). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 2020). The Bishop pine forest onsite supports potentially suitable habitat for this species.

Purple Finch

The purple finch (*Haemorhous purpureus*) is not listed and protected under either federal or California ESA's; however, it is considered a BCC by USFWS. In California, purple finch breeding range includes Klamath Mountains south along Coast Range into San Bernardino County, along the western slopes of the Cascade-Sierra Nevada axis from Shasta County south to Kern County (Wootton 2020). Purple finches nest in moist cool coniferous forests, mixed coniferous-deciduous forest, edges of bogs, riparian corridors, and to a lesser deciduous forests, orchards, ornamental plantations, pastures and lawns with scattered conifers, shrubs, hedgerows and developed areas (Wootton 2020). Nesting occurs from April to September. The Bishop pine forest onsite supports potentially suitable habitat for this species.

Osprey

The Osprey (*Pandion haliaetus*) is not listed pursuant to either the federal or California ESAs; however, the species is fully protected pursuant to § 3511 of the California Fish and Game Code and is considered a CDFW watch list species. Osprey have expanded their range throughout much of North American (Bierregaard et al. 2020). Breeding habitat requirements include proximity to fish, open nest sites free from predators, and an ice-free fledging season (Bierregaard et al. 2020). Natural nesting sites include live and dead trees, cliffs, shoreline boulders, and on the ground on predator-free islands; they readily use artificial nest sites such as duck-hunting blinds, channel markers, communication towers, and platforms erected for nesting (Bierregaard et al. 2020). Breeding season occurrences of osprey are found throughout California, with highest frequencies found along the northern California coast, northern Sacramento

Valley, and the Sierra Nevada (eBird 2020). Breeding occurs from April to September. The Bishop pine forest onsite supports potentially suitable habitat for this species.

Bryant's Savannah Sparrow

Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) is not listed pursuant to either the federal or California ESAs, but is designated as an SSC by the CDFW. This sparrow is found in low tidal habitat, adjacent ruderal area, and moist grasslands within and just above the fog belt (Fitton 2008). Cup nests are placed in dense cover on the ground in grass clumps or under matted vegetation or raised up to 10 cm on supporting vegetation (Johnston 1968 as cited in Fitton 2008). The grassland and meadow communities onsite represent potentially suitable nesting habitat for this species.

Purple Martin

The purple martin (*Progne subis*) is not listed pursuant to either the federal or California ESAs, but it is designated as an SSC by the CDFW. In California, purple martins occur within the foothills of the Sierra Nevada and the Coast Range to the Pacific Coast, and a small sub-population occurs within the urbanized portion of Sacramento County. Purple martins typically nest in mid-elevation forests comprised of coniferous, oaks, or mixed woodlands usually with large trees. The Sacramento sub-population nests under elevated bridges. Purple martins nest in North America and winter in South America; they arrive onto breeding grounds in mid-March and depart for wintering grounds in September, with nesting occurring in May through August (Airola and Williams 2008). The Bishop pine forest onsite supports potentially suitable habitat for this species.

Allen's Hummingbird

The Allen's hummingbird (*Selasphorus sasin*) is not listed and protected under either federal or California ESAs; however, it is considered a BCC according to the USFWS. Allen's hummingbirds breed along the Pacific Coast from Oregon to southern California (Clark and Mitchell 2020). Male breeding territories are located in open areas of coastal scrub or riparian vegetation, and females select nest sites in densely vegetated areas with some tree cover, such as mixed evergreen, Douglas fir, redwood and Bishop pine forests, riparian woodlands, eucalyptus and cypress groves, live oak woodlands, and coastal scrub (Clark and Mitchell 2020). Nesting occurs during February through June. The Bishop pine forest onsite supports potentially suitable habitat for this species.

4.6.6 Mammals

Four special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). A brief description of these species is presented below.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits

low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species utilizes echolocation to locate prey, often they use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (WBWG 2017).

One occurrence of pallid bat has been reported within 10 miles of the Study Area (CDFW 2020a). The rocky outcrops and trees within the Study Area provide suitable roosting habitat and the entire Study Area provides suitable foraging habitat for this species. Pallid bat has potential to occur within the Study Area.

Sonoma Tree Vole

The Sonoma tree vole (*Arborimus pomo*) is not listed pursuant to either the California or federal ESAs; however, this species is considered an SSC by CDFW. The Sonoma tree vole is a small arboreal rodent that is mostly restricted to the fog belt along the North Coast from Sonoma County to the Oregon border (CDFW 2014). The species primarily inhabits old-growth coniferous forests dominated by Douglas-fir (*Pseudotsuga menziesii*), although can also occur in hardwood and coniferous forests in other seral stages and where Douglas-fir co-occurs with other tree species (Chinnici et al. 2012). The Sonoma tree vole feeds exclusively on the needles of Douglas-fir and grand fir (*Abies grandis*) (CDFW 2014). Both male and female Sonoma tree voles will use fir needles to construct tree nests that are typically situated six to 150 feet above the ground in a whorl of limbs around the base of the trunk or at the outer limits of branches (CDFW 2014). Nests may be used by succeeding generations. Males may also infrequently nest in shallow burrows under litter at the base of fir trees (CDFW 2014). The Sonoma tree vole is active year-round and is mostly nocturnal outside the nest but may feed throughout the day on fir needles stored within the nest (CDFW 2014). The home range of the Sonoma tree vole is thought to encompass one to several fir trees (Howell 1926). The species breeds year-round, but peak breeding occurs from February through September (CDFW 2014).

Twelve occurrences of Sonoma tree vole have been reported within 10 miles of the Study Area (CDFW 2020a). Douglas-fir trees were observed during the 2018 botanical survey and may occur within the Study Area. Douglas fir trees occurring within the Study Area may provide suitable habitat for this species. Sonoma tree vole has potential to occur within the Study Area.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. Townsend's big-eared bat is a fairly large bat with prominent bilateral nose lumps and large rabbit-like ears. This species occurs throughout the west and ranges from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. This species has been reported from a wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats used include coniferous forests, mixed meso-phytic

forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Its distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. This species is readily detectable when roosting due to their habit of roosting pendant-like on open surfaces. Townsend's big-eared bat is a moth specialist with over 90 percent of its diet composed of Lepidopterans. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. This species often travels long distances when foraging and large home ranges have been documented in California (WBWG 2017).

Two occurrences of Townsend's big-eared bat have been reported within 10 miles of the Study Area (CDFW 2020a). While there is limited roosting habitat onsite, the entire Study Area provides suitable foraging habitat for this species. Townsend's big-eared bat has potential to forage within the Study Area.

American Badger

The American badger (*Taxidea taxus*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. The species historically ranged throughout much of the state, except in humid coastal forests (Williams 1986).

American badgers occupy a variety of habitats and are most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils (CDFW 2014). The principal requirements seem to be significant food supply; friable soils; and relatively open, uncultivated ground (Williams 1986). Young are born in burrows dug in relatively dry, often sandy soils with sparse understory cover (CDFW 2014).

Four occurrences of American badger have been reported within 10 miles of the Study Area (CDFW 2020a). The coastal prairie onsite represents suitable habitat for this species. American badger has potential to den and forage within the Study Area.

5.0 IMPACTS AND RECOMMENDATIONS

5.1 Waters of the U.S. and CCC Wetlands

An aquatic resources delineation has been conducted for the Project. However, the delineation has not been verified by USACE or the CCC. In addition, modifications to the trail alignment subsequent to the aquatic resources delineation were made to avoid natural resources and will require additional surveys to assess if additional USACE or CCC wetlands occur in previously non-surveyed locations. The following measures are recommended as potential mitigation for impacts to Waters of the U.S. and CCC wetlands:

- Secure a preliminary or approved jurisdictional determination from USACE for Waters of U.S. and verification from the CCC for CCC wetlands following updates to the ARD.
- A permit from the USACE will be required for any activity resulting in fill of wetlands and other Waters of the U.S. Project proponents shall be required to obtain this permit before Project initiation. A wetland mitigation plan that satisfies USACE requirements will be needed as part of the permit application. Project proponents that obtain a Section 404 permit will also be required to obtain water quality certification from the RWQCB pursuant to Section 401 of the CWA.

- The Project Proponent shall submit a mitigation and monitoring plan (MMP) to USACE and the RWQCB, for review and approval before USACE making a permit decision for the proposed action. The MMP shall identify the amount and type of proposed mitigation to ensure “no net loss” of aquatic resource functions and services that would be removed, lost, and/or substantially degraded as a result of implementing the project. The MMP will describe where and how much fill is required, mitigation, a maintenance and long-term management plan, monitoring protocols, and final success criteria for created or restored habitats).
- Mitigation methods may consist of establishment by a qualified biologist of aquatic resources in upland habitats where they did not previously exist, reestablishment (restoration) of natural historic functions to a former aquatic resource, enhancement of an existing aquatic resource to heighten, intensify, or improve aquatic resource functions, or a combination thereof. Compensatory mitigation may be accomplished through purchase of credits from a USACE-approved mitigation bank, payment into a USACE-approved in-lieu fee fund, or through permittee-responsible on- or offsite establishment, reestablishment, or enhancement, depending on availability of mitigation credits. To the extent practicable, mitigation shall be carried out within the affected watershed.
- Permittee-responsible mitigation habitat shall be monitored by a qualified biologist for a minimum of five years from completion of mitigation, or human intervention (including recontouring and grading), or until the success criteria identified in the approved MMP have been met, whichever is longer.
- A Coastal Development Permit would be required for any activity impacting CCC wetlands. Various alternatives exist for mitigating the adverse effects of wetland development projects on CCC wetlands including in-kind compensatory wetland mitigation (i.e., creation, restoration, or enhancement of wetland habitat) and out-of-kind mitigation where impacts to one habitat type are mitigated through the creation, restoration, or enhancement of another habitat type. Mitigation for impacts to CCC wetlands will be vetted through the Coastal Development Permit process.

5.2 Vegetation Communities

There are three vegetation communities mapped within the Study Area that may be considered Sensitive Natural Communities by CDFW (Figure 2). These communities include *Carex obnupta* Herbaceous Alliance (S3), *Danthonia californica* Herbaceous Alliance (S3), and *Pinus muricata* Forest Alliance (S3?) (SNRC 2018). Table 4 summarizes the acreage of each of these communities within the Study Area.

Table 4. Acreages of Potential Sensitive Natural Communities within Study Area	
Potential Sensitive Natural Community	Acres in Study Area*
<i>Carex obnupta</i> Herbaceous Alliance	0.001
<i>Danthonia californica</i> Herbaceous Alliance	0.01

<i>Pinus muricata</i> Forest Alliance	0.28
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* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total acreage reported.

The Project would result in permanent removal of vegetation within the majority of the Study Area. However, vegetation removal will be minor and the Project is neither expected to remove entire vegetation communities nor have a substantial adverse effect on Sensitive Natural Communities. During the permitting process, impacts to Sensitive Natural Communities may require consultation with CDFW and the CCC to develop acceptable mitigation.

5.3 Sonoma County Tree Ordinance

Trees within the Study Area may be impacted by the Project. It is unknown if there are heritage or landmark trees onsite. The following measures are recommended to minimize potential impacts to protected trees:

- Establish and clearly demarcate avoidance zones for heritage and landmark trees prior to construction. Avoidance zones should be maintained until the completion of construction.
- A tree permit shall be procured from the County prior to removal or damage of heritage or landmark trees.

5.4 Special-Status Species

There is suitable habitat within the Study Area for eight special-status plants, two special-status invertebrates, four special-status amphibians, one special-status reptile, nine special-status birds, and four special-status mammals. A brief discussion of impacts and recommendations is presented below for each group.

5.4.1 Plants

A total of seven plant species may be impacted by the Project. Three special status plants are known to occur within the Study Area: coastal bluff morning-glory, short-leaved evax, and purple-stemmed checkerbloom. Four additional special-status plants are known to occur within the immediate vicinity of the Study Area but were not found in the Study Area during 2018 botanical surveys: Blasdale's bent grass, swamp harebell, deceiving sedge, and Baker's goldfields (*Lasthenia californica* ssp. *bakeri*). There is also potential habitat for one special-status moss within the Study Area, minute pocket moss. Figure 6. *Botanical Survey Results* depicts the location of special-status species in relation to the Study Area, as mapped during the 2018 botanical survey (SNRC 2018).

The Project would result in direct and permanent impacts to coastal bluff morning-glory, short-leaved evax, and purple-stemmed checkerbloom. It is the opinion of SNRC that coastal bluff morning glory and short-leaved evax may be underreported and are likely not as rare as their ranking suggests (SNRC 2018). Both species are also somewhat resilient to disturbance (SNRC 2018). Therefore, it is unlikely that the Project would substantially impact coastal bluff morning-glory and short-leaved evax populations onsite.

Table 5 summarizes the estimated acres of impacts to these species, based on their extent as mapped during the 2018 botanical survey and assuming a 10-foot-wide area of direct impacts to habitat due to trail construction and two feet of temporary disturbance on either side. However, the distribution and abundance of plant populations may change from year to year.

Table 5. Estimated Acres of Impacts for Special Status Plant Species			
Species	Acres of Permanent Impacts	Acres of Temporary Impacts	Total Impacts
Coastal Bluff Morning-Glory	0.365	0.147	0.512
Short-Leaved Evax	0.063	0.025	0.088
Purple-Stemmed Checkerbloom	0.053	0.022	0.075

The Project may also result in direct and permanent impacts to Blasdale's bent grass, swamp harebell, deceiving sedge, Baker's goldfields, and minute pocket moss should they occur within the proposed trail alignment.

Indirect permanent impacts to special-status plants adjacent to the Study Area may occur due to a change in habitat postconstruction (e.g., vegetation removal causing an increase in sunlight, alteration of hydrology from the trail, introduction of invasive plant species, removal of grazing due to new management for the trail). Indirect temporary impacts may result from the deposition of dust onto the leaves of special-status plants and/or unintentional crushing of special-status plants during construction. Indirect impacts may also occur due to trail users traveling off the trail and inadvertently trampling special-status plants. These indirect impacts are expected to be minimal, as it is expected that the trail will be designed and managed to allow for continued grazing and to minimize alteration of hydrology, erosion, and off-trail travel.

Unavoidable direct impacts to special-status plants may require consultation with CDFW and development of mitigation measures during the CEQA process.

The following measures are recommended to minimize potential impacts to special-status plants:

- Develop and implement a mitigation and monitoring plan. The mitigation and monitoring plan should include documentation of baseline conditions immediately after Project construction and prior to public use of the trail. After construction, annual monitoring will be implemented to identify any impacts to sensitive biological resources from trail use, trail maintenance, and off-trail travel relative to baseline conditions. The mitigation and monitoring plan will include performance standards for maintaining sensitive biological resources. If performance standards are not met, implementation of adaptive management strategies will be required.
- Conduct pre-construction special-status plant surveys following agency protocols within the Project impact areas.
- Establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones should be maintained until the completion of construction.

- If avoidance of special-status plants is not possible, mitigate for significant impacts to special-status plants. Mitigation measures should be developed in consultation with the appropriate regulatory agency and may require preparation of a mitigation plan. Mitigation for permanent impacts may include permanent preservation of avoided onsite habitat for special-status plants and/or translocation of plants or seeds from impacted areas to unaffected habitats. Mitigation for temporary impacts may include restoration of temporarily disturbed areas through saving and replacing topsoil or collection and spread of seeds.
- Clothing, vehicles, and equipment, including shoes and the undercarriage and tires/tracks, should be cleaned prior to entering the Project area to avoid the introduction and spread of invasive plant species.
- Any materials used for the Project, such as fill dirt or erosion control materials, should be from weed-free locations or certified weed free.
- Dust generation should be kept to a minimum near special-status plant occurrences.

5.4.2 Invertebrates

Suitable habitat for two special-status invertebrates is present within the Study Area. These include western bumble bee and Behren's silverspot butterfly.

Western Bumble Bee

Potential direct impacts to western bumble bee include disturbance of a ground nest or disturbance to foraging individuals where flowering plants occur in the Study Area. Direct impacts to a ground nest could result in direct mortality of individual bees and eggs. Disturbance of foraging individuals is expected to be temporary.

Potential indirect effects include permanent removal of flowering plants within the Study Area, which may minimally reduce available floral resources for the western bumble bee.

Mitigation developed to avoid potential impacts to known flowering plant populations onsite including avoidance of sensitive flowering plant populations through project design, pre-construction plant surveys, establishing avoidance and buffer zones, and invasive species and erosion control BMPs will minimize potential impacts to western bumble bee.

Behren's Silverspot Butterfly

Vegetation removal and ground disturbance for the Project may result in the direct loss of eggs, larvae, and adults. Strikes from Project vehicles and equipment may also result in direct loss of individuals.

Potential indirect effects include permanent removal of violets (*Viola* sp.) and other flowering plants within the Study Area, which may reduce available food for larvae and nectar sources for adults. Indirect effects may also include introduction and spread of invasive species, which may outcompete violets or contribute to degradation of habitat for violets.

Unavoidable direct impacts to Behren’s silverspot butterfly would require consultation with USFWS and compliance with ESA through the Section 7 consultation process. Potential indirect impacts to Behren’s silverspot butterfly could be avoided or minimized through Project design, where feasible, and implementation of construction best management practices (BMPs) designed to protect aquatic habitats (e.g., erosion control measures).

The following measures may be implemented to determine if Behren’s silverspot butterfly will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on Behren’s silverspot butterfly:

- A qualified biologist should conduct a habitat assessment for Behren’s silverspot butterfly in the Study Area plus a one-mile buffer around the Study Area.
- If habitat for Behren’s silverspot butterfly (e.g., early blue violet [*Viola Arundo*] plants within coastal prairie) is identified onsite, consult with USFWS to determine appropriate measures to avoid, minimize, and/or compensate for impacts.

5.4.3 *Amphibians*

Suitable habitat for four special-status amphibians is present within the Study Area. These include CGS, FYLF, California red-legged frog, and red-bellied newt.

California Giant Salamander

Suitable breeding, aestivation, and dispersal habitat for the foothill CGS is present within the Study Area. Construction activities may result in direct permanent impacts to CGS habitat and may result in the direct loss of eggs, larvae, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to CGS habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Unavoidable direct impacts to CGS may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to CGS could be avoided or minimized through project design, where feasible, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures along the intermittent drainage onsite).

To determine if CGS will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on CGS, the following measures may be implemented:

- Conduct a habitat assessment for CGS in the Study Area.
- Where habitat for CGS is identified, a qualified biologist should be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction). If CGS are found during a survey, salamanders should be moved from the work area to the nearest CDFW-approved relocation site. Relocation of CGS requires a letter from CDFW authorizing this activity. Barrier fencing should be used to exclude CGS from work areas after the survey/relocation is complete.

- During construction, where habitat for CGS habitat is identified, no monofilament plastic mesh or line would be used for erosion control to reduce the risk of entrapment. An onsite biological monitor should inspect work areas daily for CGS.

Foothill Yellow-Legged Frog

Suitable breeding, aestivation, and dispersal habitat for the FYLF is present along the streams within the Study Area. Construction of bridges and other crossings for these streams may result in direct permanent impacts to FYLF habitat and may result in the direct loss of eggs, tadpoles, juveniles, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to FYLF habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Unavoidable direct impacts to FYLF may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to FYLF could be avoided or minimized through Project design, where feasible, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures).

To determine if FYLF will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on FYLF, the following measures may be implemented:

- A qualified biologist should conduct a habitat assessment for FYLF in the Study Area plus a 500-foot buffer around the Study Area.
- Where habitat for FYLF is identified, a qualified biologist should conduct preconstruction surveys for FYLF immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction). FYLF found within the work area should be moved from the work area to the nearest CDFW-approved relocation site. Relocation of FYLF requires a letter from CDFW authorizing this activity. Barrier fencing should be used to exclude FYLF from work areas after the survey/relocation is complete.
- Where habitat for FYLF habitat is identified, no monofilament plastic mesh or line would be used for erosion control to reduce the risk of entrapment during construction. An onsite biological monitor should inspect work areas daily for FYLF.

California Red-Legged Frog

There is low potential for breeding within the Study Area, although breeding habitat may occur within the vicinity of the Study Area and there is suitable dispersal habitat for CRLF within the Study Area. Construction activities would remove dispersal habitat for this species and may also result in the loss of individuals. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to CRLF dispersal habitats from construction-related activities that cause increased erosion, sedimentation, turbidity, and pollution/contamination.

Unavoidable direct impacts to CRLF would require consultation with USFWS and compliance with ESA through the Section 7 consultation process. Potential indirect impacts to CRLF would be avoided or

minimized through Project design, where feasible, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures).

The following measures may be implemented to determine if CRLF will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on CRLF:

- A qualified biologist should conduct a habitat assessment for CRLF in the Study Area plus a one-mile buffer around the Study Area.
- Where habitat for CRLF is identified, a qualified biologist should conduct protocol-level surveys to determine whether CRLF occupy habitats within or surrounding the site.
- If surveys identify CRLF or CRLF habitat, consult with USFWS to determine appropriate measures to avoid, minimize, and/or compensate for impacts to CRLF. Mitigation would have to occur within the framework of a biological opinion, and USFWS-approved mitigation developed through the regulatory permitting process would establish the appropriate and required mitigation for CRLF impacts. Measures may include preconstruction surveys, workers awareness training, and biological monitoring during construction.

Red-Bellied Newt

Suitable breeding and dispersal habitat for the red-bellied newt is present within the Study Area. Construction activities may result in direct permanent impacts to red-bellied newt habitat and may result in the direct loss of eggs, larvae, and adults. In addition to direct permanent impacts, implementation of the Project could result in indirect temporary impacts to red-bellied newt habitats from construction-related activities causing increased erosion, sedimentation, turbidity, and pollution/contamination.

Unavoidable direct impacts to red-bellied newt may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to red-bellied newt could be avoided or minimized through project design, where feasible, and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures).

The following measures may be implemented to determine if red-bellied newt will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on red-bellied newt:

- A qualified biologist should conduct a habitat assessment for red-bellied newt in the Study Area.
- Where habitat for red-bellied newt is identified, a qualified biologist should be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction). If red-bellied newt is found during a survey, newts should be moved from the work area to the nearest CDFW-approved relocation site. Relocation of red-bellied newt requires a letter from CDFW authorizing this activity. Barrier fencing should be used to exclude red-bellied newt from work areas after the survey/relocation is complete.

- Where habitat for red-bellied newt habitat is identified, no monofilament plastic mesh or line would be used for erosion control to reduce the risk of entrapment during construction. An onsite biological monitor should inspect work areas daily for red-bellied newt.

5.4.4 Reptiles

Suitable habitat for one special-status reptile, northwestern pond turtle, is present within the Study Area.

Northwestern Pond Turtle

There is low potential for breeding within the Study Area, although breeding habitat may occur within the vicinity of the Study Area and there is suitable dispersal habitat for northwestern pond turtle within the Study Area. Construction activities would remove dispersal habitat for this species and may also result in the loss of individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to northwestern pond turtle habitats from construction-related activities that result in increased erosion, sedimentation, turbidity, and pollution/contamination.

Unavoidable direct impacts to northwestern pond turtle may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to northwestern pond turtle will be avoided or minimized through project design, where feasible and implementation of construction BMPs designed to protect aquatic habitats (e.g., erosion control measures).

The following measures may be implemented to determine if northwestern pond turtle will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on northwestern pond turtle:

- A qualified biologist should conduct a habitat assessment for northwestern pond turtle in the Study Area.
- Where habitat for northwestern pond turtle is identified, a qualified biologist should be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction). If northwestern pond turtle are found during a survey, turtles should be moved from the work area to the nearest CDFW-approved relocation site. Relocation of northwestern pond turtle requires a letter from CDFW authorizing this activity. Barrier fencing should be used to exclude northwestern pond turtle from work areas after the survey/relocation is complete.
- Where habitat for northwestern pond turtle is identified, no monofilament plastic mesh or line would be used for erosion control to reduce the risk of entrapment during construction. An onsite biological monitor should inspect work areas daily for northwestern pond turtle.

5.4.5 Birds

Suitable nesting and/or wintering and foraging habitat for nine special-status birds is present within the Study Area. These include grasshopper sparrow, wrentit, olive-sided flycatcher, white-tailed kite, purple

finch, osprey, Bryant's savannah sparrow, purple martin, and Allen's hummingbird. If present, the Project could result in harassment to nesting individuals and may temporarily disrupt foraging activities.

In addition to the above-listed special-status birds, all native birds, including raptors, are protected under the California Fish and Game Code and the federal MBTA. As such, to ensure that there are no impacts to protected active nests, the following mitigation measures are recommended:

- Conduct a pre-construction nesting bird survey of all suitable habitat on the Project within 14 days of the commencement of construction during the nesting season (generally February 1 - August 31). A no-disturbance buffer around the nest shall be established if active nests are found. The buffer distance shall be established by a qualified biologist in consultation with CDFW. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest tree, to be determined by a qualified biologist. Once the young are independent of the nest, no further measures are necessary. Pre-construction nesting surveys are not required for construction activity outside the nesting season.

5.4.6 Mammals

Suitable habitat for four special status mammals is present within the Study Area. These include pallid bat, Sonoma tree vole, Townsend's big-eared bat, and American badger.

Pallid Bat

Crevices of the rock outcrops and trees within the Study Area represent suitable roosting habitat and the entire Study Area represents suitable foraging habitat for the pallid bat. Trail construction may remove habitat for pallid bat and may result in direct loss of roosting individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to bat habitat from construction-related impacts (e.g., increase noise, increased human presence, and dust).

Unavoidable direct impacts to pallid bat may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to pallid bat could be avoided or minimized through project design, where feasible.

The following measures may be implemented to determine if pallid bat will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on pallid bat:

- Pre-construction bat surveys should be completed within the Project site prior to scheduled Project activities that may impact bat roosting habitat. The bat survey should consist of a habitat assessment followed by emergence surveys (if roosting habitat is determined to be present). If roosting bats are determined to be present within the Project site, a Bat Management Plan should be prepared by a qualified bat biologist that outlines measures specific to the roost(s) potentially affected.

Sonoma Tree Vole

The trees within the Study Area represent suitable nesting habitat for Sonoma tree vole. Tree removal and ground disturbance around trees may remove habitat for Sonoma tree vole and may result in direct loss

of individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to Sonoma tree vole from construction-related impacts (e.g., increased noise, increased human presence, and dust).

Unavoidable direct impacts to Sonoma tree vole may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to Sonoma tree vole could be avoided or minimized through Project design, where feasible.

The following measures may be implemented to determine if Sonoma tree vole will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on pallid bat:

- A qualified biologist should conduct a habitat assessment for Sonoma tree vole in the Study Area.
- Where habitat for Sonoma tree vole is identified, a qualified biologist should be retained to conduct preconstruction surveys immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and trail construction).
- If Sonoma tree vole or their nests are found during surveys, a no-disturbance buffer around nest trees should be established in consultation with CDFW. If avoidance is not possible, additional measures should be determined in consultation with CDFW.

Townsend's Big-Eared Bat

There is low potential for roosting within the Study Area, although roosting may occur within the vicinity of the Study Area and there is suitable foraging habitat for Townsend's big-eared bat within the Study Area. Trail construction may remove a small amount of foraging habitat for Townsend's big-eared bat.

Direct impacts to Townsend's big-eared bat are not expected, and indirect impacts are expected to be minimal. Therefore, no measures are recommended for Townsend's big-eared bat.

American Badger

The coastal prairie represents suitable denning habitat and the entire Study Area represents suitable foraging habitat for American badger. Trail construction may remove habitat for American badger and may result in direct loss of denning individuals. In addition to direct permanent impacts, implementation of the proposed Project could result in indirect temporary impacts to American badger habitat from construction-related impacts (e.g., increase noise, increased human presence, and dust).

Unavoidable direct impacts to American badger may require consultation with CDFW and development of mitigation measures during the CEQA process. Potential indirect impacts to pallid bat could be avoided or minimized through project design, where feasible.

The following measures may be implemented to determine if American badger will be impacted by the Project and to reduce, minimize, or mitigate for potential adverse effects on American badger:

- A qualified biologist should conduct a habitat assessment for American badger in the Study Area.

- Where habitat for American badger is identified, a qualified biologist should be retained to conduct preconstruction surveys within 14-days prior to ground-disturbing activities.
- If American badgers or their dens are found during surveys, a no-disturbance buffer around dens and/or passive relocation methods should be established in consultation with CDFW. A qualified biologist should conduct a preconstruction survey within 24 hours prior to construction and should inspect work areas daily for American badger.

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Figure 2. Vegetation Communities - Overview

Figure 3. Vegetation Communities

Figure 4. Natural Resources Conservation Service Soil Units

Figure 5. Aquatic Resources Delineation

Figure 6. Botanical Survey Results

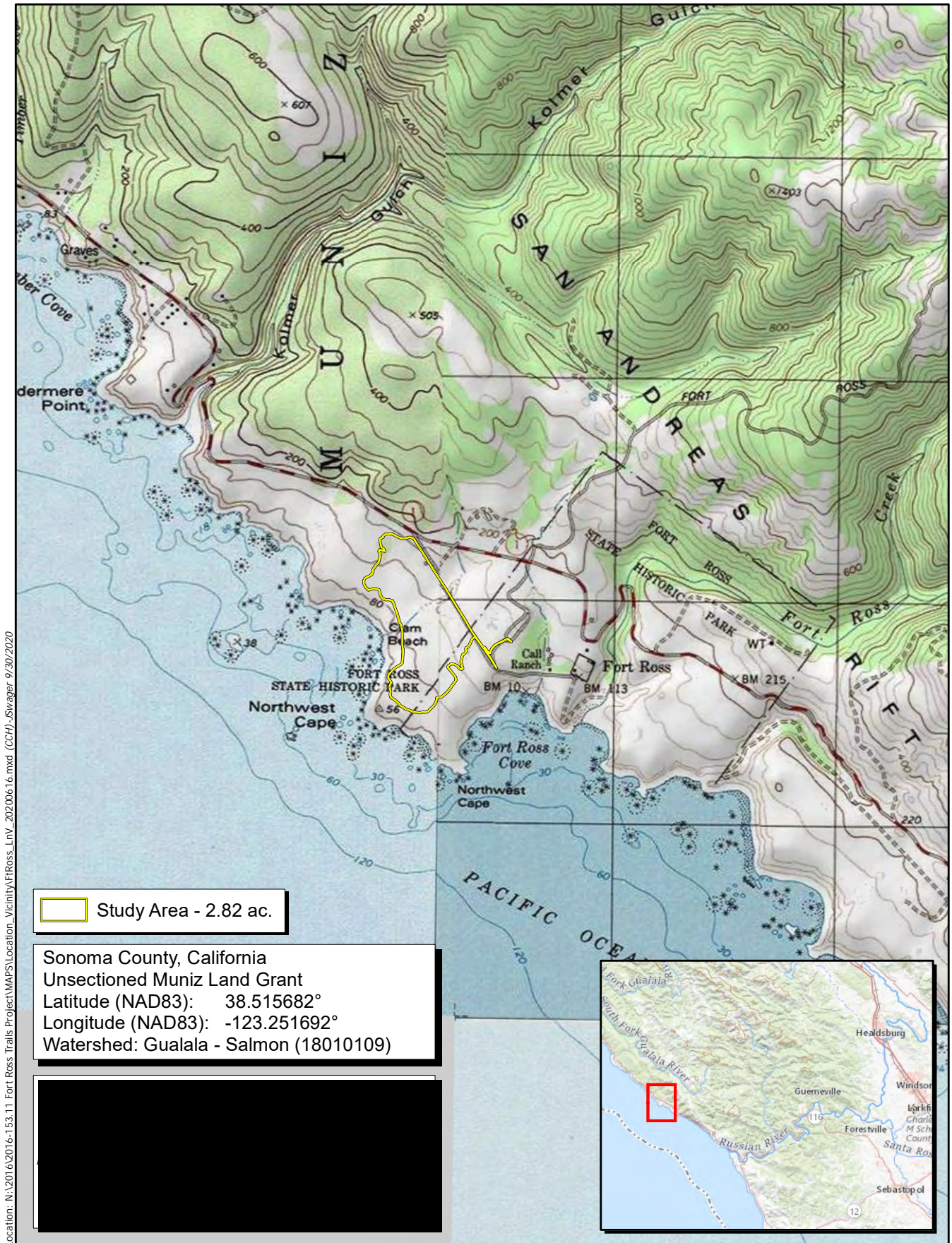


Figure 1. Project Location and Vicinity

2016-153.11 Fort Ross Trails Project

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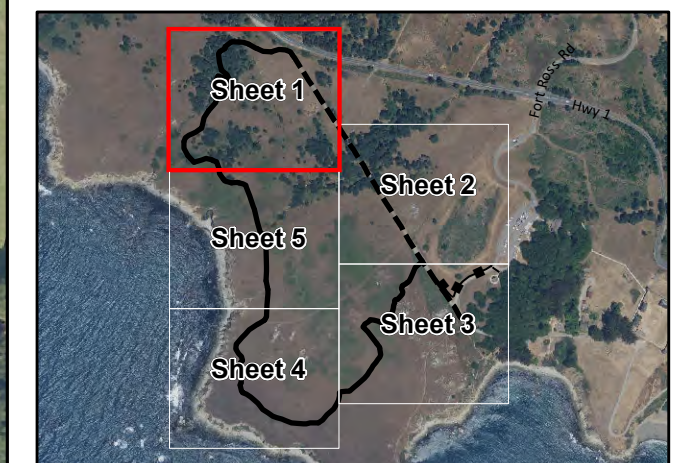
Map Features

- Study Area - 2.82 ac.
- Existing Road
- Kashia Loop Trail
- New Bench
- Interpretive Stop with Marker
- Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

- Anthoxanthum odoratum* Semi-Natural Herb Alliance
- Carex obnupta* Herbaceous Alliance
- Danthonia pilosa* Provisional Semi-Nat Association
- Festuca bromoides* Provisional Semi-Nat Association
- Juncus balticus* Herbaceous Alliance
- Pinus muricata* Forest Alliance
- Road

Sources: ESRI, USGS, CA State Parks, Sonoma County



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Map Features

Study Area - 2.82 ac.

Existing Road

Kashia Loop Trail

Interpretive Stop with Marker

Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

Anthoxanthum odoratum
Semi-Natural Herb Alliance

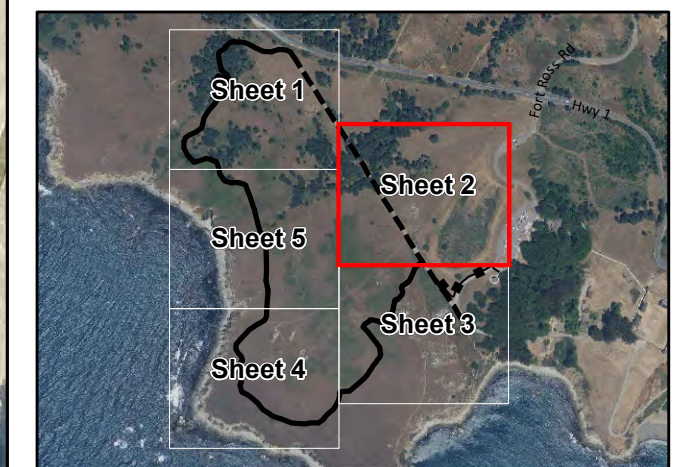
Baccharis pilularis Shrubland Alliance

Festuca bromoides Provisional
Semi-Nat Association

Pinus muricata Forest Alliance

Road

Sources: ESRI, USGS, CA State Parks, Sonoma County



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Map Features

- Study Area - 2.82 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail
- Existing Bench
- New Bench
- Interpretive Stop with Marker
- Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

- Anthoxanthum odoratum* Semi-Natural Herb Alliance
- Baccharis pilularis* Shrubland Alliance
- Danthonia californica* Herbaceous Alliance
- Deschampsia cespitosa* Herb Alliance
- Festuca bromoides* Provisional Semi-Nat Association
- Road
- Rocky Outcrop Special Feature

Sources: ESRI, USGS, CA State Parks, Sonoma County



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Map Features

- Study Area - 2.82 ac.
 - Kashia Loop Trail
 - Interpretive Stop with Marker
- Vegetation Community - Acres in Study Area *
- Deschampsia cespitosa* Herb Alliance
 - Iris douglasiana* patch
 - Lasthenia californica* Herb Alliance
 - Lupinus arboreus* Semi-Natural Alliance

Sources: ESRI, USGS, CA State Parks, Sonoma County



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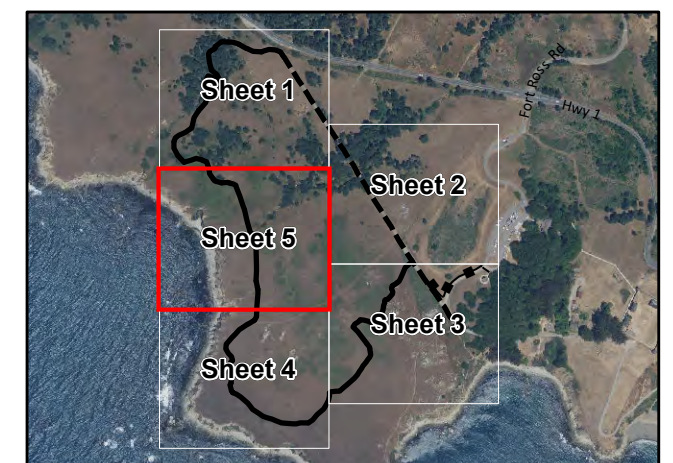
Map Features

- Study Area - 2.82 ac.
- Kashia Loop Trail
- New Bench
- Interpretive Stop with Marker
- Interpretive Stop with Panel

Vegetation Community - Acres in Study Area *

- Anthoxanthum odoratum* Semi-Natural Herb Alliance
- Danthonia pilosa* Provisional Semi-Nat Association
- Deschampsia cespitosa* Herb Alliance
- Juncus balticus* Herbaceous Alliance

Sources: ESRI, USGS, CA State Parks, Sonoma County



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Map Features

Study Area - 2.82 ac.

NRCS Soil Types Within Study Area
Series Number - Series Name

KnE - Kneeland loam, 15 to 30 percent slopes

KnF - Kneeland loam, 30 to 50 percent slopes

RrC - Rohnerville loam, 0 to 9 percent slopes

Natural Resources Conservation Service (NRCS)
Soil Survey Geographic (SSURGO) Database for
Sonoma County, CA

Sources:: ESRI, USGS, NRCS, CA State Parks, Sonoma County

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Map Features

- Study Area - 2.82 ac.
 - Permanent Impact Area - 2.01 ac.
 - Temporary Impact Area - 0.80 ac.
 - Connector Trail
 - Existing Road
 - Kashia Loop Trail
- #### Aquatic Resources
- CCC Wetland (0.051 ac.)
 - Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
 - Intermittent Drainage (0.003 ac.) (29 lin.ft.)
 - Seasonal Wetland Swale (0.027 ac.)
 - Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County

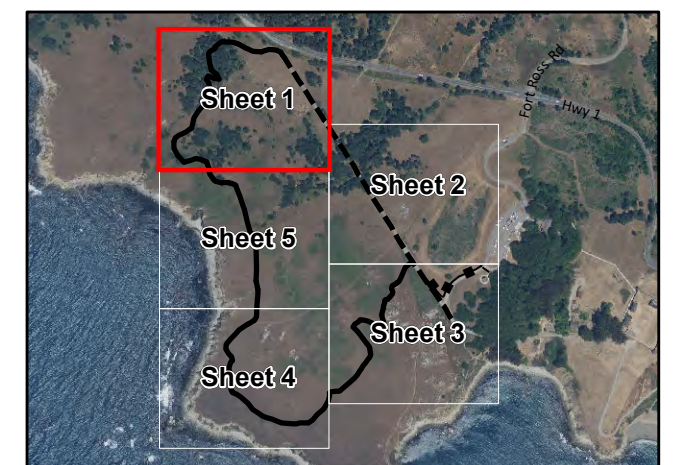


Figure 5. Aquatic Resources Delineation
(Sheet 1 of 5)












2016-153.11 Fort Ross Trails Project



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Map Features

-  Study Area - 2.82 ac.
 -  Permanent Impact Area - 2.01 ac.
 -  Temporary Impact Area - 0.80 ac.
 -  Connector Trail
 -  Existing Road
 -  Kashia Loop Trail
- #### Aquatic Resources
-  CCC Wetland (0.051 ac.)
 -  Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
 -  Intermittent Drainage (0.003 ac.) (29 lin.ft.)
 -  Seasonal Wetland Swale (0.027 ac.)
 -  Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County

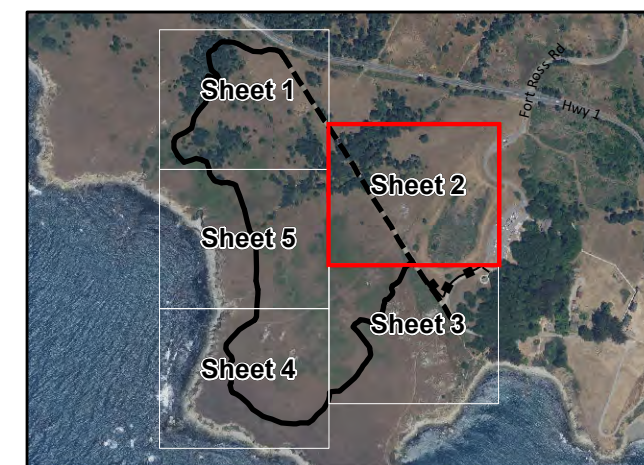


Figure 5. Aquatic Resources Delineation
(Sheet 2 of 5)

2016-153.11 Fort Ross Trails Project



ECORP: N:\2016\153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20200616.mxd (JDS)-Swager 10/5/2020



Map Features

- Study Area - 2.82 ac.
- Permanent Impact Area - 2.01 ac.
- Temporary Impact Area - 0.80 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail

Aquatic Resources

- CCC Wetland (0.051 ac.)
- Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
- Intermittent Drainage (0.003 ac.) (29 lin.ft.)
- Seasonal Wetland Swale (0.027 ac.)
- Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County



Figure 5. Aquatic Resources Delineation
(Sheet 3 of 5)












2016-153.11 Fort Ross Trails Project



ECORP: N:\2016\153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20200616.mxd (JDS)-Jswager 10/5/2020



Map Features

-  Study Area - 2.82 ac.
 -  Permanent Impact Area - 2.01 ac.
 -  Temporary Impact Area - 0.80 ac.
 -  Connector Trail
 -  Existing Road
 -  Kashia Loop Trail
- Aquatic Resources
-  CCC Wetland (0.051 ac.)
 -  Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
 -  Intermittent Drainage (0.003 ac.) (29 lin.ft.)
 -  Seasonal Wetland Swale (0.027 ac.)
 -  Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County



Figure 5. Aquatic Resources Delineation
(Sheet 4 of 5)

2016-153.11 Fort Ross Trails Project

ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Wetland_Mapping\Wetland_Delineation\2\FIRoss_BRA_WD_20200616.mxd (JDS)-Swager 10/5/2020



Map Features

- Study Area - 2.82 ac.
- Permanent Impact Area - 2.01 ac.
- Temporary Impact Area - 0.80 ac.
- Connector Trail
- Existing Road
- Kashia Loop Trail

Aquatic Resources

- CCC Wetland (0.051 ac.)
- Ephemeral Drainage (0.004 ac.) (34 lin.ft.)
- Intermittent Drainage (0.003 ac.) (29 lin.ft.)
- Seasonal Wetland Swale (0.027 ac.)
- Wet Meadow (0.052 ac.)

Sources: ESRI, USGS, CA State Parks, Sonoma County

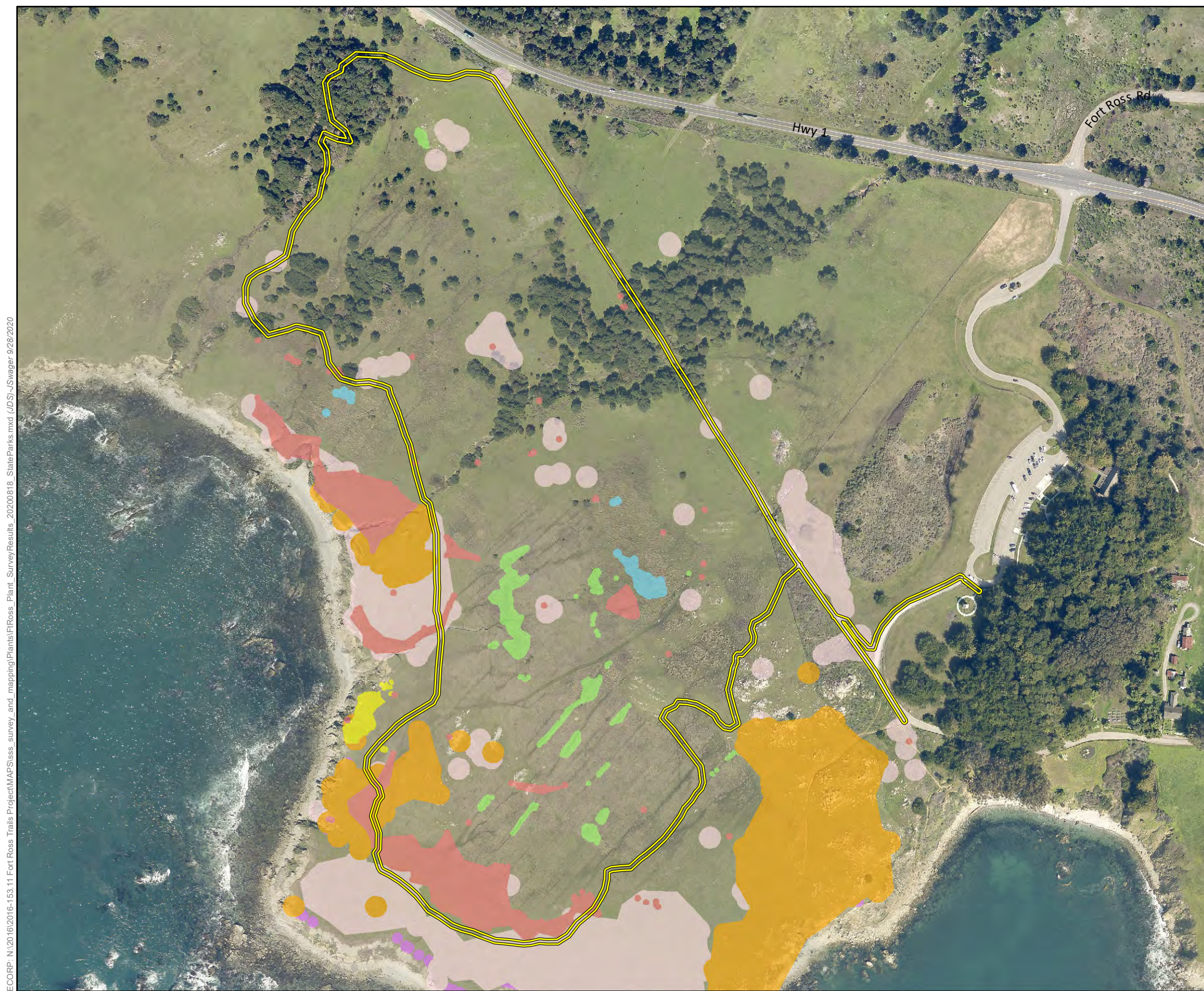


Figure 5. Aquatic Resources Delineation
(Sheet 5 of 5)

2016-153.11 Fort Ross Trails Project



ECORP: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\survey_and_mapping\Plants\FIRoss_Plant_SurveyResults_20200818_StateParks.mxd (JDS)-Jswager 9/28/2020



Map Features

Study Area - 2.82 ac.

Rare Plants

Sidalcea malviflora ssp. *purpurea*

Hesperis matronalis

Lasthenia californica subsp. *bakeri*

Carex saliniformis

Campanula californica

Agrostis blasedalei

Calystegia purpurata subsp. *saxicola*

Sources: ESRI, USGS, CA State Parks, Sonoma County

LIST OF ATTACHMENTS

Attachment A – Results of Database Queries

A1 - USFWS IPaC Resource List

A2 - CDFW CNDDDB Database Query Result

A3 - CNPS Inventory Query Result

Attachment B – Technical Studies

B1 – Botanical Survey Report

B2 – Draft Aquatic Resources Delineation

Attachment C – Wildlife Observed (August 22 and 23, 2018 and August 21, 2020)

ATTACHMENT A

Results of Database Queries

A1 - USFWS IPaC Resource List

A2 - CDFW CNDDDB Database Query Result

A3 - CNPS Inventory Query Result

Last login September 29, 2020 05:51 PM MDT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sonoma County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME

STATUS

Marbled Murrelet <i>Brachyramphus marmoratus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened
Short-tailed Albatross <i>Phoebastria (=Diomedea) albatrus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
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Behren's Silverspot Butterfly *Speyeria zerene behrensii*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/900>

Crustaceans

NAME	STATUS
California Freshwater Shrimp <i>Syncaris pacifica</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7903	Endangered

Flowering Plants

NAME	STATUS
Sonoma Spineflower <i>Chorizanthe valida</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7698	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>

- Nationwide conservation measures for birds

<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird *Selasphorus sasin*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9637>

Breeds Feb 1 to Jul 15

Black Oystercatcher *Haematopus bachmani*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9591>

Breeds Apr 15 to Oct 31

Black Turnstone *Arenaria melanocephala*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Brown Pelican *Pelecanus occidentalis*

Breeds Jan 15 to Sep 30

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/6034>

Common Murre *Uria aalge*

Breeds Apr 15 to Aug 15

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Double-crested Cormorant *phalacrocorax auritus*

Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/3478>

Great Blue Heron *Ardea herodias fannini*

Breeds Mar 15 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Herring Gull *Larus argentatus*

Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Red-breasted Merganser *Mergus serrator*

Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon *Gavia stellata*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ring-billed Gull *Larus delawarensis*

Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Surf Scoter *Melanitta perspicillata*

Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



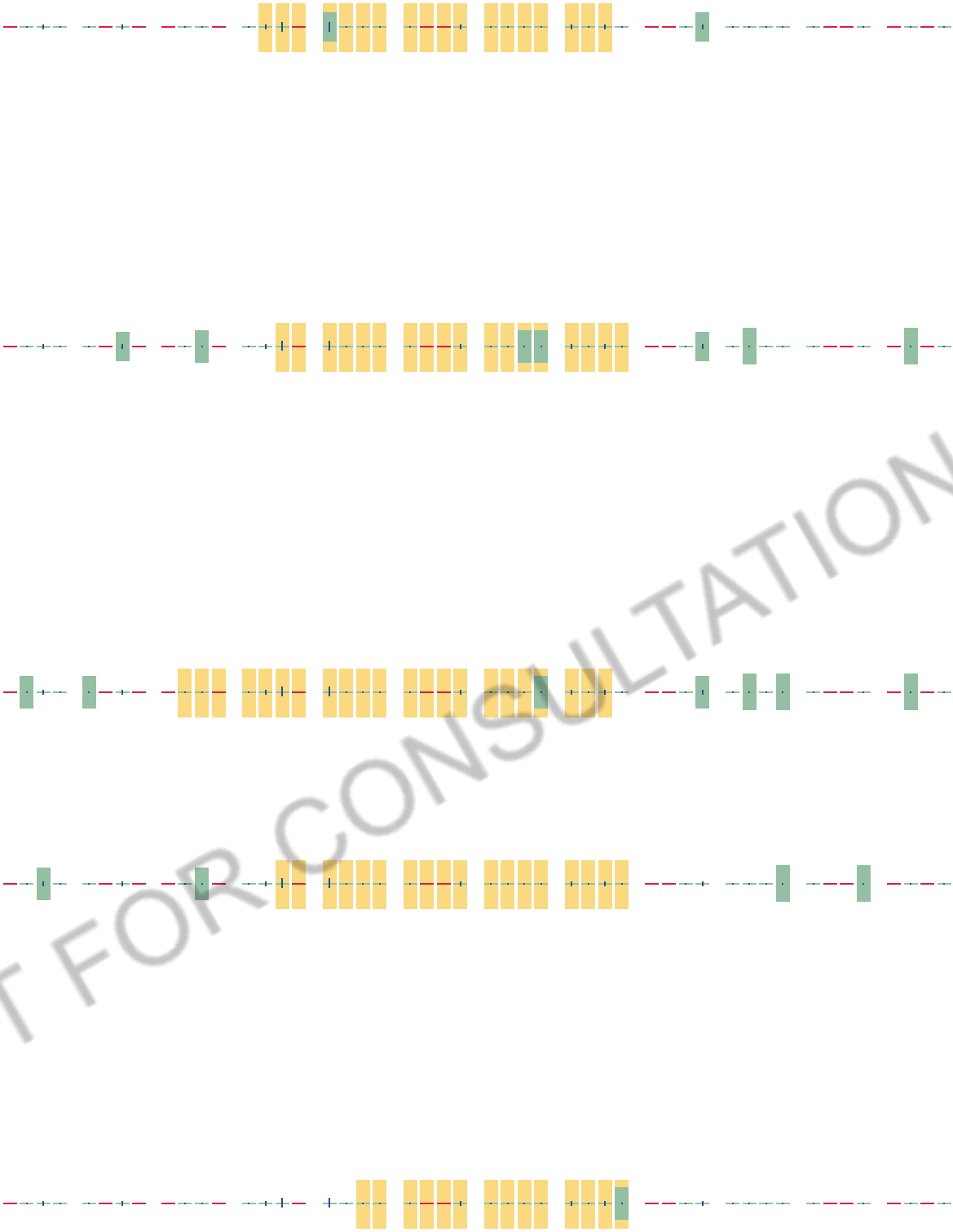
Common Murre
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

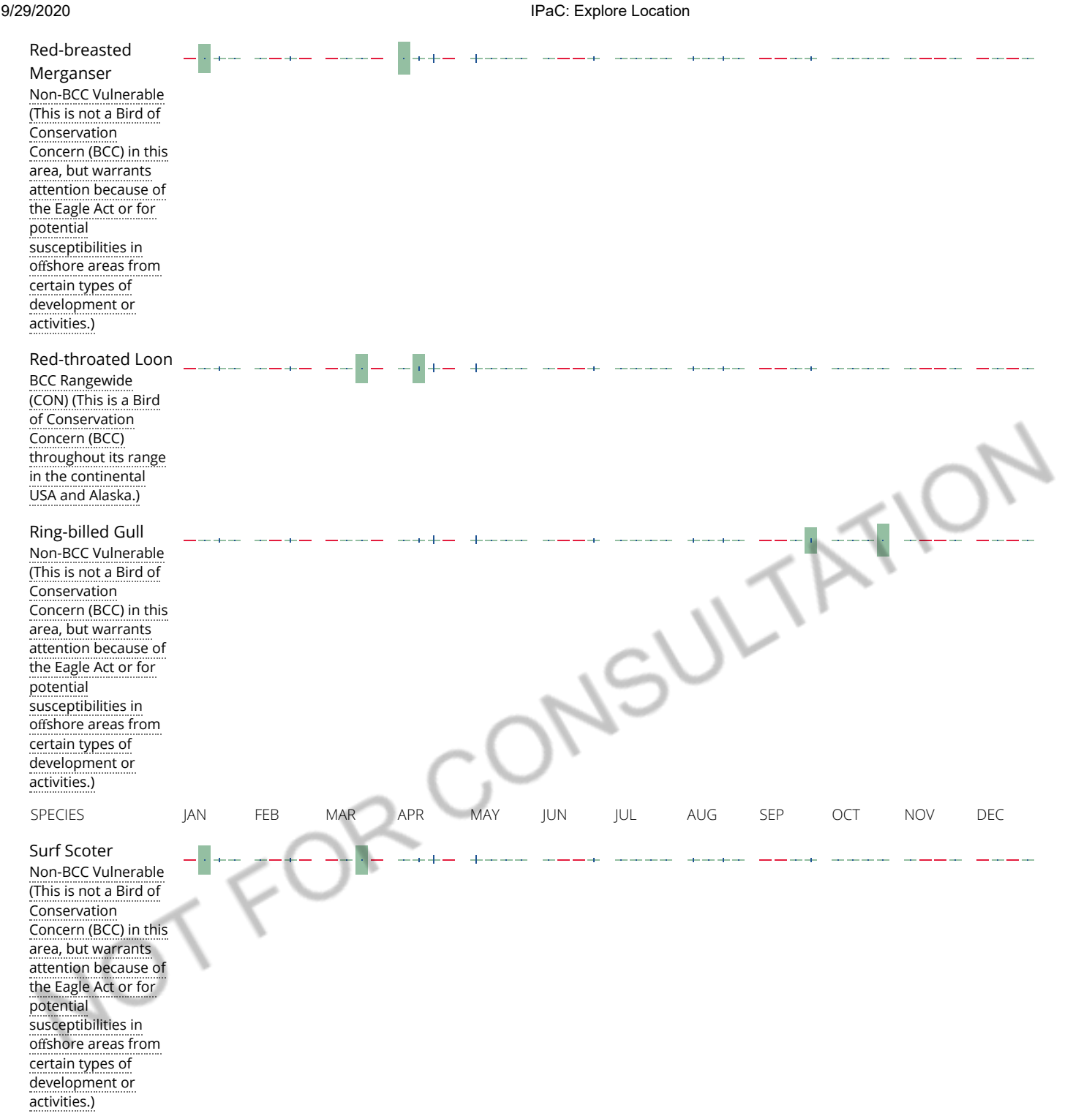
Double-crested Cormorant
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Great Blue Heron
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Herring Gull
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE WETLAND

[M2RSN](#)

[M2USN](#)

FRESHWATER EMERGENT WETLAND

[PEM1B](#)

RIVERINE

[R4SBC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercled worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this

inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Tombs Creek (3812362) OR Warm Springs Dam (3812361) OR Plantation (3812353) OR Fort Ross (3812352) OR Cazadero (3812351) OR Arched Rock (3812342) OR Duncans Mills (3812341) OR Annapolis (3812363) OR Stewarts Point (3812364))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Agrostis blasdalei</i> Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
<i>Alopecurus aequalis</i> var. <i>sonomensis</i> Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1	S1	1B.1
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Amorpha californica</i> var. <i>napensis</i> Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G5	S3	SSC
<i>Arboreus pomo</i> Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i> Baker's manzanita	PDERI04221	None	Rare	G2T1	S1	1B.1
<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i> The Cedars manzanita	PDERI04222	None	Rare	G2T2	S2	1B.2
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i> Rincon Ridge manzanita	PDERI041G4	None	None	G3T1	S1	1B.1
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Brachyramphus marmoratus</i> marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
<i>Brasenia schreberi</i> watershield	PDCAB01010	None	None	G5	S3	2B.3
<i>Calochortus raichei</i> The Cedars fairy-lantern	PMLIL0D1L0	None	None	G2	S2	1B.2
<i>Calystegia purpurata</i> ssp. <i>saxicola</i> coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
<i>Campanula californica</i> swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
<i>Carex californica</i> California sedge	PMCYP032D0	None	None	G5	S2	2B.2



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Carex comosa</i> bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
<i>Carex saliniformis</i> deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
<i>Carterocephalus palaemon magnus</i> Sonoma arctic skipper	IILEP42012	None	None	G5T5	S1	
<i>Ceanothus purpureus</i> holly-leaved ceanothus	PDRHA04160	None	None	G2	S2	1B.2
<i>Cerorhinca monocerata</i> rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
<i>Chlorogalum pomeridianum var. minus</i> dwarf soaproot	PMLIL0G042	None	None	G5T3	S3	1B.2
<i>Chorizanthe cuspidata var. villosa</i> woolly-headed spineflower	PDPGN04082	None	None	G2T2	S2	1B.2
<i>Chorizanthe valida</i> Sonoma spineflower	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
<i>Coastal and Valley Freshwater Marsh</i> Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
<i>Coastal Terrace Prairie</i> Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<i>Danaus plexippus pop. 1</i> monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
<i>Delphinium bakeri</i> Baker's larkspur	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
<i>Dicamptodon ensatus</i> California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Erigeron greenei</i> Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G3	S3	1B.2
<i>Erigeron serpentinus</i> serpentine daisy	PDAST3M5M0	None	None	G2	S2	1B.3
<i>Erigeron supplex</i> supple daisy	PDAST3M3Z0	None	None	G2	S2	1B.2
<i>Eriogonum cedrorum</i> The Cedars buckwheat	PDPGN087A0	None	None	G1	S1	1B.3



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Erysimum concinnum</i> bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
<i>Fissidens pauperculus</i> minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
<i>Fratercula cirrhata</i> tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
<i>Gilia capitata ssp. chamissonis</i> blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
<i>Gilia capitata ssp. pacifica</i> Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
<i>Gilia capitata ssp. tomentosa</i> woolly-headed gilia	PDPLM040B9	None	None	G5T1	S1	1B.1
<i>Hemizonia congesta ssp. congesta</i> congested-headed hayfield tarplant	PDAST4R065	None	None	G5T2	S2	1B.2
<i>Hesperevax sparsiflora var. brevifolia</i> short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
<i>Hesperocyparis pygmaea</i> pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
<i>Horkelia tenuiloba</i> thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
<i>Kopsiopsis hookeri</i> small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G5	S4	
<i>Lasthenia californica ssp. bakeri</i> Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
<i>Lasthenia californica ssp. macrantha</i> perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
<i>Lathyrus palustris</i> marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
<i>Lavinia symmetricus parvipinnis</i> Gualala roach	AFCJB19025	None	None	G4T1T2	S2S3	SSC
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	PDPLM09140	None	None	G2G3	S2S3	1B.2
<i>Leptosiphon rosaceus</i> rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1
<i>Lessingia arachnoidea</i> Crystal Springs lessingia	PDAST5S0C0	None	None	G2	S2	1B.2
<i>Lilium maritimum</i> coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1
<i>Lupinus tidestromii</i> Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Mendocino Pygmy Cypress Forest</i> Mendocino Pygmy Cypress Forest	CTT83161CA	None	None	G2	S2.1	
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
<i>Oncorhynchus kisutch</i> pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
<i>Oncorhynchus mykiss irideus</i> pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL
<i>Phalacrocorax auritus</i> double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
<i>Ramalina thrausta</i> angel's hair lichen	NLLEC3S340	None	None	G5?	S2S3	2B.1
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i> Point Reyes checkerbloom	PDMAL11012	None	None	G5T2	S2	1B.2
<i>Sidalcea hickmanii</i> ssp. <i>viridis</i> Marin checkerbloom	PDMAL110A4	None	None	G3TH	SH	1B.1
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i> purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
<i>Speyeria zerene behrensis</i> Behren's silverspot butterfly	IILEPJ6088	Endangered	None	G5T1	S1	
<i>Speyeria zerene myrtilae</i> Myrtle's silverspot butterfly	IILEPJ608C	Endangered	None	G5T1	S1	
<i>Spirinchus thaleichthys</i> longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
<i>Streptanthus glandulosus</i> ssp. <i>hoffmanii</i> Hoffman's bristly jewelflower	PDBRA2G0J4	None	None	G4T2	S2	1B.3
<i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i> Dorr's Cabin jewelflower	PDBRA2G0S2	None	None	G2T1	S1	1B.2
<i>Streptanthus morrisonii</i> ssp. <i>morrisonii</i> Morrison's jewelflower	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Syncaris pacifica</i> California freshwater shrimp	ICMAL27010	Endangered	Endangered	G2	S2	
<i>Taricha rivularis</i> red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Trifolium amoenum</i> two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
<i>Trifolium buckwestiorum</i> Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
<i>Usnea longissima</i> Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2

Record Count: 87



*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

76 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quads 3812362, 3812361, 3812353, 3812352, 3812351, 3812342, 3812341 3812363 and 3812364;

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Agrostis blasdalei	Blasdale's bent grass	Poaceae	perennial rhizomatous herb	May-Jul	1B.2	S2	G2
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	Poaceae	perennial herb	May-Jul	1B.1	S1	G5T1
Amorpha californica var. napensis	Napa false indigo	Fabaceae	perennial deciduous shrub	Apr-Jul	1B.2	S2	G4T2
Arctostaphylos bakeri ssp. bakeri	Baker's manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr	1B.1	S1	G2T1
Arctostaphylos bakeri ssp. sublaevis	The Cedars manzanita	Ericaceae	perennial evergreen shrub	Feb, Apr, May	1B.2	S2	G2T2
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr(May)	1B.1	S1	G3T1
Asclepias solanoana	serpentine milkweed	Apocynaceae	perennial herb	May-Jul(Aug)	4.2	S3	G3
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	2B.3	S3	G5
Bryoria spiralis	twisted horsehair lichen	Parmeliaceae	fruticose lichen (epiphytic)		1B.1	S1S2	G3
Calamagrostis bolanderi	Bolander's reed grass	Poaceae	perennial rhizomatous herb	May-Aug	4.2	S4	G4
Calochortus raichei	The Cedars fairy-lantern	Liliaceae	perennial bulbiferous herb	May-Aug	1B.2	S2	G2
Calochortus uniflorus	pink star-tulip	Liliaceae	perennial bulbiferous herb	Apr-Jun	4.2	S4	G4
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	4.2	S3	G4T3
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	Convolvulaceae	perennial herb	(Mar)Apr-Sep	1B.2	S2S3	G4T2T3
	swamp harebell	Campanulaceae	perennial	Jun-Oct	1B.2	S3	G3

<u>Campanula californica</u>			rhizomatous herb				
<u>Carex californica</u>	California sedge	Cyperaceae	perennial rhizomatous herb	May-Aug	2B.3	S2	G5
<u>Carex saliniformis</u>	deceiving sedge	Cyperaceae	perennial rhizomatous herb	May-Jun(Jul)	1B.2	S2	G2
<u>Castilleja ambigua var. ambigua</u>	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	4.2	S3S4	G4T4
<u>Ceanothus confusus</u>	Rincon Ridge ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	1B.1	S1	G1
<u>Ceanothus gloriosus var. exaltatus</u>	glory brush	Rhamnaceae	perennial evergreen shrub	Mar- Jun(Aug)	4.3	S4	G4T4
<u>Ceanothus gloriosus var. gloriosus</u>	Point Reyes ceanothus	Rhamnaceae	perennial evergreen shrub	Mar-May	4.3	S4	G4T4
<u>Ceanothus purpureus</u>	holly-leaved ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	1B.2	S2	G2
<u>Chlorogalum pomeridianum var. minus</u>	dwarf soaproot	Agavaceae	perennial bulbiferous herb	May-Aug	1B.2	S3	G5T3
<u>Chorizanthe cuspidata var. villosa</u>	woolly-headed spineflower	Polygonaceae	annual herb	May-Jul(Aug)	1B.2	S2	G2T2
<u>Chorizanthe valida</u>	Sonoma spineflower	Polygonaceae	annual herb	Jun-Aug	1B.1	S1	G1
<u>Collomia diversifolia</u>	serpentine collomia	Polemoniaceae	annual herb	May-Jun	4.3	S4	G4
<u>Cypripedium californicum</u>	California lady's- slipper	Orchidaceae	perennial rhizomatous herb	Apr- Aug(Sep)	4.2	S4	G4
<u>Cypripedium montanum</u>	mountain lady's- slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2	S4	G4
<u>Erigeron biolettii</u>	streamside daisy	Asteraceae	perennial herb	Jun-Oct	3	S3?	G3?
<u>Erigeron greenei</u>	Greene's narrow- leaved daisy	Asteraceae	perennial herb	May-Sep	1B.2	S3	G3
<u>Erigeron serpentinus</u>	serpentine daisy	Asteraceae	perennial herb	May-Aug	1B.3	S2	G2
<u>Erigeron supplex</u>	supple daisy	Asteraceae	perennial herb	May-Jul	1B.2	S2	G2
<u>Eriogonum cedrorum</u>	The Cedars buckwheat	Polygonaceae	perennial herb	Jun-Sep	1B.3	S1	G1
<u>Eriogonum nervulosum</u>	Snow Mountain buckwheat	Polygonaceae	perennial rhizomatous herb	Jun-Sep	1B.2	S2	G2
<u>Eriogonum ternatum</u>	ternate buckwheat	Polygonaceae	perennial herb	Jun-Aug	4.3	S4	G4
<u>Erysimum concinnum</u>	bluff wallflower	Brassicaceae	annual / perennial herb	Feb-Jul	1B.2	S2	G3
<u>Erysimum franciscanum</u>	San Francisco wallflower	Brassicaceae	perennial herb	Mar-Jun	4.2	S3	G3
<u>Erythronium revolutum</u>	coast fawn lily	Liliaceae	perennial bulbiferous herb	Mar-Jul(Aug)	2B.2	S3	G4G5
<u>Fissidens pauperculus</u>	minute pocket moss	Fissidentaceae	moss		1B.2	S2	G3?
<u>Gilia capitata ssp. chamissonis</u>	blue coast gilia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G5T2
<u>Gilia capitata ssp. pacifica</u>	Pacific gilia	Polemoniaceae	annual herb	Apr-Aug	1B.2	S2	G5T3
<u>Gilia capitata ssp. tomentosa</u>	woolly-headed gilia	Polemoniaceae	annual herb	May-Jul	1B.1	S1	G5T1
<u>Gilia millefoliata</u>	dark-eyed gilia	Polemoniaceae	annual herb	Apr-Jul	1B.2	S2	G2
	American glehnia	Apiaceae	perennial herb	May-Aug	4.2	S2S3	G5T5

[Glehnia littoralis ssp. leiocarpa](#)

<u>Hemizonia congesta ssp. congesta</u>	congested-headed hayfield tarplant	Asteraceae	annual herb	Apr-Nov	1B.2	S2	G5T2
<u>Hesperevax sparsiflora var. brevifolia</u>	short-leaved evax	Asteraceae	annual herb	Mar-Jun	1B.2	S2	G4T3
<u>Hesperocyparis pygmaea</u>	pygmy cypress	Cupressaceae	perennial evergreen tree		1B.2	S1	G1
<u>Horkelia tenuiloba</u>	thin-lobed horkelia	Rosaceae	perennial herb	May-Jul(Aug)	1B.2	S2	G2
<u>Hosackia gracilis</u>	harlequin lotus	Fabaceae	perennial rhizomatous herb	Mar-Jul	4.2	S3	G3G4
<u>Iris longipetala</u>	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May	4.2	S3	G3
<u>Kopsiopsis hookeri</u>	small groundcone	Orobanchaceae	perennial rhizomatous herb (parasitic)	Apr-Aug	2B.3	S1S2	G4?
<u>Lasthenia californica ssp. bakeri</u>	Baker's goldfields	Asteraceae	perennial herb	Apr-Oct	1B.2	S1	G3T1
<u>Lasthenia californica ssp. macrantha</u>	perennial goldfields	Asteraceae	perennial herb	Jan-Nov	1B.2	S2	G3T2
<u>Lathyrus palustris</u>	marsh pea	Fabaceae	perennial herb	Mar-Aug	2B.2	S2	G5
<u>Leptosiphon jepsonii</u>	Jepson's leptosiphon	Polemoniaceae	annual herb	Mar-May	1B.2	S2S3	G2G3
<u>Leptosiphon rosaceus</u>	rose leptosiphon	Polemoniaceae	annual herb	Apr-Jul	1B.1	S1	G1
<u>Lessingia arachnoidea</u>	Crystal Springs lessingia	Asteraceae	annual herb	Jul-Oct	1B.2	S2	G2
<u>Lessingia hololeuca</u>	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	S2S3	G3?
<u>Lilium maritimum</u>	coast lily	Liliaceae	perennial bulbiferous herb	May-Aug	1B.1	S2	G2
<u>Lupinus tidestromii</u>	Tidestrom's lupine	Fabaceae	perennial rhizomatous herb	Apr-Jun	1B.1	S1	G1
<u>Perideridia gairdneri ssp. gairdneri</u>	Gairdner's yampah	Apiaceae	perennial herb	Jun-Oct	4.2	S3S4	G5T3T4
<u>Piperia candida</u>	white-flowered rein orchid	Orchidaceae	perennial herb	(Mar)May-Sep	1B.2	S3	G3
<u>Ramalina thrausta</u>	angel's hair lichen	Ramalinaceae	fruticose lichen (epiphytic)		2B.1	S2?	G5
<u>Ranunculus lobbii</u>	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	4.2	S3	G4
<u>Sidalcea calycosa ssp. rhizomata</u>	Point Reyes checkerbloom	Malvaceae	perennial rhizomatous herb	Apr-Sep	1B.2	S2	G5T2
<u>Sidalcea hickmanii ssp. viridis</u>	Marin checkerbloom	Malvaceae	perennial herb	May-Jun	1B.1	SH	G3TH
<u>Sidalcea malachroides</u>	maple-leaved checkerbloom	Malvaceae	perennial herb	(Mar)Apr-Aug	4.2	S3	G3
<u>Sidalcea malviflora ssp. purpurea</u>	purple-stemmed checkerbloom	Malvaceae	perennial rhizomatous herb	May-Jun	1B.2	S1	G5T1
<u>Streptanthus glandulosus ssp. hoffmanii</u>	Hoffman's bristly jewelflower	Brassicaceae	annual herb	Mar-Jul	1B.3	S2	G4T2
<u>Streptanthus morrisonii ssp. elatus</u>	Three Peaks jewelflower	Brassicaceae	perennial herb	Jun-Sep	1B.2	S1	G2T1

<u>Streptanthus morrisonii</u> <u>ssp. hirtiflorus</u>	Dorr's Cabin jewelflower	Brassicaceae	perennial herb	Jun	1B.2	S1	G2T1
<u>Streptanthus morrisonii</u> <u>ssp. morrisonii</u>	Morrison's jewelflower	Brassicaceae	perennial herb	May, Aug, Sep	1B.2	S1?	G2T1?
<u>Trifolium amoenum</u>	two-fork clover	Fabaceae	annual herb	Apr-Jun	1B.1	S1	G1
<u>Trifolium buckwestiorum</u>	Santa Cruz clover	Fabaceae	annual herb	Apr-Oct	1B.1	S2	G2
<u>Usnea longissima</u>	Methuselah's beard lichen	Parmeliaceae	fruticose lichen (epiphytic)		4.2	S4	G4
<u>Veratrum fimbriatum</u>	fringed false- hellebore	Melanthiaceae	perennial herb	Jul-Sep	4.3	S3	G3

Suggested Citation

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Questions and Comments

rareplants@cnps.org

ATTACHMENT B

Technical Studies

B1 – Botanical Survey Report

B2 – Draft Aquatic Resources Delineation

BOTANICAL SURVEY REPORT

FOR

FORT ROSS CULTURAL TRAIL
19005 COAST HIGHWAY ONE
APNs 109-100-013 & 109-110-010
JENNER, CA
SONOMA COUNTY



prepared for:

California Department of Parks and Recreation
Sonoma-Mendocino Coast District
P.O. Box 123
Duncan Mills, CA 95430

prepared by:

Spade Natural Resources Consulting
Asa B. Spade & Teresa R. Spade, AICP
31901 Simpson Lane
Fort Bragg, CA 95437
(707) 964-6947
spadenrc@gmail.com

August 02, 2018

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Appendix A. References

Appendix B. List of All Species Documented in the Study Area

1 EXECUTIVE SUMMARY

An approximately 1.5-mile-long cultural trail loop is proposed at the Fort Ross State Historic Park. A Study Area of approximately 92 acres surrounding the proposed trail alignment was surveyed for special status plants and natural communities. Floristic botanical surveys were conducted May 17, 19, 20, 26, & 27, June 9 & 10 and July 04, 2018, by Spade Natural Resources Consulting.

Spade Natural Resources Consulting observed and mapped twenty natural communities within the Study Area, eleven of which are special status or likely coincided with Coastal Act wetlands. These natural communities included:

- *Calamagrostis nutkaensis* Herbaceous Alliance (S2)
- *Anthoxanthum odoratum* – *Deschampsia cespitosa* wet meadow (likely Coastal Act wetland)
- *Carex obnupta* Herbaceous Alliance (S3)
- *Danthonia californica* Herbaceous Alliance (S3)
- *Deschampsia cespitosa* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Eryngium armatum* seep (likely Coastal Act wetland)
- *Juncus balticus* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Juncus effusus* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Lasthenia californica* Herbaceous Alliance (S4, could potentially be considered “especially valuable”)
- *Nassella pulchra* Herbaceous Alliance (S3?)
- *Pinus muricata* Forest Alliance (S3).

Seven species of special status plants were observed and mapped.

- purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea* 1B.2)
- short leaved evax (*Hesperervax sparsiflora* var. *brevifolia* 1B.2)
- Baker’s goldfields (*Lasthenia californica* ssp. *bakeri* 1B.2)
- deceiving sedge (*Carex saliniformis* 1B.2)
- swamp harebell (*Campanula californica* 1B.2)
- Blasedale’s bentgrass (*Agrostis blasdalei* 1B.2)
- coastal bluff morning glory (*Calystegia purpurea* ssp. *saxicola* 1B.2).

Wetlands and watercourses were observed but not recorded. Some plant communities are noted as likely being or containing areas of Coastal Act wetland. Special status wildlife was not the subject of the survey,

but one species was noted during surveys: Bryant's savannah sparrow (*Passerculus sandwichensis* ssp. *alaudinus* SSC) was observed in grassland habitat throughout much of the Study Area. There is a potential for presence of California red-legged frog, foothill yellow legged frog, Sonoma tree vole, special status birds and bats, and nesting birds protected by the Migratory Bird Treaty Act.

2 Background

2.1 Purpose

On November 19, 2010, Ecologist Darren Wiemeyer conducted and wrote a botanical report for State Parks Coastal Trail for the State of California-Natural Resources Agency, Department of Parks and Recreation-Russian River District on the Salt Point State Park and Fort Ross State Park proposed Coastal Trail. Wiemeyer's surveys were performed in order to relocate past known occurrences of special status plant species identified in a 2004 botanical report by Dr. Philip T. Northern and to survey the proposed Coastal Trail alignment for additional special status plant species with the potential to occur within his study area. Wiemeyer recommended avoidance and mitigation measures that included surveys for special status plant species and plant communities prior to start of on-site construction activities.

The purpose of this survey report is to update botanical survey findings and to map and document special status plants and plant communities that occur within 100 feet of the proposed trail alignment for the Fort Ross Cultural Trail as communicated to Spade Natural Resources Consulting May 7, 2018. This document was requested as a baseline pre-construction record for use in potential adjustments in the final trail alignment, and for estimating the number and/or area of rare plants and sensitive habitats impacted by the trail construction.

3 STUDY AREA DESCRIPTION

3.1 General Site Description

The Study Area is approximately 92 acres surrounding a proposed 1.5-mile cultural trail loop. The Study Area was created by generating a 100-foot buffer around the proposed trail alignment digital layer provided by State Parks. Additional observations and mapping are included for areas south of the Study Area; ~13 acres between the official Study Area and the bluff edge. The Study Area is west of Highway 1, within the Coastal Zone, and includes portions of two parcels: APNs 109-100-013 & 109-110-010. The Study Area is located on the coastal bluff terrace, sloping gently from east to west toward the bluff edge. Elevation ranges from ~130ft along the eastern edge of the Study Area to ~60ft at the bluff edge. The parking lot and headquarters of the Fort Ross State Historic Park are to the east of the Study Area.

4 METHODS

Survey methodology conformed with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018).

This report follows the definition of special status plants in CDFW's 2018 protocol, which includes:

- Listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA) or candidates for possible future listing as threatened or endangered under the ESA (50 C.F.R., § 17.12).
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)⁴. In CESA, “endangered species” means a native species or subspecies of plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish & G. Code, § 2062). “Threatened species” means a native species or subspecies of plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA (Fish & G. Code, § 2067). “Candidate species” means a native species or subspecies of plant that the California Fish and Game Commission has formally noticed as being under review by CDFW for addition to either the list of endangered species or the list of threatened species, or a species for which the California Fish and Game Commission has published a notice of proposed regulation to add the species to either list (Fish & G. Code, § 2068).
- Listed as rare under the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish & G. Code, § 1901).
- Meet the definition of rare or endangered under CEQA Guidelines section 15380, subdivisions (b) and (d), including:
 - Plants considered by CDFW to be “rare, threatened or endangered in California.” This includes plants tracked by the California Natural Diversity Database (CNDDDB) and the California Native Plant Society (CNPS) as California Rare Plant Rank (CRPR) 1 or 25;
 - Plants that may warrant consideration on the basis of declining trends, recent taxonomic information, or other factors. This may include plants tracked by the CNDDDB and CNPS as CRPR 3 or 46.

- Considered locally significant plants, that is, plants that are not rare from a statewide perspective but are rare or uncommon in a local context such as within a county or region (CEQA Guidelines, § 15125, subd. (c)), or as designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include plants that are at the outer limits of their known geographic range or plants occurring on an atypical soil type.

To the extent possible, natural communities or vegetation alliances are described and mapped based on the Classification of the Vegetation Alliances and Associations of Sonoma County, California (CDFW 2015), and A Manual of California Vegetation (Sawyer and Keeler Wolf, 2009). Sensitive natural communities are determined by the most current version of the California Department of Fish and Wildlife's California Natural Community List (CDFW 2018).

4.1 Literature Review

Existing records of special-status plant and animal species occurrences were reviewed to determine which special-status species have the potential to occur in the project vicinity. The following sources were consulted:

- California Native Plant Society (CNPS) Electronic Inventory occurrence records for the Planation, Fort Ross, Stewarts Point, Annapolis, Tombs Creek, and Arched Rock USGS 7.5 minute quadrangles.
- California Natural Diversity Data Base (CNDDB) occurrence records for the Fort Ross and Plantation USGS 7.5 minute quadrangles
- Aerial imagery and topographic maps analysis, to gather baseline info regarding habitat in the project area.
- Botanical Survey Report State Parks Coastal Trail (Wiemeyer 2010)
- Report on the Rare Plant Survey for the Coastal Trail Project (Northern 2004).

4.2 Field Methods

Field surveys were conducted May 17, 19, 20, 26, & 27, June 9 & 10 and July 04, and were scheduled based on the known blooming periods of these species, their geographic location, the natural communities present, and the weather patterns of the year in which the surveys were conducted. Plant species are identified with the Jepson Manual (Hickman 2012) to the taxonomic level necessary to determine rarity and listing status. Nearby accessible known occurrences of sensitive plant species were observed to determine that the plants were identifiable at the time of the survey.

Botanical surveys were conducted by field observers walking throughout the property in a systematic method sufficient to ensure thorough coverage. Surveyors wove back and forth across an area at a

distance appropriate to the vegetation cover so that all areas of ground could be observed. A handheld GPS receiver was checked periodically while in the field to ensure that all areas were covered. In some cases, survey pin flags were used to temporarily mark plant occurrences while adjacent areas were checked to determine rare plant population extent. Individual plants, plant populations, and plant communities were delineated with a series of points or a track recorded with a GPS unit. All plant species detected within the project area were recorded. The location of special status plants and plant communities were recorded using a Global Positioning System (GPS) where available, or by use of a detailed map (1:24,000 or larger) showing the locations and boundaries of each special status plant community and population in relation to the project area, with occurrences and boundaries marked as accurately as possible. Where the number of individual species was small, that number was counted; and where large populations were observed, the number of individuals was estimated by counting individuals in meter square plots at ten locations. To the extent possible, information was provided on the percentage of each special status plant in each life stage observed such as seeding, vegetative, flowering, and fruiting. The density of populations was provided, describing whether special status plants are present in a relatively low, medium or high density. Photographs were also taken of special status plants and vegetation alliances, showing identifying features.

For known occurrences, any adverse conditions, such as disease, drought, predation, fire, herbivory or other disturbances that may preclude the presence or identification of potentially present special status plants or vegetation alliances are considered when making a negative finding. If adverse conditions exist during survey efforts, the known occurrence is considered still potentially present until surveys are repeated during appropriate times of the year for proper identification, when normal conditions are present and known reference sites are consulted to verify that blooms or other identifying features should be visible.

5 RESULTS

5.1 Documented Special Status Plants

5.1.1 Purple Stemmed Checkerbloom (*Sidalcea malviflora* ssp. *purpurea* 1B.2)

This perennial herb occurred scattered throughout the Study Area in native grassland. Three subspecies of *Sidalcea malviflora* are reported to occur in Sonoma County according to occurrences on CalFlora: *S. m.* ssp. *laciniata*, *S. m.* ssp. *malviflora*, and *S. m.* ssp. *purpurea*. Some variation was present from plant to plant but the plants most closely matched subspecies *purpurea* in leaf shape, number of flowers per inflorescence, and due to purple calyx coloration (Figure 1). The population within the Study Area is estimated to be 250-325 plants. Approximately 15-25 plants (~7% present) could be affected by the trail.



Figure 1. Few flowers and purple calyxes on *Sidalcea malviflora* found within the Study Area.

5.1.2 Short Leaved Evax (*Hesperevax sparsiflora* var. *brevifolia* 1B.2)

This annual herb occurred in three main areas: within the rocky area in the southeastern portion of the study area, at the southwestern tip of the Study Area, and in another area along the middle of the western Study Area boundary. This plant occurred mostly within area of rocky outcrops, California oatgrass, and brome fescue meadows. To estimate the population all plants within a square-meter grid (Figure 2) were counted at ten locations within the mapped occurrences. Populations numbers were as high as 1,500 plants per square meter but averaged around 580 plants per square meter. The estimated total population within the mapped habitat is 20 to 40 million plants. The trail may impact 150-300 thousand plants (an insignificant percentage of those present).

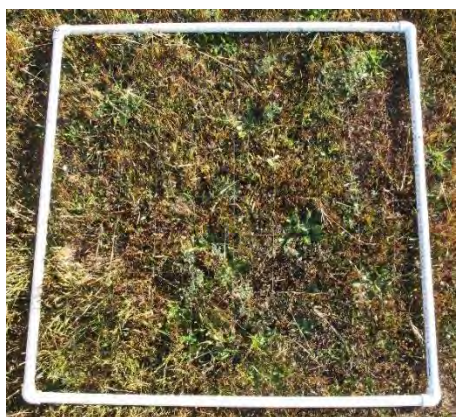


Figure 2. A square-meter grid being used to inform *Hesperevax* population estimates at the site.

5.1.3 Baker's Goldfields (*Lasthenia californica* ssp. *bakeri* 1B.2)

A perennial subspecies of *Lasthenia californica* was present in one small area (~0.25 acres) just outside the western edge of the Study Area. These plants may have been *L. c.* ssp. *bakeri* or *L. c.* ssp. *macrantha* either of which have a rarity ranking of 1B.2. A decision to treat them as *L. c.* ssp. *bakeri* in this report was made based on observations of erect unbranched stems and relatively narrow leaf width compared to a reference population of ssp. *macrantha* examined. A population estimate of 500-700 plants was made by counting all individuals in a fraction of the area where they occurred and multiplying that number in proportion to the total area where they were present at that density. None of these plants were within the proposed trail alignment. At least one plant that displayed characteristics of *Lasthenia californica* ssp. *macrantha* was observed in the Study Area during an initial scouting/scoping visit but was not observed on subsequent visits when identification and mapping was performed.



Figure 3. Perennial *Lasthenia californica* observed within the Study Area.

5.1.4 Deceiving Sedge (*Carex saliniformis* 1B.2)

This perennial sedge (Figure 4) occurred along several wet depressions in the middle of the southern half of the Study Area as well as one location near the northern end of the Study Area. The population of the plant was dense in the relatively narrow areas (Figure 5) where it occurred, with an average of ~1050 plants per square meter where it occurred. Population estimates were made by counting all individuals in a meter square at ten locations throughout the documented populations. An estimated population of this plant within the Study Area is 3-5 million plants. None occurred within the proposed trail alignment.



Figure 4. *Carex saliniformis* observed at the site.



Figure 5. *Carex saliniformis* population within a linear depression near the middle of the Study Area.

5.1.5 Swamp Harebell (*Campanula californica* 1B.2)

This perennial herb (Figure 6) was observed in two locations within *Calamagrostis nutkaensis* grassland. One of the populations occurred along the western side of the proposed trail alignment. A population estimate was made by noting an average number of plants at each location where a GPS point was taken to record their presence and then multiplying that range by the number of points recorded. The estimated population within the Study Area is 80-120 plants with 10-15 plants (~12.5%) along the trail alignment.



Figure 6. *Campanula californica* observed at the site.

5.1.6 Blasedale's Bentgrass (*Agrostis blasedalei* 1B.2)

This perennial grass occurred along the bluff edge, mostly along the southern portion of the peninsula, outside of the official Study Area but within the area surveyed. This plant (Figure 7) occurred in medium to high density within a narrow band of habitat near the eroded edge of the bluff. An estimated 150-200 plants were present based on noting an average number of plants at each location where a GPS point was taken to record presence of the plant and multiplying it by the number of points recorded. None would be likely to be affected by the trail.



Figure 7. Blasedale's bentgrass observed at the site.

5.1.7 Coastal Bluff Morning Glory (*Calystegia purpurea* ssp. *saxicola* 1B.2)

This perennial herb was found at relatively low density throughout the dryer portions of the Study Area especially within areas dominated by non-native grasses. Two subspecies of *Calystegia purpurea* are described in the Jepson Manual. *C. p. ssp. purpurea* is described as having a strongly climbing stem greater than 1 meter in length, triangular leaves with acute tips and V-shaped sinus. *C. p. ssp. saxicola* is described as having a stem that is trailing to weakly climbing and is generally less than one meter long, leaves that are ovate-triangular to reniform in shape, with a tip that is generally rounded to notched, and sinuses that are generally more or less closed. The plants on the site showed a mixture of these characters, sometimes in the same or directly adjacent plants (Figure 8). All *C. purpurea* that was not strongly climbing was mapped and treated as *C. p. ssp. saxicola* in this report. In some areas where this plant occurred, there were often several individual plants (Figure 9) separated by approximately one meter. In other areas there was a distance of around 10 meters between plants. SpadeNRC estimates that there were 600-800 individual plants in the Study Area combined with the additional area surveyed to the south of the Study Area bases on the observations of their density multiplied over the area where they were mapped as present. An estimated 20-30 plants (~3.5%) could be impacted by the trail.



Figure 8. *Calystegia purpurea* at the site with rounded reniform leaves at photo left and pointed triangular leaves to the right.



Figure 9. Small population of *Calystegia purpurata* ssp. *saxicola* at the site.

5.2 Documented Natural Communities

Within this report plant community classification conforms primarily to two sources, The Manual of California Vegetation (Manual) (Sawyer 2009) and Vegetation Alliances and Associations of Sonoma County, California (Veg of Sonoma) (CDFW 2015). In several instances vegetation did not fit well into any published alliance or association. In those cases, this document refers to those areas of vegetation using naming scheme based on the dominant overstory species, consistent with the methodology of the Manual, and has provided a description of the vegetation present. When appropriate the nearest match in the source has also been listed. Conducting rapid assessment or relevé studies was beyond the budgeted scope of the work conducted for this report. Some other areas mapped and described consist of primarily a single dominant plant species covering less area than the minimum mapping unit considered by the methodology of the Manual and Veg of Sonoma, which is 1 acre for wetland and 0.5 acres for special stands. For example, Douglas iris patches are mappable at a relatively fine scale but do not usually occur in stands large enough to be considered their own plant community. SpadeNRC has chosen to map and describe some of these here, rather than fold them into the adjacent classifiable natural communities.

The majority of the Study Area was within an area actively grazed by cattle (Figure 10). The grazing has a dramatic effect on species composition and the identifiability of herbaceous plants.



Figure 10. Cattle grazing in the Study Area.



Figure 11. On the eastern side of this fence coyote brush and non-native grasses dominate, while on the west side of the fence native grasses are more prevalent.



Figure 12. Another dramatic comparison of a grazed area vs a non-grazed area

5.2.1 *Anthoxanthum odoratum* Seminatural Association

This plant community occurred mostly in the drier areas in the northeastern portion of the Study Area and along the non-grazed east side of the road at the east side of the Study Area. Sweet vernal grass (*Anthoxanthum odoratum*) was the dominant grass with rattlesnake grass (*Briza maxima*), Douglas iris (*Iris douglasiana*), English plantain (*Plantago lanceolata*), California blackberry (*Rubus ursinus*), blue eyed grass (*Sisyrinchium bellum*), colonial bentgrass (*Agrostis capillaris*), and spring vetch (*Vicia sativa*) present.



Figure 13. *Anthoxanthum odoratum* grassland at the site.

5.2.2 *Anthoxanthum odoratum* – *Deschampsia cespitosa* wet meadow

A relatively large area in the middle of the northern portion of the Study Area was dominated by sweet vernal grass but contained enough tufted hairgrass (*Deschampsia caespitosa*) and other wet tending vegetation that it warranted separate mapping and classification from other areas dominated by sweet vernal grass, which tended to be much drier. Other vegetation that shares this area co-dominated by sweet vernal grass and tufted hairgrass included California blackberry (*Rubus ursinus*), coastal rush (*Juncus hesperius*), western bracken (*Pteridium aquilinum*), Douglas iris (*Iris douglasiana*), Nootka rose (*Rosa nutkana*), cascara buckthorn (*Frangula purshiana*), Baltic rush (*Juncus balticus*), brown headed rush (*Juncus phaeocephalus*), pennyroyal (*Mentha pulegium*), changing forget me not (*Myosotis discolor*), slough sedge (*Carex obnupta*), American vetch (*Vicia americana* var. *americana*), coyote thistle (*Eryngium armatum*), California buttercup (*Ranunculus californica*), dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*), purple velvetgrass (*Holcus lanatus*) and wild hyacinth (*Triteleia hyacinthina*). Portions of this plant community likely meet the definition of Coastal Act wetland.

5.2.3 *Baccharis pilularis* Shrubland Alliance (S5)

This natural community occurred mostly in the non-grazed portion at the southeastern edge of the Study Area. The dominate overstory plant was coyote brush (*Baccharis pilularis*). Other plants present included stunted Douglas fir (*Pseudotsuga menziesii*), sticky monkeyflower (*Diplacus aurantiacus*), California bee plant (*Scrophularia californica*), western bracken (*Pteridium aquilinum*), sheep sorrel (*Rumex acetosella*), Pacific reedgrass (*Calamagrostis nutkaensis*), California blackberry (*Rubus ursinus*), scarlet pimpernel (*Lysimachia arvensis*), rattlesnake grass (*Briza maxima*), yarrow (*Achillea millefoliata*), coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*), Douglas iris (*Iris douglasiana*), and pale flax (*Linum bienne*).



Figure 14. *Baccharis pilularis* shrubland at the site.

5.2.4 *Briza maxima* Provisional Semi-Natural Association

One non-grazed area at the southeastern corner of the Study Area was dominated by rattlesnake grass (*Briza maxima*). Other species present included wild oat (*Avena barbata*), California blackberry (*Rubus ursinus*), Coyote brush (*Baccharis pilularis*), yarrow (*Achillea millefoliata*), sheep sorrel (*Rumex acetosella*), western bracken (*Pteridium aquilinum*), brome fescue (*Festuca bromoides*), sticky

monkeyflower (*Diplacus aurantiacus*), slender lotus (*Lotus angustissimus*), coastal bluff morning glory (***Calystegia purpurata* ssp. *saxicola***), rattlesnake weed (*Daucus pusillus*), lizard tail (*Eriophyllum staechadifolium*), Douglas iris (*Iris douglasiana*), coyote mint (*Monardella villosa* ssp. *villosa*), poison oak (*Toxicodendron diversilobum*), brownie thistle (*Cirsium quercetorum*), California brome (*Bromus carinatus*), perennial ryegrass (*Festuca perennis*), seaside lupine (*Lupinus variicolor*), pale flax (*Linum bienne*), rigid hedge nettle (*Stachys rigida*), and common catchfly (*Silene gallica*).



Figure 15. *Briza maxima* grassland at the site.

5.2.5 *Calamagrostis nutkaensis* Herbaceous Alliance (S2)

Pacific reedgrass meadow occurred in several large patches within the wetter portions of the Study Area. These areas were dominated by Pacific reedgrass (*Calamagrostis nutkaensis*) and supported California blackberry (*Rubus ursinus*), Douglas iris (*Iris douglasiana*), sweet vernal grass (*Anthoxanthum odoratum*), harlequin lotus (***Hosackia gracilis***), slough sedge (*Carex obnupta*), coast rush (*Juncus hesperius*), changing forget me not (*Myosotis discolor*), Nootka rose (*Rosa nutkana*) and swamp harebell (***Campanula californica***).



Figure 16. *Calamagrostis nutkaensis* grassland at the site.

5.2.6 *Carex obnupta* Herbaceous Alliance (S3)

An area along a stream in the northwestern portion of the Study Area was thickly vegetated with slough sedge (*Carex gynodinema*). This area is likely to be Coastal Act wetland.

5.2.7 *Danthonia californica* Herbaceous Alliance (S3)

This natural community occurred along much of the southern and western edge of the Study Area in relatively flat areas. The dominant grass was California oatgrass (*Danthonia californica*). Other species present included brome fescue (*Festuca bromoides*), rattail fescue (*Festuca myros*), small quaking grass (*Briza minima*), seaside lupine (*Lupinus variicolor*), miniature lupine (*L. bicolor*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), meadow barley (*Hordeum brachyantherum*), English plantain (*Plantago lanceolata*), silver hairgrass (*Aira caryophyllea*), and common rush (*Juncus patens*). In some lower lying areas within the California oatgrass meadow coyote thistle (*Eryngium armatum*), Johnny nip (*Castilleja ambigua*), Johnny tuck (*Triphysaria eriantha*), yellowbeak owl's clover (*T. versicolor*) and California goldfields (*Lasthenia californica* ssp. *californica*) were present.



Figure 17. *Danthonia californica* grassland at the site.

5.2.8 *Deschampsia cespitosa* Herbaceous Alliance (S4)

This natural community was present through the middle of the southern part of the Study Area. These areas were dominated by tufted hairgrass (*Deschampsia cespitosa*). The density and relative cover of the *Deschampsia* varied as did the moisture in the soil. Other vegetation present in relatively drier areas included California blackberry (*Rubus ursinus*), brome fescue (*Festuca bromoides*), English plantain (*Plantago lanceolata*), rough cat's ear (*Hypochaeris radicata*), hairy woodrush (*Luzula comosa*), purple velvetgrass (*Holcus lanatus*), Douglas iris (*Iris douglasiana*), purple stemmed checkerbloom (*Sidalcea*

malviflora ssp. purpurea), sheep sorrel (*Rumex acetosella*), and sweet vernal grass (*Anthoxanthum odoratum*). In somewhat wetter areas harlequin lotus (*Hosackia gracilis*), golden eyed grass (*Sisyrinchium californicum*), smooth cat's ear (*Hypochaeris glabra*), Harford's sedge (*Carex harfordii*) wonder woman sedge (*C. gynodynamis*), low bulrush (*Isolepis cernua*), brown headed rush (*Juncus phaeocephalus* var. *phaeocephalus*) were present. In low spots within this grassland there were occurrences of coyote thistle (*Eryngium armatum*), low bulrush (*Isolepis cernua*), toad rush (*Juncus bufonius*), pennyroyal (*Mentha pulegium*), and deceiving sedge (*Carex saliniformis*). Much of the area vegetated with this plant community could meet requirements to be considered Coastal Act wetland.



Figure 18. *Deschampsia cespitosa* grassland at the site.

5.2.9 *Eryngium armatum* seep

One location in the northern portion of the Study Area was a seep dominated by coyote thistle (*Eryngium armatum*). Vegetation in this location was heavily grazed. Species that could be identified included sweet vernal grass (*Anthoxanthum odoratum*), blue eyed grass (*Sisyrinchium bellum*), California blackberry (*Rubus ursinus*), western panicum (*Panicum acuminatum* var. *acuminatum*), small quaking grass (*Briza minima*), California oatgrass (*Danthonia californica*), California buttercup (*Ranunculus californicus*), pale flax (*Linum bienne*), wonder woman sedge (*Carex gynodynamis*), deceiving sedge (*Carex saliniformis*), pennyroyal (*Mentha pulegium*), and Douglas iris (*Iris douglasiana*). This area likely meets requirements to be considered a Coastal Act wetland.

5.2.10 *Festuca bromoides* Semi-Natural Association

Brome fescue (*Festuca bromoides* aka *Vulpia bromoides*) was the dominant overstory plant in the driest areas around rocky outcrops in the south western and middle-western portion of the Study Area. Other species in these areas included purple awned wallaby grass (*Rytidosperma penicillatum*) Douglas iris (*Iris douglasiana*), silver hairgrass (*Aira caryophyllea*), rattlesnake weed (*Daucus pusillus*), slender lotus (*Lotus angustissimus*), California plantain (*Plantago erecta*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), hedgehog dogtail grass (*Cynosurus echinatus*), western bracken

(*Pteridium aquilinum*), common catchfly (*Silene gallica*), short leaved evax (*Hesper-evax sparsiflora* var. *brevifolia*) scarlet pimpernel (*Lysimachia arvense*), and maritime brome (*Bromus maritimus*). The two described natural communities in Veg of Sonoma that most closely fit these areas are *Avena* spp. – *Bromus* spp. Provisional Semi-Natural Alliance, and the *Danthonia californica* – (*Briza maxima* – *Vulpia bromoides*) Provisional Association. The first is a better fit because it is a bit of a catch-all for areas dominated by non-native grasses in a dry topographic position. In addition, the namesake *Avena* and *Bromus* did not make a great showing anywhere else within the grazed portion of the Study Area and may have been less evident and identifiable due to grazing. The *Danthonia* association, on the other hand is a less likely match because *Danthonia* was apparent in adjacent areas during the survey but was not significantly present at the same time in the areas mapped as *Festuca bromoides* Semi-Natural Association.

5.2.11 *Iris douglasiana* patch

A few areas at the south end and one at the north end of the Study Area had patches of Douglas iris (*Iris douglasiana*) large enough to map with a GPS and were apparent in aerial photos. These patches occurred in areas of transition between several other plant communities and were not necessarily “belong” to any one of these communities. Other vegetation in these patches included California goldfields (*Lasthenia californica* ssp. *californica*), English plantain (*Plantago lanceolata*), California ponysfoot (*Dichondra donelliana*), New Zealand geranium (*Geranium retrorsum*), annual bluegrass (*Poa annua*), English daisy (*Bellis perennis*), California buttercup (*Ranunculus californica*), purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*), sheep sorrel (*Rumex acetosella*), rigid hedge nettle (*Stachys rigida*), Johnny tuck (*Triphysaria eriantha* ssp. *rosea*), brownie thistle (*Cirsium quercetorum*), silver hairgrass (*Aira caryophyllea*), rattlesnake grass (*Briza maxima*), brome fescue (*Festuca bromoides*), Italian thistle (*Carduus pycnocephalus*), and changing forget-me-not (*Myositis discolor*).

5.2.12 *Juncus balticus* Herbaceous Alliance (S4)

Baltic rush (*Juncus balticus*) was present in the northwestern portion of the Study Area. A couple of areas were dominated by this plant. Other species present in these areas were coyote brush (*Baccharis pilularis*), sheep sorrel (*Rumex acetosella*), Pacific reedgrass (*Calamagrostis nutkaensis*), Henderson’s angelica (*Angelica hendersonii*), wonder woman sedge (*Carex gynodynema*), split awn sedge (*C. tumulicola*), California blackberry (*Rubus ursinus*), harlequin lotus (*Hosackia gracilis*), purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*), California horkelia (*Horkelia californica*), California buttercup (*Ranunculus californicus*), sweet vernal grass (*Anthoxanthum odoratum*), purple velvetgrass (*Holcus lanatus*), Douglas iris (*Iris douglasiana*), and changing forget me not (*Myosotis discolor*). This alliance is likely to meet requirements to be considered Coastal Act wetland.

5.2.13 *Juncus effusus* Herbaceous Alliance (S4)

Coast rush (*Juncus hesperius* aka *Juncus effusus*) was the dominant plant in a small area in the northwestern portion of the Study Area. The marsh was narrow and other vegetation present was similar in composition to the surrounding areas. This natural community is likely a Coastal Act wetland.



Figure 19. *Juncus effusus* marsh at the site.

5.2.14 *Lasthenia californica* Herbaceous Alliance (S4)

This natural community occurred along a drainage near the southwestern point of the Study Area. Predominant vegetation included California goldfields (*Lasthenia californica* ssp. *californica*), California oatgrass (*Danthonia californica*), meadow barley (*Hordeum brachyantherum*), and coyote thistle (*Eryngium armatum*). Other vegetation present included Johnny tuck (*Triphysaria eriantha* ssp. *rosea*), purple everlasting (*Gamochaeta ustulata*), yellow hairgrass (*Aira praecox*), short leaved evax (***Hesperovax sparsiflora* var. *brevifolia***), and a very significant population of purple stemmed checkerbloom (***Sidalcea malviflora* ssp. *purpurea***). While *Lasthenia californica* Herbaceous Alliance is ranked S4, not a rare plant community, this area could also be considered a less abundant Association within the *Danthonia californica* Herbaceous Alliance, which has a rare ranking. Because it is also habitat for two rare plants and likely a significant resource for native pollinators it could also be considered to provide an “especially valuable” role in the ecosystem.



Figure 20. *Lasthenia californica* flower field.

5.2.15 *Lupinus arboreus* Semi-Natural Alliance

Yellow bush lupine (*Lupinus arboreus*) is purportedly not native to the Study Area. It was the predominant overstory vegetation in a large area at the southern end of the Study Area. The density of the shrubs varied but there was usually space between individual shrubs. Species with significant cover between the shrubs included brome fescue (*Festuca bromoides*), sheep sorrel (*Rumex acetosella*), and patches of Italian thistle (*Cardus pycnocephalus*). Other species in this natural community included bull thistle (*Cirsium vulgare*), tidy-tips (*Layia platyglossa*), rough hedge nettle (*Stachys rigida*), purple velvetgrass (*Holcus lanatus*), Japanese cudweed (*Euchiton japonicus*), California goldfields (*Lasthenia californica* ssp. *californica*), rough cat's ear (*Hypochaeris radicata*), California plantain (*Plantago erecta*), English plantain (*P. lanceolata*), and coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*). Many of the shrubs had relatively fresh mounds of dirt beneath them which may be tailings from California ground squirrel burrowing. No squirrels were seen during the surveys.



Figure 21. *Lupinus arboreus* shrubland at the site.

5.2.16 *Nassella pulchra* Herbaceous Alliance (S3?)

A couple of patches of purple needle grass (*Stipa pulchra* aka *Nassella pulchra*) occurred within the rocky dry areas in the middle-eastern portion of the Study Area. Other than the presence of purple needlegrass the species composition was similar to the surrounding *Festuca bromoides* Semi-Natural Association.



Figure 22. Purple needle grass meadow at the site.

5.2.17 *Pinus muricata* Forest Alliance (S3)

Bishop pine (*Pinus muricata*) dominated forest stands occurred in three locations in the northern portion of the Study Area. Bishop pine forest in this area is in decline due to drought and disease. Understory vegetation included coyote brush (*Baccharis pilularis*), cascara buckthorn (*Frangula purshiana*), sword fern (*Polystichum munitum*), California blackberry (*Rubus ursinus*), strongly climbing morning glory (*Calystegia purpurata* ssp. *purpurata*), California ponysfoot (*Dichondra donelliana*), Pacific sanicle (*Sanicula crassicaulis*), little false Solomon's seal (*Maianthemum stellatum*), California huckleberry (*Vaccinium ovatum*), coast manroot (*Marah oreganus*), bedstraw (*Gallium aparine*) and Douglas iris (*Iris douglasiana*).

A stream flows through the southernmost stand of Bishop pine forest. At a location just below the road the following plants were observed in the understory: pink flowering current (*Ribes sanguineum* var. *glutinosum*), thimbleberry (*Rubus parviflorus*), giant chain fern (*Woodwardia fimbriata*), cow parsnip (*Heracleum maximum*), seep monkeyflower (*Erythranthe guttata*), coast rush (*Juncus hesperius*), miner's lettuce (*Claytonia perfoliata*), orchard grass (*Dactylis glomerata*), western sword fern (*Polystichum munitum*), California blackberry (*Rubus ursinus*), coastal burnweed (*Senecio minimus*), giant horsetail (*Equisetum telmatia*), California bee plant (*Scrophularia californica*), coast hedge nettle (*Stachys chamissonis*), cascara buckthorn (*Frangula purshiana*), bedstraw (*Galium aparine*), slender foot sedge (*Carex leptopoda*), pennyroyal (*Mentha pulegium*), broadleaf forget me not (*Myotis latifolia*), chickweed (*Stellaria media*), sweet vernal grass (*Anthoxanthum odoratum*), bull thistle (*Cirsium vulgare*), field mustard (*Brassica rapa*) and Italian thistle (*Carduus pycnocephalus*).



Figure 23. *Pinus muricata* forest in the northern portion of the Study Area.



Figure 24. Understory within the Bishop pine forest at the site.

5.2.18 Rocky Outcrops

Outcroppings of rock were present in the southeastern portion and a couple other locations of the Study Area. They occurred mostly within areas mapped as *Festuca bromoides* Semi-Natural Association in the eastern portion of the Study Area, or within the *Danthonia californica* Herbaceous Alliance further west. These areas were characterized with bare or lichen covered rock and relatively dry conditions, though a variety of microclimates and therefore a higher diversity of plant species were present here than surrounding areas. Plants present around the rocks included western bracken (*Pteridium aquilinum*), coyote brush (*Baccharis pilularis*), beach strawberry (*Fragaria chiloensis*), California plantain (*Plantago erecta*), California sandaster (*Corethrogyne filaginifolia* var. *californica*), silver hairgrass (*Aira caryophyllea*), short leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), purple velvetgrass (*Holcus lanatus*), seaside lupine (*Lupinus variicolor*), sheep sorrel (*Rumex acetosella*), brome fescue (*Festuca bromoides*), hairy woodrush (*Luzula comosa*), Pacific reedgrass (*Calamagrostis nutkaensis*), Japanese cudweed (*Euchiton japonicus*), purple everlasting (*Gamochaeta ustulata*), dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*), tidy-tips (*Layia platyglossa*), rattlesnake grass (*Briza maxima*), pussy ears (*Calochortus tolmiei*), footsteps of spring (*Sanicula arctopoides*), Douglas iris (*Iris douglasiana*), California milkwort (*Polygala californica*), north coast dudleya (*Dudleya farinosa*), common catchfly (*Silene gallica*), corn spurry (*Spergula arvensis* ssp. *arvensis*), California brome (*Bromus carinatus*), California goldfields (*Lasthenia californica* ssp. *californica*), New Zealand geranium (*Geranium retrorsum*), and red maids (*Calandrinia ciliata*). In addition to supporting many microclimates and plant species, these areas also provide refugia for wildlife, are visually interesting, and are potentially more easily impacted by human activities than the surrounding grassland.



Figure 25. Rocky outcrops at the site.

5.2.19 *Rubus (ursinus)* Provisional Alliance

In a couple areas at the middle-eastern portion of the Study Area significant enough stand of California blackberry (*Rubus ursinus*) to map. Other vegetation was consistent with the surrounding natural communities.

5.2.20 *Rytidosperma penicillatum* Semi-Natural Association

This grassland was dominated by purple awned wallaby grass (*Rytidosperma penicillatum*) which is referred to by the name *Danthonia pilosa* in Veg of Sonoma. Within this source the closest matching association is the *Cynosurus echinatus* – (*Danthonia pilosa* – *Nassella manicata*) Provisional Semi-Natural Association, however neither the namesake *Cynosurus echinatus* nor *Nassella manicata* were present and the proportions of vegetation cover did not match the stand tables well.

These areas were dominated by purple awned wallaby grass (*Rytidosperma penicillatum*). Other species present included common velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), rough cat's ear (*Hypochaeris radicata*), brome fescue (*Festuca bromoides*), Douglas iris (*Iris douglasiana*) and western bracken (*Pteridium aquilinum*).



Figure 26. *Rytidosperma penicillatum* grassland at the site.

5.2.21 Northern Coastal Bluff Scrub

Northern Coastal bluff scrub is a Holland type plant community with no direct Alliance that describes it well. This natural community occurred at and below the break in slope of the bluff edge along the southern and western edges of the peninsula. These areas were not safely accessible, and all were more than 100 feet from the proposed trail alignment. Therefore, these natural communities were not fully surveyed and are not mapped. Plants observed from the bluff top included north coast dudleya (*Dudleya farinosa*), coast buckwheat (*Eriogonum latifolium*), lizard tail (*Eriophyllum staechadifolium*), onion (*Allium dichlamydeum*), seaside daisy (*Erigeron glaucus*), Blasedale's bentgrass (***Agrostis blasdalei***), short leaved evax (***Hesperevax sparsiflora* var. *brevifolia***), California phacelia (*Phacelia californica*), California poppy (*Eschscholzia californica*), cream cups (*Platystemon californicus*), maritime brome (*Bromus maritima*), maritime plantain (*Plantago maritima*), yellow hairgrass (*Aira praecox*), brome fescue (*Festuca bromoides*) and scarlet pimpernel (*Lysimachia arvensis*).



Figure 27. Two views of Coastal bluff scrub observed at the site.

6 Discussion

In the professional opinion of Spade Natural Resources Consulting, eleven natural communities and seven species of rare plant are present on the property that warrant protection and/or compensatory mitigation if unavoidably impacted. Table 1 below shows the sensitive resources potentially impacted by the current trail alignment. An assumption has been made that the trail will be six feet wide. Estimated number of rare plants, area of sensitive communities, and relative percentages of each of these resources potentially impacted is presented.

The trail should avoid the swamp harebell (*Campanula californica*) patch at the western edge of the northern portion of the Study Area.

In SpadeNRC's opinion coastal bluff morning glory (*Castilleja purpurata* ssp. *saxicola*) and short leaved evax (*Hesperisparisiflora* var. *brevifolia*) are under reported and likely not as rare as their ranking suggests. SpadeNRC biologists have also observed that these two species are more resilient to disturbance than many other species, even favoring areas of recent disturbance such as trails, mowing, and grazing.

SpadeNRC biologists have observed that *Sidalcea malviflora* does best in undisturbed soils and suggested that the southern portion of the proposed trail alignment be moved further south, into the yellow bush lupine scrub, in order to avoid areas where purple stemmed checkerbloom currently occurs. Further correspondence revealed that other sensitive resources that must not be impacted occur to the south of the trail alignment, within the area that would be least impacting to the *Sidalcea malviflora*. If the trail cannot be constructed in a manner that precludes impact to the other sensitive resource, then realigning the trail slightly further north of its current alignment should be considered.

Cattle grazing has been utilized as a vegetation management tool within most of the area surveyed. The much higher presence of invasive plant within the ungrazed areas is remarkable. In our professional opinion cattle grazing at the levels used has greatly benefited the habitat present and should continue.



Although the survey did not focus on wildlife one species of special concern, Bryant's savannah sparrow (Figure 28) was noted during surveys.

Figure 28. Bryant's savannah sparrow observed in the grassland at the site.

Table 1. Sensitive resources potentially impacted by the proposed trail alignment.

Rare plant species	Plants impacted		Total plants on site	Impacted %
<i>Sidalcea malviflora</i>	15-25		250-325	6.8%
<i>Hesperovax sparsiflora</i> ssp. <i>brevifolia</i>	150,000 – 300,000		20-40 million	<0.01%
<i>Campanula californica</i>	10-15		80-120	12.5%
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	20-30		600-800	3.5%
Sensitive natural community	Linear trail (ft)	Trail area (sqft)	Total community area mapped	Area impacted %
<i>Calamagrostis nutkaensis</i>	192	1152	186477	0.62%
<i>Carex obnupta</i>	21	126	4078	3.09%
<i>Danthonia californica</i>	1714	10284	699495	1.47%
<i>Deschampsia cespitosa</i>	103	618	724127	0.09%
<i>Juncus balticus</i>	112	672	56999	1.18%
<i>Lasthenia californica</i>	383	2298	35449	6.48%
<i>Pinus muricata</i>	737	4422	414620	1.07%
Rocky outcrops	62	372	125261	0.30%

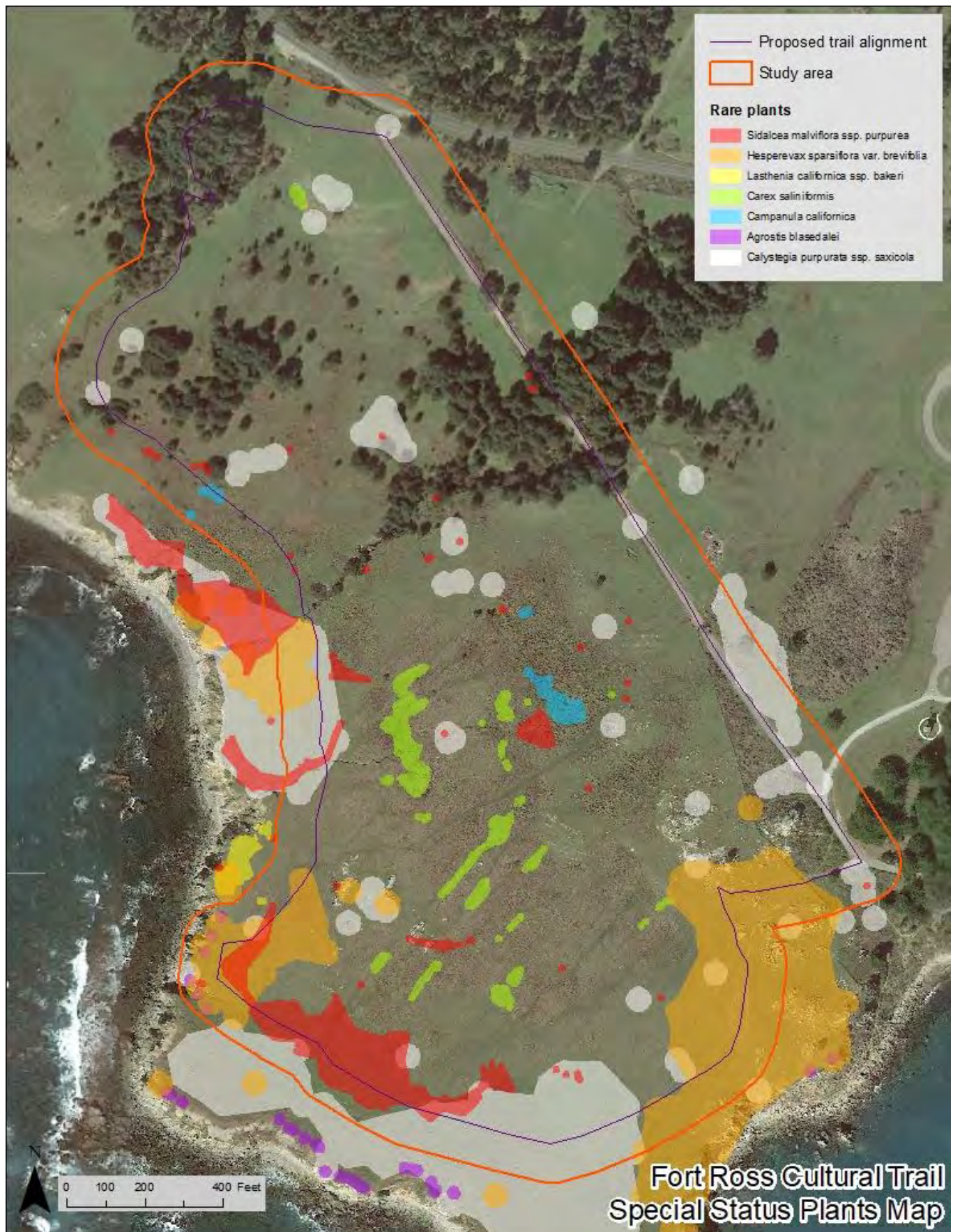


Figure 29. Rare plants map.

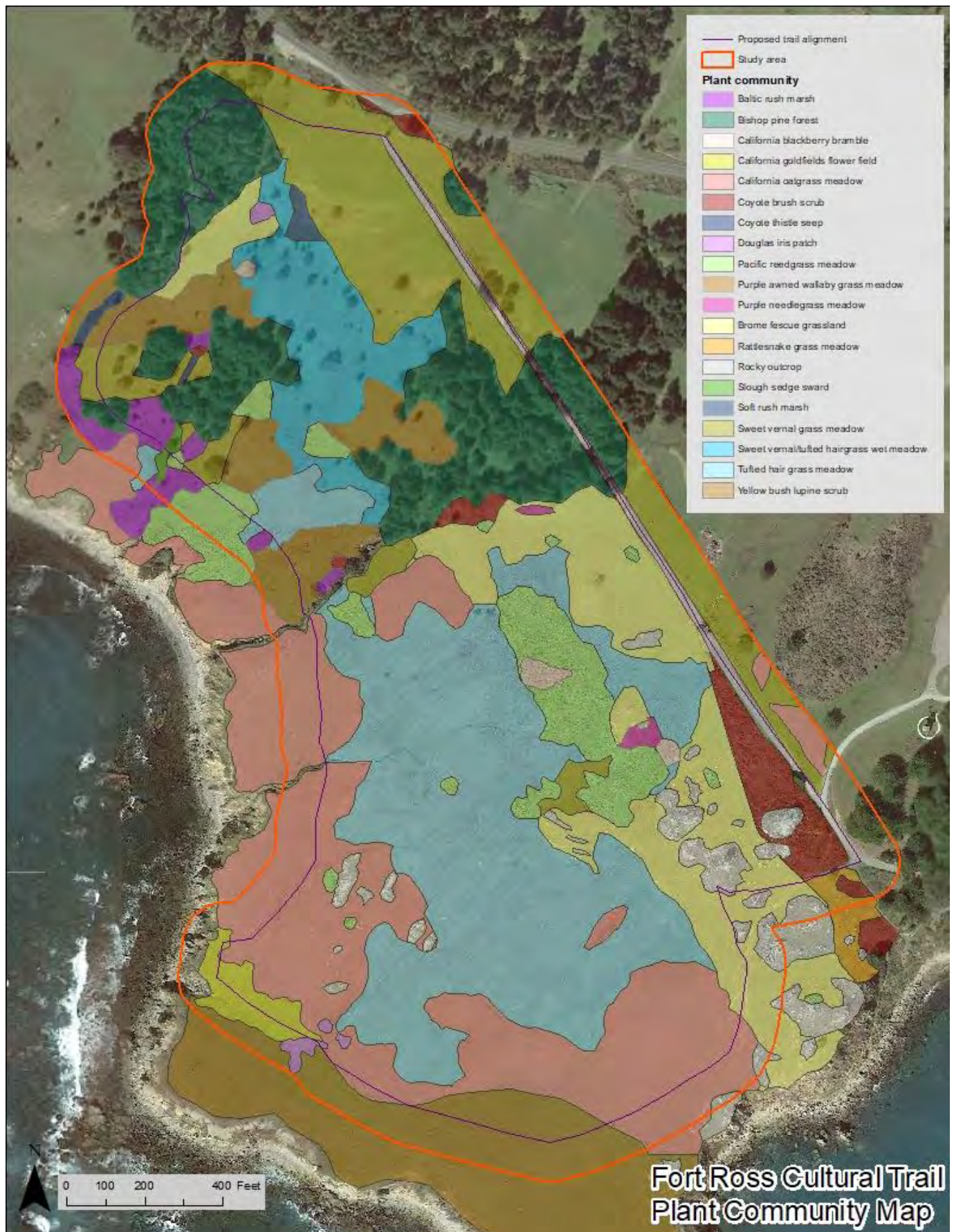


Figure 30. Plant community map.

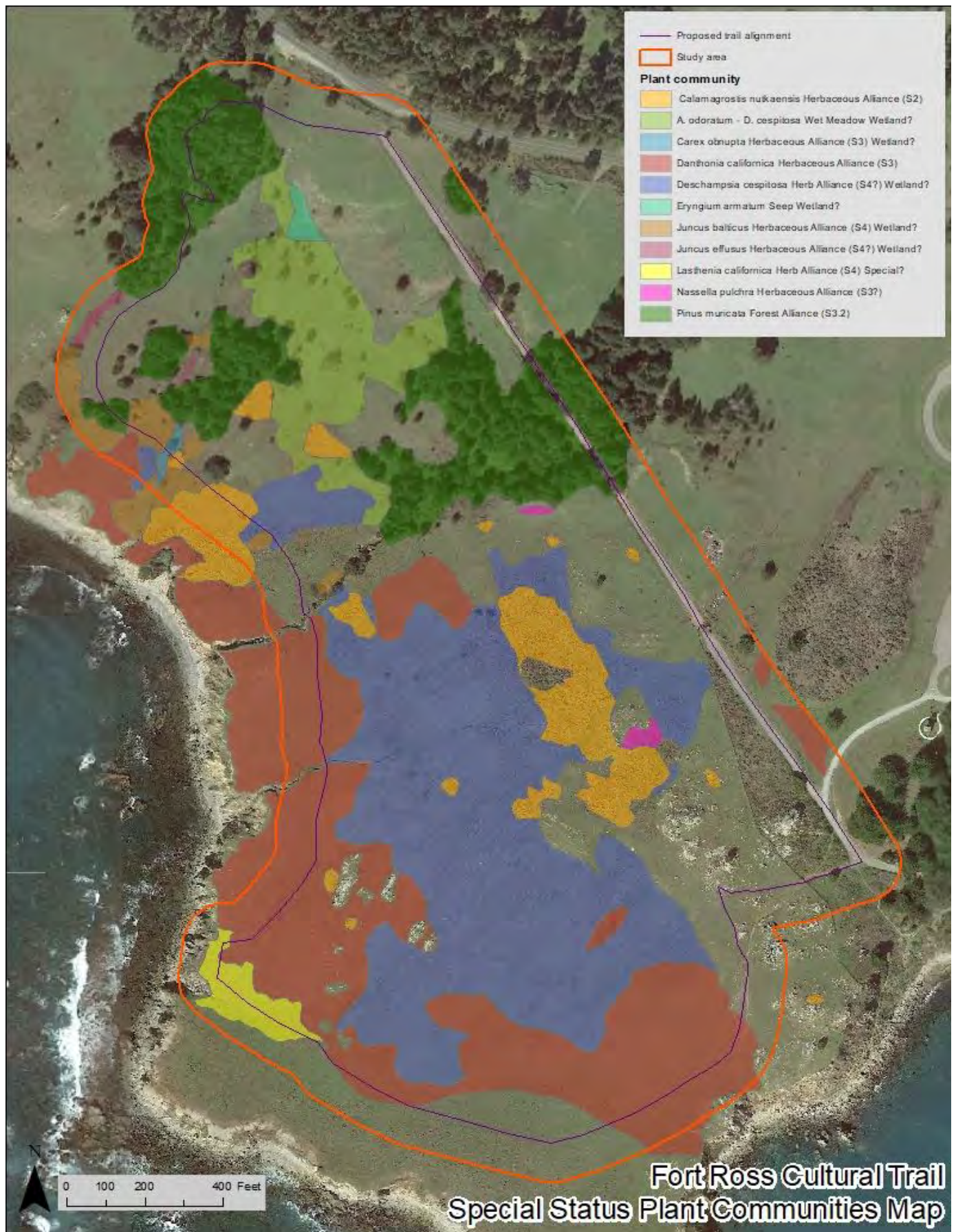


Figure 31. Special status plant communities map.

Appendix A. References

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Appendix B. List of All Plant Species Documented in the Study Area.

GROUP	Family	Latin binomial	Common name	Native
FERNS AND ALLIES				
	Dennstaedtiaceae			
		<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken; western bracken; hairy bracken fern	Y
	Dryopteridaceae			
		<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	subarctic lady-fern; lady fern	Y
		<i>Dryopteris expansa</i>	wood fern	Y
		<i>Polystichum munitum</i>	western sword fern	Y
	Equisetaceae			
		<i>Equisetum arvense</i>	field horsetail; common horsetail	Y
		<i>Equisetum telmateia</i> ssp. <i>braunii</i>	giant horsetail	Y
GYMNOSPERMS				
	Pinaceae			
		<i>Pinus muricata</i>	Bishop pine; prickly-cone pine; bull pine	Y
		<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas fir	Y
DICOTS				
	Aizoaceae			
		<i>Carpobrotus chilensis</i>	sea fig	N
	Anacardiaceae			
		<i>Toxicodendron diversilobum</i>	poison oak	Y
	Apiaceae			
		<i>Angelica hendersonii</i>	Henderson's angelica	Y
		<i>Conium maculatum</i>	poison hemlock	N
		<i>Daucus pusillus</i>	rattlesnake weed, American wild carrot	Y
		<i>Eryngium armatum</i>	prickly coyote thistle, coastal eryngo	Y
		<i>Heracleum maximum</i>	common cow parsnip	Y
		<i>Sanicula arctopoides</i>	yellow mats, footsteps of spring	Y
		<i>Sanicula crassicaulis</i>	Pacific sanicle, gamble weed, Pacific black snakeroot	Y
	Apocynaceae			
		<i>Vinca major</i>	greater periwinkle, periwinkle	N
	Asteraceae			
		<i>Achillea millefolium</i>	yarrow	Y
		<i>Anaphalis margaritacea</i>	pearly everlasting	Y
		<i>Anisocarpus madioides</i>	woodland madia	Y
		<i>Artemisia douglasiana</i>	mugwort, wormwood, Douglas' sagewort	Y
		<i>Baccharis pilularis</i>	coyote brush	Y
		<i>Baccharis salicifolia</i>	mule-fat	Y
		<i>Bellis perennis</i>	English daisy	N
		<i>Carduus pycnocephalus</i>	Italian thistle	N
		<i>Cirsium quercetorum</i>	brownie thistle	Y
		<i>Cirsium vulgare</i>	bull thistle	N
		<i>Corethrogyne filaginifolia</i> var. <i>californica</i>	California sandaster	Y
		<i>Erigeron glaucus</i>	seaside daisy	Y
		<i>Eriophyllum staechadifolium</i>	lizard tail, seaside golden yarrow, seaside wooly sunflower	Y
		<i>Euchiton japonicus</i>	Japanese cudweed	N
		<i>Gamochaeta ustulata</i>	purple everlasting	Y
		<i>Helenium bolanderi</i>	Bolander's sneezeweed	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Hesperex sparsiflora</i> var. <i>brevifolia</i>	few-flowered evax	Y
		<i>Hypochaeris glabra</i>	smooth cat's ear	N
		<i>Hypochaeris radicata</i>	rough cat's ear, hairy cat's ear	N
		<i>Lasthenia californica</i> ssp. <i>californica</i>	common goldfields; sunshine	Y
		<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	Y
		<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	Y
		<i>Layia platyglossa</i>	tidy-tips	Y
		<i>Madia sativa</i>	coast tarweed	Y
		<i>Pseudognaphalium stramineum</i>	Chilean cudweed, cottonbatting plant	Y
		<i>Senecio glomeratus</i>	cut-leafed erectites, New Zealand fireweed	N
		<i>Senecio minimus</i>	coastal burnweed	N
		<i>Senecio vulgaris</i>	common groundsel, Old man of spring	N
		<i>Silybum marianum</i>	milk thistle	N
		<i>Soliva sessilis</i>	common soliva, Field burnweed	N
		<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle	N
		<i>Sonchus oleraceus</i>	common sow thistle	N
		<i>Symphotrichum chilense</i>	california aster	Y
	Boraginaceae			
		<i>Myosotis discolor</i>	Forget me not, changing forget me not	N
		<i>Myosotis latifolia</i>	Broadleaf forget me not, Wide leaved forget me not	N
	Brassicaceae			
		<i>Brassica rapa</i>	field mustard, turnip	N
		<i>Raphanus sativus</i>	wild radish	N
	Cactaceae			
		<i>Opuntia ficus-indica</i>	tuna	N
	Campanulaceae			
		<i>Campanula californica</i>	swamp harebell	Y
	Caprifoliaceae			
		<i>Lonicera hispidula</i>	hairy honeysuckle	Y
	Caryophyllaceae			
		<i>Polycarpon tetraphyllum</i>	four-leaved allseed	N
		<i>Silene gallica</i>	windmill pink, Common catchfly	N
		<i>Spergula arvensis</i> ssp. <i>arvensis</i>	stickwort, sandwort, corn spurry	N
		<i>Stellaria media</i>	common chickweed	N
	Convolvulaceae			
		<i>Calystegia purpurata</i> ssp. <i>purpurata</i>	Purple western morning glory	Y
		<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	Bodega morning-glory	Y
		<i>Dichondra donelliana</i>	California ponysfoot, dichondra	Y
	Crassulaceae			
		<i>Dudleya farinosa</i>	north coast dudleya, Bluff lettuce, Powdery liveforever	Y
	Cucurbitaceae			
		<i>Marah oreganus</i>	coast wild-cucumber; wild cucumber, coast manroot	Y
	Ericaceae			
		<i>Gaultheria shallon</i>	salal	Y
		<i>Vaccinium ovatum</i>	California huckleberry	Y
	Euphorbiaceae			
		<i>Euphorbia lathyris</i>	gopher plant, caper spurge, compass plant	N
	Fabaceae			
		<i>Acemispion americanus</i> var. <i>americanus</i>	Spanish clover, American bird's foot trefoil	Y
		<i>Hosackia gracilis</i>	coastal lotus	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Lathyrus vestitus</i> var. <i>vestitus</i>	common Pacific pea, Hillside pea, Wild sweetpea	Y
		<i>Lotus angustissimus</i>	slender bird's foot trefoil, slender lotus	N
		<i>Lotus corniculatus</i>	bird's-foot trefoil, Birdfoot deervetch	N
		<i>Lupinus arboreus</i>	coastal bush lupine, yellow bush lupine	Y
		<i>Lupinus bicolor</i>	miniature lupine	Y
		<i>Lupinus variicolor</i>	varied lupine, varied-color lupine	Y
		<i>Medicago polymorpha</i>	California burclover, Bur clover, Bur medic	N
		<i>Melilotus indica</i>	sourclover, yellow sweetclover	N
		<i>Trifolium dubium</i>	shamrock, Shamrock clover, Suckling clover	N
		<i>Trifolium hirtum</i>	rose clover	N
		<i>Trifolium wormskioldii</i>	cow's clover, coast clover	Y
		<i>Vicia americana</i> var. <i>americana</i>	American vetch	Y
		<i>Vicia sativa</i>	vetch	N
	Geraniaceae			
		<i>Erodium cicutarium</i>	red-stemmed filaree	N
		<i>Erodium moschatum</i>	white-stem filaree	N
		<i>Geranium dissectum</i>	cut-leaved geranium	N
		<i>Geranium retrorsum</i>	New zealand geranium	N
	Grossulariaceae			
		<i>Ribes sanguineum</i> var. <i>glutinosum</i>	pink-flowering currant	Y
	Hydrophyllaceae			
		<i>Phacelia californica</i>	California phacelia	Y
	Hypericaceae			
		<i>Hypericum anagalloides</i>	tinker's penny	Y
	Lamiaceae			
		<i>Mentha pulegium</i>	pennyroyal	N
		<i>Monardella villosa</i> ssp. <i>villosa</i>	coyote-mint	Y
		<i>Prunella vulgaris</i> var. <i>lanceolata</i>	lance-leaf self-heal	Y
		<i>Stachys rigida</i>	rigid hedge-nettle	Y
		<i>Stachys chamissonis</i>	coast hedge-nettle	Y
	Linaceae			
		<i>Linum bienne</i>	pale flax	N
	Lythraceae			
		<i>Lythrum hyssopifolium</i>	loosestrife	N
	Malvaceae			
		<i>Sidalcea malvaeflora</i> ssp. <i>malvaeflora</i>		Y
		<i>Sidalcea malvaeflora</i> ssp. <i>purpurea</i>	purple checkerbloom	Y
	Myricaceae			
		<i>Morella californica</i>	wax-myrtle	Y
	Onagraceae			
		<i>Clarkia davyi</i>	Davy's clarkia	Y
		<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	willowherb	Y
		<i>Taraxia ovata</i>	goldeneggs, sun cups	Y
	Orobanchaceae			
		<i>Castilleja affinis</i> ssp. <i>affinis</i>	coast Indian paintbrush, Wight's Indian Paint brush	Y
		<i>Castilleja ambigua</i>	johnny nip	Y
		<i>Castilleja wightii</i>	Wight's paintbrush	Y
		<i>Parentucellia viscosa</i>	yellow glandweed, yellow parentucellia	N
		<i>Triphysaria eriantha</i> ssp. <i>rosea</i>	pink butter 'n' eggs, Johnny tuck	Y
		<i>Triphysaria versicolor</i> ssp. <i>versicolor</i>	yellowbeak owl's clover, yellow owl's clover	Y

GROUP	Family	Latin binomial	Common name	Native
	Oxalidaceae			
		<i>Oxalis albicans</i> ssp. <i>pilosa</i>		Y
	Papaveraceae			
		<i>Eschscholzia californica</i>	California poppy	Y
		<i>Platystemon californicus</i>	cream cups	Y
	Phrymaceae			
		<i>Diplacus aurantiacus</i>	sticky monkeyflower	Y
		<i>Erythranthe guttata</i>	common yellow monkeyflower, seep monkey flower	Y
	Plantaginaceae			
		<i>Plantago erecta</i>	California plantain dotseed plantain	Y
		<i>Plantago lanceolata</i>	English plantain, ribwort, ribgrass	N
		<i>Plantago maritima</i>	maritime plantain, seaside plantain, goose tongue	Y
	Plumbaginaceae			
		<i>Armeria maritima</i> ssp. <i>californica</i>	California sea-pink	Y
	Polemoniaceae			
		<i>Navarretia squarrosa</i>	skunkweed	Y
	Polygalaceae			
		<i>Polygala californica</i>	California milkwort	Y
	Polygonaceae			
		<i>Eriogonum latifolium</i>	coast buckwheat	Y
		<i>Rumex acetosella</i>	common sheep sorrel	N
		<i>Rumex crispus</i>	curly dock	N
		<i>Rumex salicifolius</i>	willow dock, willow leaf dock	Y
	Portulacaceae			
		<i>Calandrinia ciliata</i>	red maids	Y
		<i>Claytonia perfoliata</i>	miner's lettuce	Y
	Primulaceae			
		<i>Lysimachia arvensis</i>	scarlet pimpernel, poor man's weathervane	N
	Ranunculaceae			
		<i>Ranunculus californicus</i>	California buttercup	Y
	Rhamnaceae			
		<i>Ceanothus thyrsiflorus</i>	blueblossom	Y
		<i>Frangula purshiana</i>	cascara sagrada, chittum, cascara buckthorn	Y
	Rosaceae			
		<i>Fragaria chiloensis</i>	beach strawberry	Y
		<i>Horkelia californica</i> ssp. <i>californica</i>	California horkelia	Y
		<i>Potentilla anserina</i> ssp. <i>pacifica</i>	Pacific potentilla, silverweed	Y
		<i>Rosa nutkana</i> var. <i>nutkana</i>	Nootka rose	Y
		<i>Rubus parviflorus</i>	thimbleberry	Y
		<i>Rubus ursinus</i>	California blackberry	Y
	Rubiaceae			
		<i>Galium aparine</i>	common bedstraw; cleavers; goose-grass	Y
		<i>Sherardia arvensis</i>	field madder	N
	Salicaceae			
		<i>Salix lasiolepis</i>	arroyo willow	Y
	Saxifragaceae			
		<i>Heuchera micrantha</i>	crevice alumroot	Y
	Scrophulariaceae			
		<i>Myoporum laetum</i>	lollypop Tree, ngaio tree	N
		<i>Scrophularia californica</i>	California figwort, California bee plant	Y

GROUP	Family	Latin binomial	Common name	Native
	Solanaceae			
		<i>Solanum americanum</i>	common nightshade, American nightshade	Y
	Violaceae			
		<i>Viola adunca</i>	western dog violet	Y
MONOCOTS				
		<i>Chlorogalum pomeridianum</i>	amole, soaproot	Y
	Araceae			
		<i>Zantedeschia aethiopica</i>	calla lily, Calla-lily	N
	Cyperaceae			
		<i>Carex gynodynamis</i>	wonder woman sedge	Y
		<i>Carex harfordii</i>	Harford's sedge, Monterey sedge	
		<i>Carex leptopoda</i>	slender footed sedge	Y
		<i>Carex obnupta</i>	slough sedge	Y
		<i>Carex saliniformis</i>	salt sedge, deceiving sedge	Y
		<i>Carex tumulicola</i>	split-awn sedge	Y
		<i>Cyperus eragrostis</i>	tall flatsedge	Y
		<i>Isolepis cernua</i>	low lateral bulrush	Y
	Iridaceae			
		<i>Iris douglasiana</i>	Douglas' iris	Y
		<i>Romulea rosea</i> var. <i>australis</i>	rosy sand crocus, rosy sandcrocus	
		<i>Sisyrinchium bellum</i>	blue-eyed grass	Y
		<i>Sisyrinchium californicum</i>	California golden-eyed grass	Y
	Juncaceae			
		<i>Juncus balticus</i>	Baltic rush, wire rush	Y
		<i>Juncus bolanderi</i>	Bolander's rush	Y
		<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	Y
		<i>Juncus effusus</i>	common bog rush	Y
		<i>Juncus hesperius</i>	coast rush, bog rush	Y
		<i>Juncus patens</i>	common rush	Y
		<i>Juncus phaeocephalus</i> var. <i>phaeocephalus</i>	brown-headed rush	Y
		<i>Luzula comosa</i>	hairy wood rush	Y
	Liliaceae			
		<i>Allium dichlamydeum</i>	coastal onion	Y
		<i>Calochortus tolmiei</i>	pussy ears	Y
	Melanthiaceae			
		<i>Toxicoscordion fremontii</i>	Fremont's death-camas	Y
	Poaceae			
		<i>Agrostis blasdalei</i>	Blasdale's bentgrass	Y
		<i>Agrostis capillaris</i>	colonial bentgrass	N
		<i>Aira caryophyllea</i>	silver European hairgrass, hairgrass	N
		<i>Aira praecox</i>	yellow hairgrass, little hairgrass	N
		<i>Anthoxanthum odoratum</i>	sweet vernal grass	N
		<i>Avena barbata</i>	slender wild oat	N
		<i>Briza maxima</i>	big quaking grass; rattlesnake grass	N
		<i>Briza minor</i>	little quaking grass; quaking grass	N
		<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	Y
		<i>Bromus diandrus</i>	ripgut brome; ripgut	N
		<i>Bromus hordeaceus</i>	soft chess	N
		<i>Bromus madritensis</i>	foxtail chess, foxtail brome, Madrid brome, Spanish brome	N
		<i>Bromus maritimus</i>	seaside brome	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	Y
		<i>Cynosurus echinatus</i>	hedgehog dogtail-grass; annual dogtail-grass	N
		<i>Dactylis glomerata</i>	orchard-grass	N
		<i>Danthonia californica</i>	California oatgrass, wild oatgrass	Y
		<i>Deschampsia cespitosa</i> ssp. <i>holciformis</i>	coastal tufted hair-grass	Y
		<i>Festuca arundinacea</i>	tall fescue, meadow fescue	N
		<i>Festuca bromoides</i>	brome fescue	N
		<i>Festuca myuros</i>	rattail fescue	N
		<i>Festuca perennis</i>	perennial ryegrass, English ryegrass	N
		<i>Holcus lanatus</i>	common velvetgrass	N
		<i>Hordeum brachyantherum</i>	meadow barley	Y
		<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	N
		<i>Hordeum murinum</i>	foxtail barley	N
		<i>Lagurus ovatus</i>	hare's tail	N
		<i>Panicum acuminatum</i> var. <i>acuminatum</i>	western panicum	Y
		<i>Poa annua</i>	annual blue grass	N
		<i>Rytidosperma penicillatum</i>	purple awned wallaby grass; hairy oat grass	N
		<i>Stipa pulchra</i>	purple needle grass	Y
	Ruscacea			
		<i>Maianthemum stellatum</i>	little false-Solomon's-seal	Y
	Themidaceae			
		<i>Brodiaea terrestris</i> ssp. <i>terrestris</i>	dwarf brodiaea	Y
		<i>Triteleia hyacinthina</i>	white brodiaea, wild hyacinth	Y
		<i>Triteleia laxa</i>	Ithuriel's spear	Y

Aquatic Resources Delineation

Fort Ross State Historic Park-California Coastal Trail Project

Sonoma County, California

Prepared For:

California Department of Parks and Recreation

DRAFT

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Attachment B - Survey Area Aerial
Attachment C - Plant Species Observed Onsite
Attachment D - USACE ORM Aquatic Resources Table
Attachment E - Representative Site Photographs
Attachment F- Wetland Delineation Shape File (to be included with USACE submittal only)
Attachment G – USACE Verification Request Form (to be included with USACE submittal only)

LIST OF ACRONYMS AND ABBREVIATIONS

CCR	California Code of Regulations
CARI	California Aquatic Resources Inventory
CCA	California Coastal Act of 1976
CCC	California Coastal Commission
CCC	California Coastal Commission
CDEC	California Data Exchange Center
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CWA	Clean Water Act
FAC	Facultative
FACW	Facultative wetland
FR	Federal Register
LCP	Local Coastal Program
NRCS	Natural Resources Conservation Service

LIST OF ACRONYMS AND ABBREVIATIONS

OBL	Obligate
OHWM	Ordinary high-water mark
Project	Fort Ross State Historic Park portion of the California Coastal Trail Project
Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, version 2.0
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Application
SFEI	San Francisco Estuary Institute
SR	State Route
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WRCC	Western Regional Climate Center

1.0 INTRODUCTION

On behalf of California Department of Parks and Recreation, ECORP Consulting, Inc. conducted an aquatic resources delineation of Waters of the U.S. and Waters of the State for the Fort Ross State Historic Park portion of the California Coastal Trail, which also includes portions of the Fort Ross State Historic Park Cultural Trail Project (Project), located in Sonoma County, California. The Project is located approximately 12 miles northwest of Jenner, California along State Route (SR) 1 (Figure 1. *Project Location and Vicinity*). The site corresponds to the unsectioned Muniz Land Grant within the "Plantation, California" and the "Fort Ross, California" 7.5-minute quadrangles (U.S. Geological Service [USGS] 1977, 1978, respectively). The approximate center of the Project is located at latitude (NAD83) 38.519263° and longitude (NAD83) -123.253147° within the Gualala-Salmon Watershed (Watershed #18010109) (Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016).

This report describes aquatic resources identified within the site that may be regulated by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Coastal Commission (CCC), and the California Department of Fish and Wildlife (CDFW).

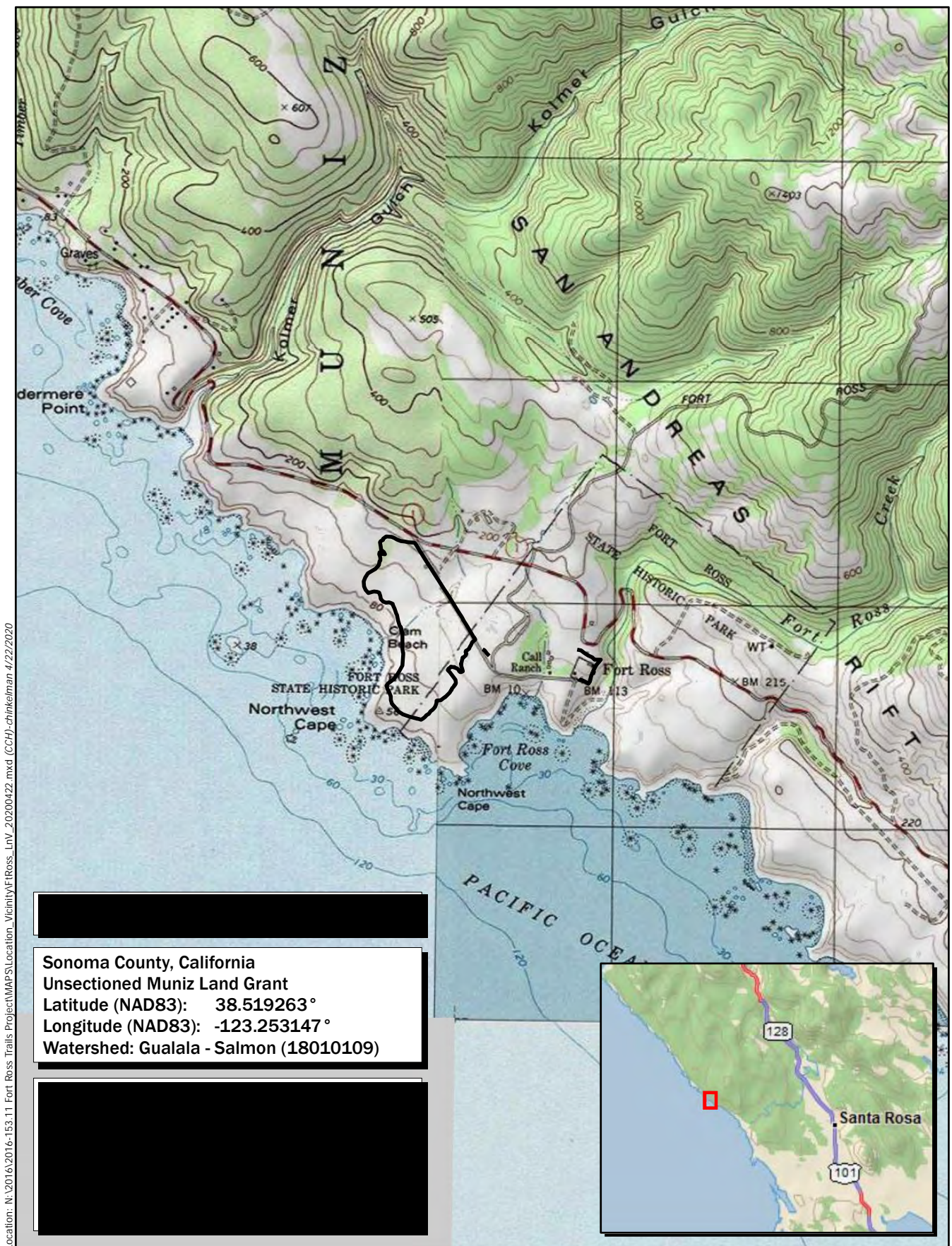
The information presented in this report provides data requested by the USACE San Francisco District's *Information Requested for Verification of Corps Jurisdiction* (USACE 2016a). The potential waters boundaries depicted in this report represent a calculated estimation of the jurisdictional area within the site, and are subject to modification following the USACE, CCC, and/or CDFW verification process. Map and figures submitted have been prepared according to the USACE *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016b). The purpose of this aquatic resources delineation is to identify and map the presence (or absence) of jurisdictional Waters of the U.S. and State within the Project trail alignment (Project alignment). For purposes of this delineation, the Project alignment included the trail centerline plus 10 feet on either side from centerline, but also included several areas where culvert crossings and aquatic resources were found adjacent to the proposed Project alignment.

2.0 REGULATORY SETTING

2.1 Clean Water Act

The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the federal Clean Water Act (CWA). "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 Code of Federal Regulations (CFR) §328.2(f)]. In addition, Section 401 of the CWA (33 U.S. Code 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Location: N:\2016\2016-153.11 Fort Ross Trails Project\MAPS\Location_Vicinity\FRoss_Lnv_20200422.mxd (CCH)-chinkman-4/22/2020



Sonoma County, California
Unsectioned Muniz Land Grant
Latitude (NAD83): 38.519263°
Longitude (NAD83): -123.253147°
Watershed: Gualala - Salmon (18010109)

Figure 1. Project Location and Vicinity
2016-153.11 Fort Ross Trails Project

Substantial impacts to wetlands, over 0.5 acre of impact, may require an individual permit. Projects that only minimally affect wetlands, less than 0.5 acre of impact, may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the RWQCB.

2.1.1 Waters of the United States

This report describes potential Waters of the U.S., including wetlands, that may be regulated by the USACE under Section 404 of the federal CWA.

2.1.2 Wetlands

Wetlands are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (51 Federal Register [FR] 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993).

2.1.3 Other Waters

Other waters that may be found in the Delineation Area are non-tidal, perennial, and intermittent watercourses and tributaries to such watercourses (51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993). The limit of USACE jurisdiction for non-tidal watercourses (without adjacent wetlands) is defined in 33 CFR 328.4(c)(1) as the “ordinary high-water mark” (OHWM). The OHWM is defined as the “line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” approximation of the lateral limit of USACE jurisdiction. The upstream limits of other waters are defined as the point where the OHWM is no longer perceptible.

2.2 Jurisdictional Assessment

The federal Clean Water Act’s (CWA’s) purpose is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into “Waters of the U.S.” without a permit from the U.S. Army Corps of Engineers (USACE).

The following guidance is from the USEPA website:

“On October 22, 2019, the Environmental Protection Agency and Department of the Army (the agencies) published a final rule (Step One) to repeal the 2015 Rule defining “waters of the United States” and re-codify the regulatory text that existed prior to the 2015 Rule. The final Step One rule became effective on December 23, 2019. The Step One rule will be replaced by the Navigable Waters Protection Rule upon its effective date of June 22, 2020. Until the Navigable Waters Protection Rule takes effect, the Step One rule is in effect. 40 CFR 230.3(s) indicates that the term “waters of the United States” means:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - ii. (From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - iii. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA."

2.3 California Coastal Act

The CCC regulates development activities within the coastal zone pursuant to the California Coastal Act of 1976 (CCA). In general, the coastal zone is defined as the area that extends three miles seaward and approximately 1,000 feet inland. The California State Legislature finds and declares that the basic goals of the CCA are to:

- a) protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
- b) assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the State;

- c) maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners;
- d) assure priority for coastal-dependent and coastal-related development over other development on the coast; and
- e) encourage State and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Section 30231 of the CCA requires the maintenance and restoration (if feasible) of the biological productivity and quality of wetlands appropriate to maintain optimum populations of marine organisms and for the protection of human health. Section 30233 limits the filling of wetlands to identified high priority uses, including certain boating facility, public recreational piers, restoration, nature study, and incidental public services. Any wetland fill must be avoided unless there is no feasible environmentally damaging alternative, and authorized fill must be fully mitigated.

2.3.1 CCC One-Parameter Wetland Definition

Section 30121 of the CCA defines the term “wetland” as:

Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

The CCC’s regulations (California Code of Regulations [CCR] Title 14) establish a one-parameter definition that only requires evidence of a single parameter to establish wetland conditions:

Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such Wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577).

2.4 California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a Streambed Alteration Application (SAA) be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, submits proposed measures to protect affected fish and wildlife resources to the applicant. The final proposal that is mutually agreed upon by CDFW and the Applicant is the SAA. Often,

projects that require an SAA also require a permit from USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA may overlap.

2.5 Sonoma County Local Coastal Program

Under the CCA, cities and counties along the California coast are responsible for preparing a Local Coastal Program (LCP), which consists of a Local Coastal Plan and an Implementation Plan. The current LCP for Sonoma County was written in 1981 and amended in 2001. The LCP serves as a conservation and development planning document for the coastal zone of Sonoma County. The CCA encourages the productive maintenance and protection of marine resources and environmentally sensitive habitat areas, such as wetlands.

3.0 METHODS

This wetland delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, version 2.0 (Regional Supplement) (USACE 2010). Field identification of non-wetland aquatic drainage features was performed according to *A Guide to Ordinary High-Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (USACE 2014). The boundaries of potential Waters of the U.S. were delineated through aerial photograph interpretation and standard field methods (e.g., paired sample set analyses), and field data were recorded on Wetland Determination Data Forms – Western Mountains, Valleys, and Coast Region (Attachment A). A color aerial photograph (1"=100' scale; NAIP 2016) was used to assist with mapping and ground-truthing (Attachment B). Munsell Soil Color Book (Munsell Color 2009) and the Soil Data Access Hydric Soils List (NRCS 2018b) were used to aid in identifying hydric soils in the field. The Jepson Manual, Second Edition (Baldwin et al. 2012) was used for plant nomenclature and identification.

Field surveys were conducted on August 22 and 23, 2018 by ECORP biologists Keith Kwan and Clay DeLong and on April 21, 2020 by ECORP biologists Tom Scofield and Keith Kwan. The biologists walked the entire approximately 8,837 linear feet of the Project to determine the location and extent of potential Waters of the U.S. and CCC wetlands within the survey area. In addition, several culvert crossings adjacent to the proposed Project alignment were delineated at the request of Mr. Gary Shannon, California State Parks staff. Paired sampling point locations were sampled to evaluate whether or not the vegetation, hydrology, and soils data supported a determination of wetland or non-wetland status. At each paired location, one point was located such that it was within the estimated wetland area, and the other point was situated outside the limits of the estimated wetland area. The total area of the wetlands and other waters within the site was recorded in the field using a post-processing capable global positioning system unit with sub-meter accuracy (Trimble GeoXT and Apple iPad Collector Program with Arrow 100 GNSS EOS Positioning Systems)

3.1 Routine Determinations for CWA Wetlands

To be determined a potential CWA wetland, the following three criteria must be met:

- A majority of dominant vegetation species are wetland-associated species.
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season.
- Hydric soils are present.

3.1.1 Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). The definition of wetlands includes the phrase "a prevalence of vegetation typically adapted for life in saturated soil conditions." Prevalent vegetation is characterized by the dominant plant species comprising the plant community (Environmental Laboratory 1987). The dominance test is the basic hydrophytic vegetation indicator and was applied at each sampling point location. The "50/20 rule" was used to select the dominant plant species from each stratum of the community. The rule states that for each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of coverage and cumulatively totaled) that immediately exceed 50 percent of the total coverage for the stratum, plus any additional species that individually comprise 20 percent or more of the total cover in the stratum (Headquarters USACE [HQUSACE] 1992; USACE 2010).

Dominant plant species observed at each sampling point were then classified according to their indicator status (probability of occurrence in wetlands) (Table 1), *North American Digital Flora: National Wetland Plant List* (Lichvar et al. 2016). If the majority (greater than 50 percent) of the dominant vegetation on a site are classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), the site was considered to be dominated by hydrophytic vegetation.

Table 1. Classification of Wetland-Associated Plant Species ¹		
Plant Species Classification	Abbreviation	Probability of Occurring in Wetland
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Upland	UPL	Almost never occur in wetlands
Plants That Are Not Listed (assumed upland species)	N/L	Does not occur in wetlands in any region.

¹Source: Lichvar et al. 2016

In instances where indicators of hydric soil and wetland hydrology were present, but the plant community failed the dominance test, the vegetation was re-evaluated using the Prevalence Index. The Prevalence

Index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and weighting is by abundance (percent cover). If the plant community failed the Prevalence Index, the presence/absence of plant morphological adaptations to prolonged inundation or saturation in the root zone was evaluated.

3.1.2 Soils

A hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2003). Indicators that a hydric soil is present include, but are not limited to, histosols, histic epipedon, hydrogen sulfide, depleted below dark surface, sandy redox, loamy gleyed matrix, depleted matrix, redox dark surface, and redox depressions.

At each sampling point a soil pit was excavated to the depth needed to document an indicator, to confirm the absence of indicators, or until refusal at each sampling point. The soil was then examined for hydric soil indicators. Soil colors were determined while the soil was moist using the *Munsell Soil Color Book* (Munsell Color 2009). Hydric soils are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment. These processes and the features in the soil that develop can be identified by looking at the color and texture of the soils.

3.1.3 Hydrology

Wetlands, by definition, are seasonally or perennially inundated or saturated at or near (within 12 inches of) the soil surface. Primary indicators of wetland hydrology include, but are not limited to: visual observation of saturated soils, visual observation of inundation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, oxidized rhizospheres along living roots, aquatic invertebrates, water marks, drift deposits/lines, and sediment deposits. The occurrence of one primary indicator is sufficient to conclude that wetland hydrology is present. If no primary indicators are observed, two or more secondary indicators are required to conclude wetland hydrology is present. Secondary indicators include, but are not limited to: drainage patterns, FAC-neutral test, and shallow aquitard.

3.2 CCC One-Parameter Wetlands Determination

There is no guidance from the CCC and CCA for determining, in the field, the presence of hydric soil, hydrophytic vegetation, or recognizing the presence of surface water or soil saturation. Consequently, the individual parameters (i.e., dominance of hydrophytes, presence of hydric soil, or presence of wetland hydrology) used for delineating CWA wetlands were used to identify CCC one-parameter wetlands. If at least one of the three parameters was met, the area was delineated as a CCC wetland. All areas identified as potential CWA waters were considered potential CCC wetlands.

4.0 RESULTS

4.1 Existing Site Conditions

The Project lies on a coastal terrace characterized by gently rolling terrain situated at an elevational range of approximately 50 to 150 feet above mean sea level in the North Coast Subregion of the Northwestern California floristic region of California (Baldwin et. al. 2012). The Project site is gently sloped towards the Pacific Ocean. Drainage within the Project site originates in coastal conifer forests and grasslands located north and east of SR-1.

The wetland delineation was conducted in late summer of 2019, well past the blooming season for most plant species, and in early spring of 2020 during the blooming season for some plants. The 2019 field survey was conducted at a suboptimal time of the year to observe wetland hydrology. The 2020 field survey was conducted at an appropriate time of the year to observe wetland hydrology. Many grasses and forbs were not identifiable to species due to the ongoing cattle grazing within this portion of the park.

Prior to the 2019 field survey, the last significant precipitation occurred during May 2018 (California Data Exchange Center [CDEC] 2018a). The Russian River basin for the 2018 water year through August 2018 was 71 percent of the historic average and 49 percent for the 2020 water year through April 2020 (CDEC 2018b). Average annual precipitation for this location is 40.62 inches with 80 percent of this total occurring from November through March (Western Regional Climate Center [WRCC] 2020).

4.1.1 Vegetation Communities

There are several vegetation communities mapped for the Survey Area based on the "Fort Ross Cultural Trail, Special Status Plant Communities Map" prepared by Department of Parks and Recreation staff. These include the following:

- *Calamagrostis nutkaensis* Herbaceous Alliance
- *Danthonia pilosa* Provisional Semi-Natural Association
- *Anthoxanthum odoratum* Semi-Natural Herb Alliance
- *Briza maxima* Provisional Semi-Natural Association
- *Danthonia californica* Herbaceous Alliance
- *Deschampsia caespitosa* Herbaceous Alliance
- *Juncus balticus* Herbaceous Alliance
- *Lasthenia californica* Herbaceous Alliance
- *Lupinus arboreus* Semi-Natural Alliance
- *Pinus muricata* Forest Alliance

- Rocky Outcrop Special Feature

A small herd of cattle was observed grazing in the survey area during the field delineation.

4.1.2 Hydrology

The surface hydrology of the Project area is directly related to several intermittent and ephemeral drainages that flow directly into the Pacific Ocean to the south and west.

4.1.3 California Aquatic Resource Inventory

According to the California Aquatic Resources Inventory (CARI) (San Francisco Estuary Institute [SFEI] 2016), there are Depressional Seasonal Natural Emergent features mapped within the survey area (Figure 2. *California Aquatic Resource Inventory (CARI)*). These correspond to seasonal wetland swales, wet meadows, and CCC one-parameter wetlands.

4.1.4 Soils

According to the Web Soil Survey (NRCS 2018a), five soil units, or types, have been mapped within the survey area (Figure 3. *Natural Resources Conservation Service Soil Types*). These are:

- KnE – Kneeland loam, 15 to 30 percent slopes.
- KnF – Kneeland loam, 30 to 50 percent slopes.
- RrC – Rhonerville loam, 0 to 9 percent slopes.
- RrD – Rhonerville loam, 9 to 15 percent slopes.
- TeG – Terrace escarpments.

One of these soil units is considered hydric; TeG-Terrace escarpments contains unnamed hydric components in drainageways (NRCS 2018b).

4.2 Potential Waters of the U.S.

A total of 1.876 acres and 888 linear feet of potential Waters of the U.S. have been mapped within the Project (Table 2). The wetland determination data forms are included in Attachment A, an aerial photograph of the Project is included in Attachment B, and a list of plant species observed onsite is included in Attachment C. A discussion of the aquatic resources is presented below, and the potential Waters of the U.S. wetland delineation map is presented on Figure 4. *Aquatic Resources Delineation*. The USACE Operations and Maintenance Business Information Link Regulatory Module (ORM) aquatic resources table of potential Waters of the U.S. is included in Attachment D. Representative site photographs are included in Attachment E.

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Figure 2.
California Aquatic
Resources Inventory (CARI)

Map Features

— Fort Ross Coastal Trail

CARI Streams

— Fluvial Natural

CARI Wetlands

— Depressional Seasonal Natural Emergent

— Marine Natural Intertidal Non-vegetated

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





**Figure 3. Natural Resources
Conservation Service Soil Units**

Map Features

Coastal Trail Study Area

Series Number - Series Name

KnE - Kneeland loam, 15 to 30 percent slopes

KnF - Kneeland loam, 30 to 50 percent slopes

RrC - Rohnerville loam, 0 to 9 percent slopes

RrD - Rohnerville loam, 9 to 15 percent slopes

Natural Resources Conservation Service (NRCS)
Soil Survey Geographic (SSURGO) Database for
Sonoma County, CA



Location: N:\2016\2016-153.11 Fort Ross Trails Project\Map\Soils_and_Geology\Soils\FRoss_Soils_20200422.mxd (CCH)-chinkelman 4/22/2020



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Figure 4.
Aquatic Resources Delineation
(Sheet 1 of 7)

Map Features

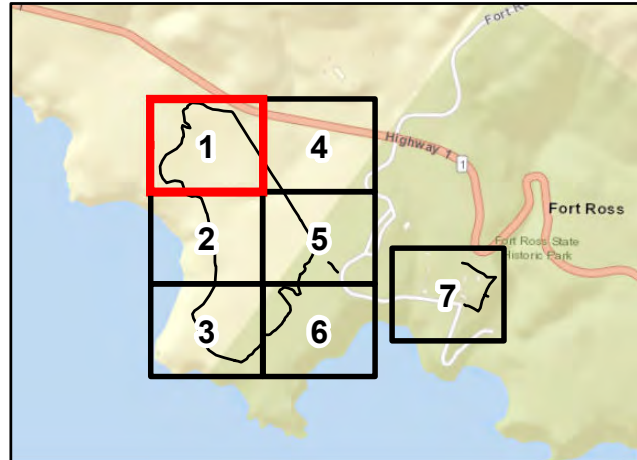
- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

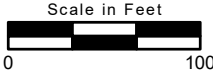
- CCC Wetland (0.069 acre)
- Ditch (0.077 acre)
- Seasonal Wetland Swale (0.065 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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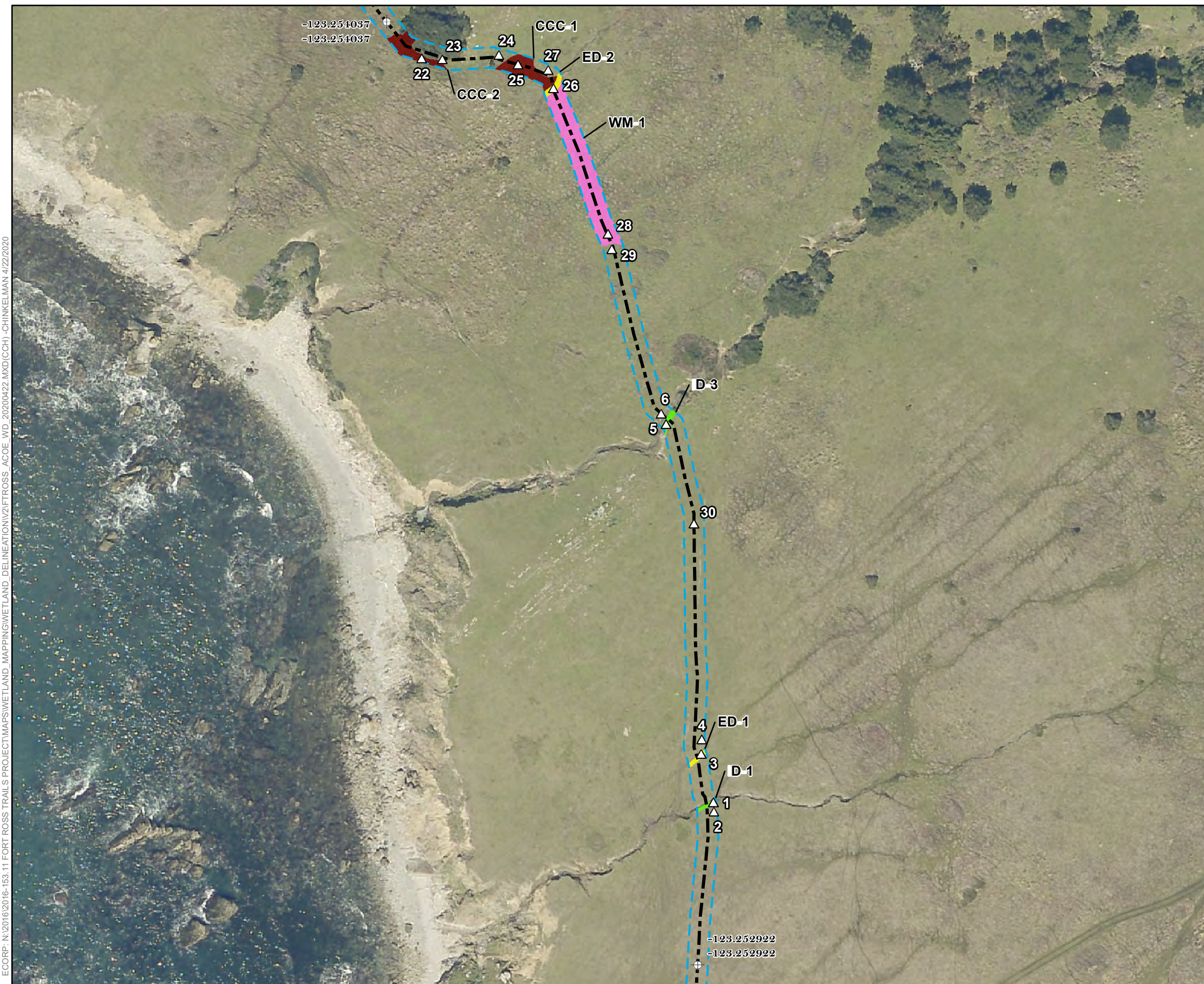


Figure 4.
Aquatic Resources Delineation
(Sheet 2 of 7)

Map Features

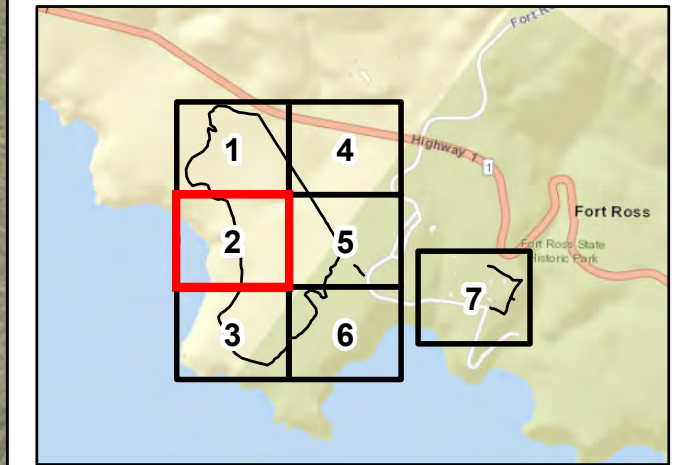
- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

Wetland Type

- CCC Wetland (0.069 acre)
- Ephemeral Drainage (0.006 acre)
- Intermittent Drainage (0.021 acre)
- Wet Meadow (0.074 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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Figure 4.
Aquatic Resources Delineation
(Sheet 3 of 7)

Map Features

- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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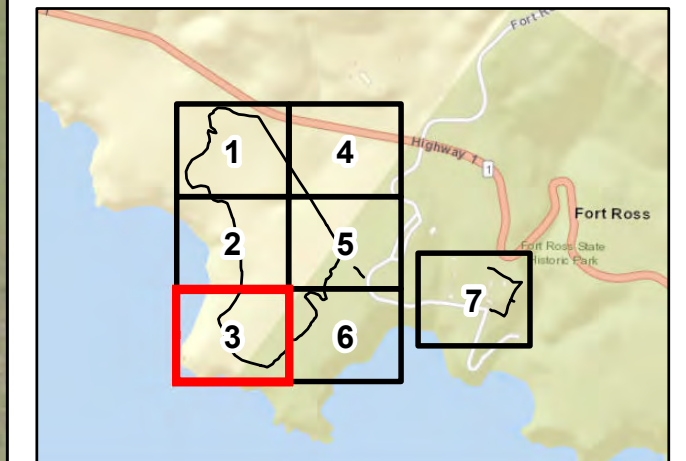




Figure 4.
Aquatic Resources Delineation
(Sheet 4 of 7)

Map Features

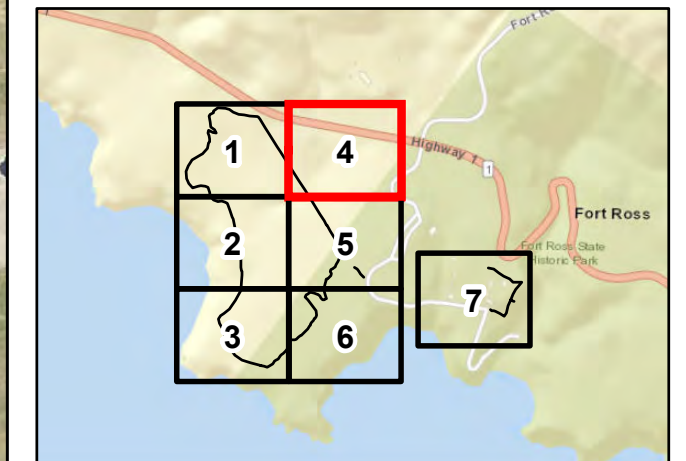
- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

- Ditch (0.077 acre)
- Intermittent Drainage (0.021 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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Figure 4.
Aquatic Resources Delineation
(Sheet 5 of 7)

Map Features

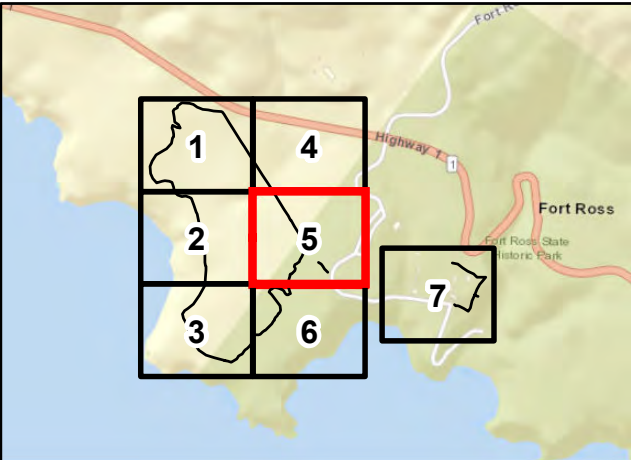
- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

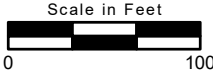
- Orange Ditch (0.077 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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Figure 4.
Aquatic Resources Delineation
(Sheet 6 of 7)

Map Features

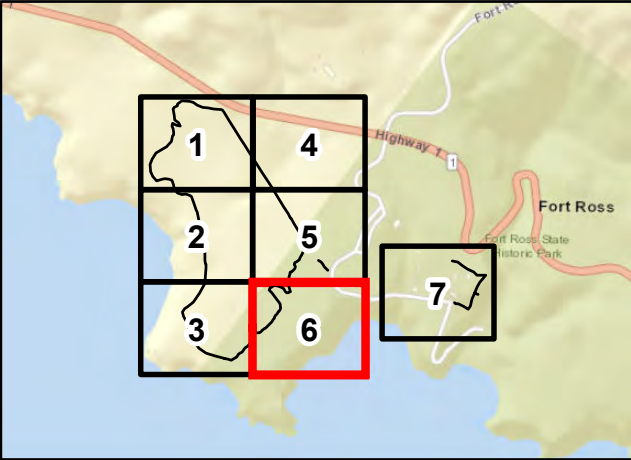
- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

Wetland Type

- CCC Wetland (0.069 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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Figure 4.
Aquatic Resources Delineation
(Sheet 7 of 7)

Map Features

- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Acid West Region Version 2.0, as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

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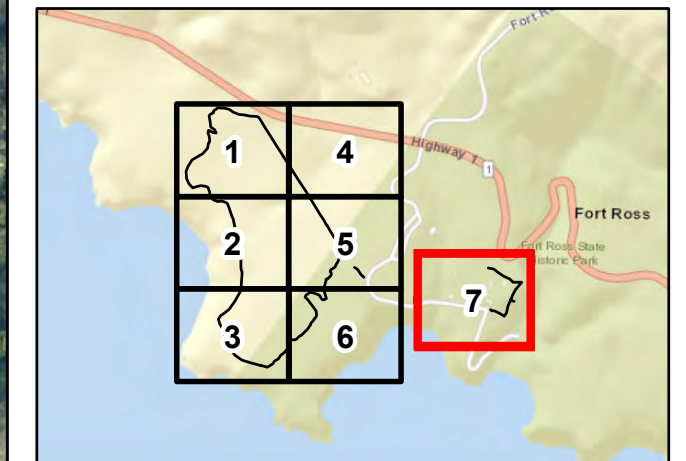


Table 2. Potential Waters of the U.S.		
Type	Acreage ¹	Linear Feet
Wetlands		
Seasonal Wetland Swale	0.065	Not Applicable
Wet Meadow	0.074	Not Applicable
Other Waters		
Ephemeral Drainage	0.006	48
Intermittent Drainage	0.021	80
Ditch	0.077	559
Total²	1.876	687

¹Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

² Summation of individual wetland type acreages may not equal the reported total due to error incurred by rounding.

4.2.1 Wetlands

Seasonal Wetland Swale

Seasonal wetland swales are generally linear wetland features that convey stormwater runoff, but do not exhibit an OHWM, and support a predominance of hydrophytic vegetation, hydric soil, and wetland hydrology. These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation into the growing season. Sample points 14 and 18 were taken in different reaches of the same seasonal wetland swale, and sample points 15 and 19, respectively, were taken as adjacent upland comparison points.

Dominant plant species identified within the seasonal wetland swale at the sample points included coyote thistle (FACW, *Eryngium armatum*), velvet grass (FAC, *Holcus lanatus*), perennial cat's-ear (FACU, *Hypochaeris radicata*), soft rush (FACW, *Juncus effusus*), and Kentucky bluegrass (FAC, *Poa pratensis*). The vegetation within the seasonal wetland swale was considered hydric, as the dominance test indicator was met. Dominant plant species identified within the adjacent uplands included sweet vernal grass (FACU, *Anthoxanthum odoratum*), perennial cat's-ear (FACU), Douglas iris (N/L, *Iris douglasiana*), Bishop pine (N/L, *Pinus muricata*), California blackberry (FACU, *Rubus ursinus*), and purple awned wallaby grass (N/L, *Rytidosperma penicillatum*).

Sampled soil within the seasonal wetland swale had matrix colors of 7.5YR3/1 with 5YR4/6 redox features and 5YR3/1 with 2.5YR4/4 redox features; these were considered hydric due to the presence of the Redox Dark Surface (F6) indicator. The soil within the uplands (sample 15) had a matrix color of 7.5YR3/2 with 5YR4/6 redox features (0-1 inch depth) and 7.5YR3/2 with no redox features (1-12 inches depth). This soil did not meet any hydric soil indicators. Sample 19 had 7.5YR3/1 with no redox features (0-4 inches depth) and 7.5YR3/1 with 5YR4/6 redox features (4-12 inches depth).

Wetland hydrology indicators observed within the seasonal wetland swale included Algal Mat or Crust (B4) and Drainage Patterns (B10). Wetland hydrology indicators were not observed in the upland areas adjacent to the seasonal wetland swale.

Wet Meadow

The wet meadow mapped onsite is a level to sloped wetland feature that likely remains saturated for prolonged periods into the growing season. It may support small areas of standing water during the wet season but is more likely to maintain soil saturation from a combination of direct precipitation, surface runoff, and subsurface flows from upslope sources. Sample point 28 was collected within the wet meadow, and sample point 29 was collected in the adjacent upland for comparison.

Dominant plant species observed within the wet meadow included tufted hairgrass (FACW, *Deschampsia cespitosa*), sweet vernal grass (FACU), soft rush (FACW), and velvet grass (FAC). The vegetation was considered hydric, as the Dominance Test was passed. The vegetation within the adjacent upland did not meet hydrophytic vegetation criteria with a dominance of English plantain (FACU, *Plantago lanceolata*) and sweet vernal grass (FACU).

The soil matrix color within a wet meadow was 7.5YR3/1 with 5YR4/2 redox concentrations. This soil met the hydric soil criteria with the Redox Dark Surface (F6) indicator. The adjacent upland did not contain hydric soil, with a matrix color of 7.5YR3/1 with no redox.

The wetland hydrology indicator, Algal Mat or Crust (B4), was found within the wet meadow. There were no wetland hydrology indicators found within the adjacent uplands.

4.2.2 Other Waters

Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features typically convey runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year. Two ephemeral drainages were mapped within the Project. Sampling points 3 and 26 were taken in ephemeral drainages; sampling points 4 and 27 are the adjacent upland points, respectively.

The ephemeral drainages mapped within the Project did not meet hydrophytic vegetation or hydric soil criteria as wetlands, but were delineated in the field by the presence of an OHWM at vegetation breaks on the eroded banks and water marks.

Intermittent Drainage

Intermittent drainages are linear features that exhibit a bed and bank and an OHWM. Intermittent drainages differ from ephemeral drainages in that they flow for longer duration, typically weeks or months following rainfall events and are often influenced by sub-surface flows. This usually results in greater quantities and duration of flow relative to ephemeral drainages.

The intermittent drainages mapped within the Project were delineated due to the presence of an OHWM, which was identified in the field by water marks.

Ditch

The ditches mapped onsite are at the edge of the paved road that represents the eastern portion of the Project. The mapped ditches are located in depressional areas that pool during the wet season or on sloped areas with sufficient flows for the establishment of an OHWM. Sample points 7 and 11 were collected within ditches. Both of these locations met the three parameters for a wetland, but also exhibit OHWM in the form of water marks, drainage patterns and changes in vegetation composition.

4.3 CCC One-Parameter Wetlands

In addition to the potential Waters of the U.S. described above, the Project site supports wetland areas that meet the CCC one-parameter wetland criterion. A total of ±0.073 acre of one-parameter wetlands was delineated (Figure 5. *California Coastal Commission Aquatic Resources Delineation*) and Table 3.

Sampling points 19, 20, 22, and 25 were collected within these areas. Sampling points 19, 22, and 25 met the hydric soil criterion only, and sampling point 20 met the hydrophytic vegetation criterion only. None of these areas met the wetland hydrology criterion, as described in the Regional Supplement.

Table 3. Potential CCC Jurisdictional Waters ¹		
Type	Acreage	Linear Feet
Seasonal Wetland Swale	0.065	Not Applicable
Wet Meadow	0.074	Not Applicable
CCC One-Parameter Wetland	0.073	Not Applicable
Ephemeral Drainage	0.006	48
Intermittent Drainage	0.021	80
Ditch	0.077	559
Total²:	0.317	687

¹Acreages and linear footage represent a calculated estimation and are subject to modification following the CCC verification process.

²Summation of individual wetland type acreages may not equal the reported total due to error incurred by rounding.

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Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 1 of 7)

Map Features

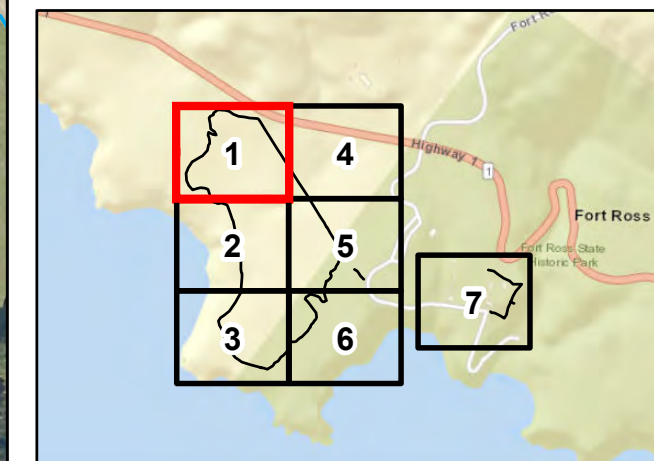
- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

- CCC Wetland (0.073 acre)
- Ditch (0.077 acre)
- Seasonal Wetland Swale (0.065 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Acid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
² The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 2 of 7)

Map Features

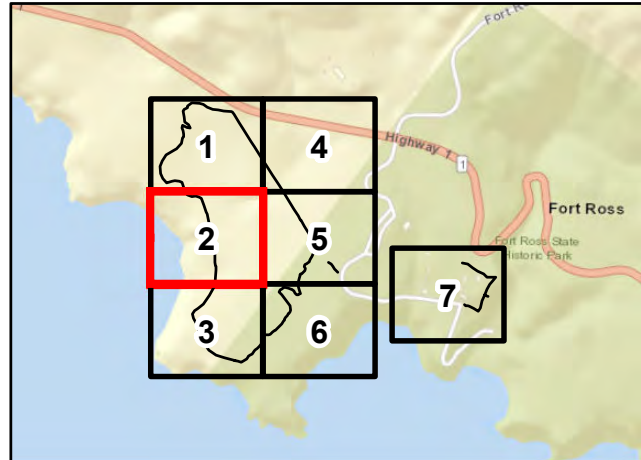
- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

Wetland Type

- CCC Wetland (0.073 acre)
- Ephemeral Drainage (0.006 acre)
- Intermittent Drainage (0.021 acre)
- Wet Meadow (0.074 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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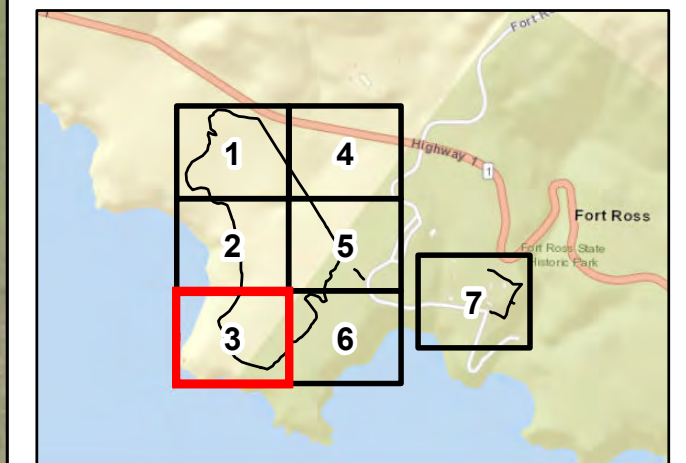
Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 3 of 7)

Map Features

- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 4 of 7)

Map Features

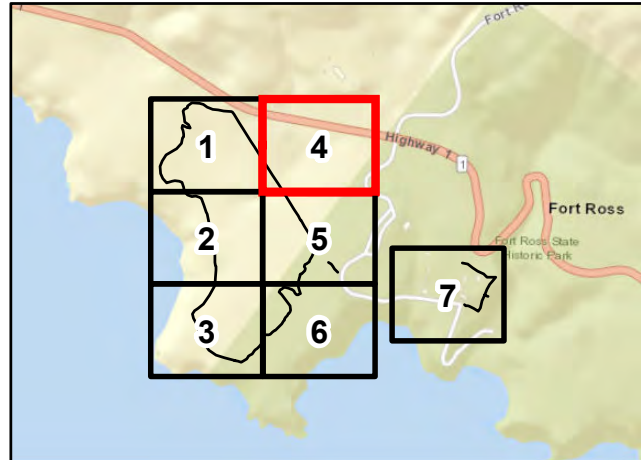
- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

- Ditch (0.077 acre)
- Intermittent Drainage (0.021 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 5 of 7)

Map Features

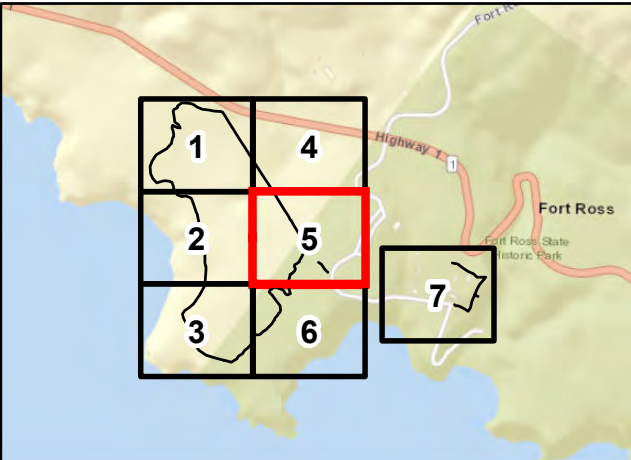
- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert
- △ Sample Points

Wetland Type

- Ditch (0.077 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Acid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 6 of 7)

Map Features

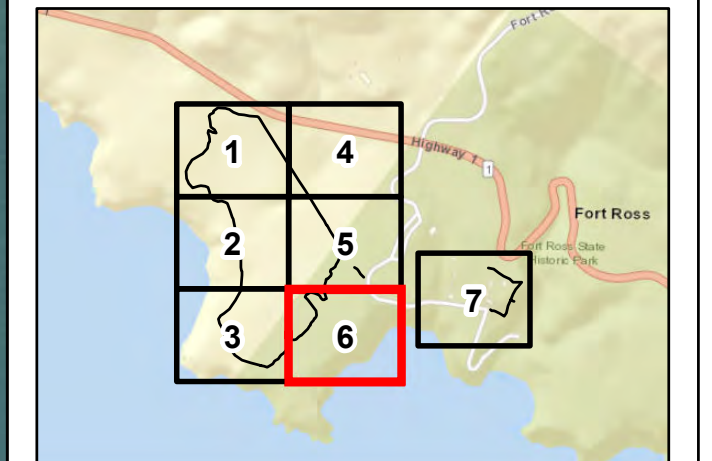
- Fort Ross Coastal Trail
- - - Coastal Trail Study Area
- ⊕ Reference Coordinates
- △ Sample Points

Wetland Type

- CCC Wetland (0.073 acre)

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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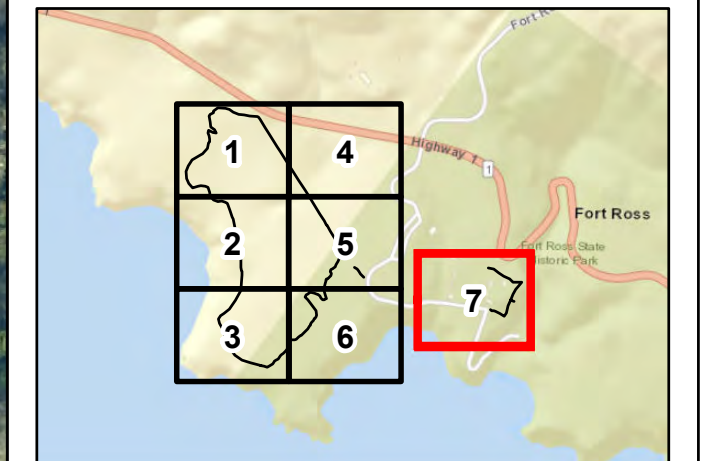
Figure 5.
California Coastal Commission
Aquatic Resources Delineation
(Sheet 7 of 7)

Map Features

- Fort Ross Coastal Trail
- Coastal Trail Study Area
- ⊕ Reference Coordinates
- ⊕ Culvert

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Acid West Region Version 2.0, as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
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 **ECORP Consulting, Inc.**
ENVIRONMENTAL CONSULTANTS

5.0 JURISDICTIONAL ASSESSMENT

5.1 USACE Waters of the U.S.

As per Regulatory Guidance Letter (08-02), an Applicant “may elect to use a Preliminary Jurisdictional Determination to voluntarily waive or set aside questions regarding Clean Water Act/Rivers and Harbors Act jurisdiction over a particular site, usually in the interest of allowing the landowner or other ‘affected party’ to move ahead expeditiously to obtain a USACE permit authorization where the party determines that is in his or her best interest to do so” (USACE 2008). The following information on connectivity of wetlands and other waters in the Delineation Area to Traditional Navigable Waters, interstate waters and/or territorial seas is provided to support USACE should an Approved Jurisdictional Determination be necessary.

All of the linear aquatic features mapped on this Project (i.e., seasonal wetland swales, ephemeral drainages, intermittent drainages, and ditches) flow directly or indirectly into the Pacific Ocean. The remaining aquatic feature, the wet meadow, abuts an ephemeral drainage that flows directly into the Pacific Ocean.

5.2 CCC One-Parameter Wetlands

In addition to the potential USACE waters identified above, there were several areas within the Project that met the CCC definition for a one-parameter wetland. These are subject to verification by the CCC.

6.0 CONCLUSION

A total of 0.244 acre and 687 linear feet of potential Waters of the U.S. regulated under the CWA and a total of 0.317 acre of waters that may be regulated under the CCA have been mapped for the Fort Ross State Historic Park, California Coastal Trail Project.

These acreages represent a calculated estimation of the jurisdictional area within the Project and are subject to modification following the USACE and CCC review and verification process. Any impacts, such as placement of dredged or fill material into jurisdictional features would require a permit pursuant to Section 404 of the CWA and certification or waiver in compliance with Section 401 of the CWA and CDFW SAA.

7.0 REFERENCES

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LIST OF ATTACHMENTS

Attachment A - Wetland Determination Data Forms - Western Mountains, Valleys, and Coast Region

Attachment B - Survey Area Aerial

Attachment C - Plant Species Observed Onsite

Attachment D - USACE ORM Aquatic Resources Table

Attachment E - Representative Site Photographs

Attachment F- Wetland Delineation Shape File (to be included with USACE submittal only)

Attachment G – USACE Verification Request Form (to be included with USACE submittal only)

Wetland Determination Data Forms - Western Mountains, Valleys, and Coast Region

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 Aug 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 1
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): LRR-A Lat: 38.5147427 Long: -123.25287522 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: intermittent drainage			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 10'</u>) 1. <u>Mentha pulegium</u> 10 yes OBL 2. <u>Iris douglasiana</u> 2 no N/L 3. <u>Briza maxima</u> 1 no N/L 4. <u>Briza minor</u> 1 no FAC 5. <u>Eryngium armatum</u> 1 no FACW 6. <u>Deschampsia caespitosa</u> 1 no FACW 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 16 = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>85</u>				
Remarks:				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | ³ Indicators of hydrophytic vegetation and |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | wetland hydrology must be present, |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | unless disturbed or problematic. |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input checked="" type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present:
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

eroded channel 1-3 feet wide and up to 4 feet deep; OHWM delineated based on water marks

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 Aug 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 2
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 10
 Subregion (LRR): LRR-A Lat: 38.51471788 Long: -123.2528722 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 1		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
Herb Stratum (Plot size: <u>10' x 10'</u>)				
1. <u>Bromus hordeaceus</u>	<u>30</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Plantago lanceolata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
3. <u>Aira caryophyllea</u>	<u>15</u>	<u>no</u>	<u>FACU</u>	
4. <u>Eryngium armatum</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	
5. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>				
Remarks:				

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	5YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 Aug 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 3
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.514873226 Long: -123.2529191 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: ephemeral drainage; OHWM delineated	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>3' x 5'</u>)				
1. <u>Plantago lanceolata</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Eryngium armatum</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	
3. <u>Lupinus sp.</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
4. <u>Deschampsia caespitosa</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	
5. <u>Hyochoaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>35</u>				
Remarks:				

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	5YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input checked="" type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OHWM delineation based on presence of vegetation break on eroded bank

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 Aug 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 4
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 10
 Subregion (LRR): LRR-A Lat: 38.514912 Long: -123.2529178 Datum: NAD83
 Soil Map Unit Name: RrC Rhonerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 3	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Plantago lanceolata</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Eryngium armatum</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	
3. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Holcus lanatus</u>	<u>1</u>	<u>no</u>	<u>FAC</u>	
5. <u>Festuca myuros</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. <u>Bromus hordeaceus</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
7. <u>Deschampsia caespitosa</u>	<u>35</u>	<u>yes</u>	<u>FACW</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				
Remarks:				

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	5YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes ____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 5
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.5157640 Long: -123.253055 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: intermittent drainage			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: 5' x 5') 1. <u>Eleocharis macrostachya</u> 10 yes OBL 2. <u>Juncus balticus</u> 10 yes FACW 3. <u>Cirsium vulgare</u> 10 yes FACU 4. <u>Rubus ursinus</u> 2 no FACU 5. <u>Prunella vulgaris</u> 3 no FACU 6. <u>Holcus lanatus</u> 5 no FAC 7. <u>Briza minor</u> 1 no FAC 8. <u>Anthoxanthum odoratum</u> 5 no FACU 9. _____ 10. _____ 11. _____ 46 = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>55</u>				
Remarks:				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	5YR3/2	80	2.5YR4/6	20	c	m	sandy loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input checked="" type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input checked="" type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OHWM delineated at water marks

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 6
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 15
 Subregion (LRR): LRR-A Lat: 38.5157920 Long: -123.2530727 Datum: NAD83
 Soil Map Unit Name: RrC Rhonerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 5	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
2. <u>Plantago lanceolata</u>	<u>15</u>	<u>no</u>	<u>FACU</u>	
3. <u>Rubus ursinus</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Briza minor</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
5. <u>Antoxanthus odoratum</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
6. <u>Holcus lanatus</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
7. <u>Rytidosperma penicillatum (Danthonia pilosa)</u>	<u>50</u>	<u>yes</u>	<u>N/L</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	7.5YR3/3	100					loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)

☐ Sandy Redox (S5)

☐ Histic Epipedon (A2)

☐ Stripped Matrix (S6)

☐ Black Histic (A3)

☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)

☐ Hydrogen Sulfide (A4)

☐ Loamy Gleyed Matrix (F2)

☐ Depleted Below Dark Surface (A11)

☐ Depleted Matrix (F3)

☐ Thick Dark Surface (A12)

☐ Redox Dark Surface (F6)

☐ Sandy Mucky Mineral (S1)

☐ Depleted Dark Surface (F7)

☐ Sandy Gleyed Matrix (S4)

☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10)

☐ Red Parent Material (TF2)

☐ Very Shallow Dark Surface (TF12)

☐ Other (Explain in Remarks)

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ____ No <input checked="" type="checkbox"/>
Remarks: refusal at 6" below surface	

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 7
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drianageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.5157832 Long: -123.2494682 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: roadside ditch			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>3' x 5'</u>)				
1. <u>Mentha pulegium</u>	<u>15</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Holcus lanatus</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Rubus ursinus</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Festuca perennis</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
5. <u>Festuca myuros</u>	<u>1</u>	<u>no</u>	<u>FACU</u>	
6. <u>Eryngium armatum</u>	<u>2</u>	<u>no</u>	<u>FACW</u>	
7. <u>Poa pratensis</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>55</u>				
Remarks:				

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR3/1	80	5YR4/6	20	c	m	loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

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

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: OHWM delineated at water marks		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 22 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 8
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.5157863 Long: -123.2494477 Datum: NAD83
 Soil Map Unit Name: RrC Rhonerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 7		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: 5' x 5') 1. <u>Baccharis pilularis</u> 20 yes N/L 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: 5' x 5') 1. <u>Rytidosperma penicillatum (Danthonia pilosa)</u> 60 yes N/L 2. <u>Plantago lanceolata</u> 5 no FACU 3. <u>Poa pratensis</u> 15 no FAC 4. <u>Holcus lanatus</u> 5 no FAC 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>15</u>				
Remarks:				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR3/2	99	7.5YR4/6	1	c	m	loam	
1-12	10YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

- | | | |
|--|--|-----------------------|
| Surface Water Present? | Yes _____ No <input checked="" type="checkbox"/> | Depth (inches): _____ |
| Water Table Present? | Yes _____ No <input checked="" type="checkbox"/> | Depth (inches): _____ |
| Saturation Present?
(includes capillary fringe) | Yes _____ No <input checked="" type="checkbox"/> | Depth (inches): _____ |

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 9
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.5171343 Long: -123.2505698 Datum: NAD83
 Soil Map Unit Name: RrC Rhonerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: intermittent drainage; OHWM delineated			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Prunus sp.</u>	<u>20</u>	<u>yes</u>	<u>N/L</u>	
2. <u>Pinus muricata</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>25</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Ribes sp.</u>	<u>25</u>	<u>yes</u>	<u>-</u>	
2. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>25</u> = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Woodwardia fimbriata</u>	<u>10</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Ageratina adenophora</u>	<u>10</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>20</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>80</u>				
Remarks:				

SOIL

Sampling Point: 9

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: OHWM delineated		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 10
Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 5
Subregion (LRR): LRR-A Lat: 38.51713586 Long: -123.2505249 Datum: NAD83
Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 9	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Prunus sp.</u>	<u>25</u>	<u>yes</u>	<u>N/L</u>
2. <u>Pinus muricata</u>	<u>10</u>	<u>no</u>	<u>N/L</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
<u>35</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			
Herb Stratum (Plot size: <u>5' x 5'</u>)			
1. <u>Carduus pycnocephalus</u>	<u>10</u>	<u>yes</u>	<u>N/L</u>
2. <u>Cynosurus echinatus</u>	<u>20</u>	<u>yes</u>	<u>N/L</u>
3. <u>Juncus balticus</u>	<u>2</u>	<u>no</u>	<u>FACW</u>
4. <u>Rubus ursinus</u>	<u>1</u>	<u>no</u>	<u>FACU</u>
5. <u>Mentha pulegium</u>	<u>5</u>	<u>no</u>	<u>OBL</u>
6. <u>Holcus lanatus</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>
7. <u>Equisetum sp.</u>	<u>1</u>	<u>no</u>	<u>FAC</u>
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
<u>49</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			
% Bare Ground in Herb Stratum <u>55</u>			
Remarks:			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:
Total % Cover of: _____ Multiply by: _____
OBL species _____ x 1 = _____
FACW species _____ x 2 = _____
FAC species _____ x 3 = _____
FACU species _____ x 4 = _____
UPL species _____ x 5 = _____
Column Totals: _____ (A) _____ (B)
Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0¹
____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants¹
____ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ☒

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	7.5YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 11
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LRR-A Lat: 38.51778514 Long: -123.2511251 Datum: NAD83
 Soil Map Unit Name: KnF Kneeland loam, 30 to 50 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: roadside ditch			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: 3' x 10') 1. <u>Juncus effusus</u> 25 yes FACW 2. <u>Juncus balticus</u> 10 no FACW 3. <u>Hordeum marinum</u> 25 yes FAC 4. <u>Rubus ursinus</u> 1 no FACU 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 61 = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>40</u>				
Remarks:				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Remarks:				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	7.5YR3/1	90	5YR4/6	10	c	m	loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input checked="" type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OHWM delineated at vegetation change from upland to wetland species

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 12
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.517795 Long: -123.251123 Datum: NAD83
 Soil Map Unit Name: KnF Kneeland loam, 30 to 50 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 11		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
Herb Stratum (Plot size: 5' x 5')				
1. <i>Rytidosperma penicillatum</i> (<i>Danthonia pilosa</i>)	20	yes	N/L	
2. <i>Plantago lanceolata</i>	10	no	FACU	
3. <i>Rubus ursinus</i>	5	no	FACU	
4. <i>Poa pratensis</i>	20	yes	FACU	
5. <i>Hypochaeris radicata</i>	10	no	FACU	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
65 = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>35</u>				
Remarks:				

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

refusal at 6" below surface; feels like asphalt or some other material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 13
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.51922079 Long: -123.2528345 Datum: NAD83
 Soil Map Unit Name: KnE Kneeland loam, 15 to 30 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks: upland location, representative of northernmost portion of the project alignment			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
Herb Stratum (Plot size: 5' x 5')				
1. <u>Cynosurus echinatus</u>	20	yes	N/L	
2. <u>Hypochaeris radicata</u>	15	no	FACU	
3. <u>Rytidosperma penicillatum</u>	10	no	N/L	
4. <u>Plantago lanceolata</u>	10	no	FACU	
5. <u>Aira caryophyllea</u>	25	yes	FACU	
6. <u>Rubus ursinus</u>	10	no	FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>				
Remarks:				

SOIL

Sampling Point: 13

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 14
Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 15
Subregion (LRR): LRR-A Lat: 38.519306487 Long: -123.2533037 Datum: NAD83
Soil Map Unit Name: KnE Kneeland loam, 15 to 30 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: seasonal wetland swale	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Mentha pulegium</u>	<u>5</u>	<u>no</u>	<u>OBL</u>	
2. <u>Eryngium armatum</u>	<u>15</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Hypochaeris radicata</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	
4. <u>Poa pratensis</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>25</u>				
Remarks:				

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	7.5YR3/1	95	5YR4/6	5	c	m	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input checked="" type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 15
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 25
 Subregion (LRR): LRR-A Lat: 38.51928492 Long: -123.2532163 Datum: NAD83
 Soil Map Unit Name: KnE Kneeland loam, 15 to 30 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to sample point 14		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Hypochaeris radicata</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Plantago lanceolata</u>	<u>15</u>	<u>no</u>	<u>FACU</u>	
3. <u>Rytidosperma penicillatum</u>	<u>20</u>	<u>yes</u>	<u>N/L</u>	
4. <u>Poa pratensis</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
5. <u>Festuca myuros</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>15</u>				
Remarks:				

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	7.5YR3/2	99	5YR4/6	1	c	m	loam	
1-12	7.5YR3/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 16
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10
 Subregion (LRR): LRR-A Lat: 38.51818836 Long: -123.254294954 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks: upland location. point is representative of project alignment in vicinity of forest edge.			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>Pinus muricata</u>	<u>15</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	<u>15</u>	<u>= Total Cover</u>		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>10</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	<u>10</u>	<u>= Total Cover</u>		
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rytidosperma penicillatum (Danthonia pilosa)</u>	<u>70</u>	<u>yes</u>	<u>N/L</u>	
2. <u>Anthoxanthum odoratum</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
3. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Cynosurus echinatus</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
5. <u>Plantago lanceolata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. <u>Iris douglasiana</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	<u>95</u>	<u>= Total Cover</u>		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>5</u> _____ <u>= Total Cover</u>				
Remarks:				

SOIL

Sampling Point: 16

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 17
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.5171643695 Long: -123.25452608 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location. Area is co-dominated by <i>Juncus balticus</i> (FACW) but other dominant species are primarily FACU or N/L. No hydric soil or wetland hydrology indicators present.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <i>Rubus ursinus</i>	50	yes	FACU	
2. <i>Baccharis pilularis</i>	1	no	N/L	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
51 = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <i>Juncus balticus</i>	15	yes	FACW	
2. <i>Anthoxanthum odoratum</i>	5	no	FACU	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
3. <i>Holcus lanatus</i>	5	no	FAC	
4. <i>Fragaria vesca</i>	5	no	FACU	
5. <i>Iris douglasiana</i>	10	yes	N/L	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
40 = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>60</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks:				

SOIL

Sampling Point: 17

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 18
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.51715914 Long: -123.2542116 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: seasonal wetland swale			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pinus muricata</u>	<u>30</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
4. _____	<u>30</u>	_____	_____	Prevalence Index worksheet:
<u>30</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Total % Cover of: _____ Multiply by: _____
1. _____	_____	_____	_____	OBL species _____ x 1 = _____
2. _____	_____	_____	_____	FACW species _____ x 2 = _____
3. _____	_____	_____	_____	FAC species _____ x 3 = _____
4. _____	_____	_____	_____	FACU species _____ x 4 = _____
5. _____	_____	_____	_____	UPL species _____ x 5 = _____
Herb Stratum (Plot size: <u>5' x 5'</u>)				Column Totals: _____ (A) _____ (B)
1. <u>Juncus effusus</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____
2. <u>Holcus lanatus</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Rubus ursinus</u>	<u>2</u>	<u>no</u>	<u>FACU</u>	
4. <u>Mentha pulegium</u>	<u>5</u>	<u>no</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>62</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>40</u> = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	5YR3/1	95	2.5YR4/4	5	c	m	loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
- ☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
- ☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
- ☐ Thick Dark Surface (A12) ☒ Redox Dark Surface (F6)
- ☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
- ☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 19
Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10
Subregion (LRR): LRR-A Lat: 38.51712851 Long: -123.25415181 Datum: NAD83
Soil Map Unit Name: RrC Rohnervill loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to seasonal wetland swale. Location may be considered a wetland by CA Coastal Commission due to presence of hydric soil.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>Pinus muricata</u>	<u>15</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>15</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>5</u> = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Antoxanthum odoratum</u>	<u>30</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Iris douglasiana</u>	<u>15</u>	<u>yes</u>	<u>N/L</u>	
3. <u>Holcus lanatus</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
4. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
5. <u>Carex obnupta</u>	<u>10</u>	<u>no</u>	<u>OBL</u>	
6. <u>Fragaria vesca</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>70</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>30</u>				
Remarks:				

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	7.5YR3/1	100					loam	
4-12	7.5YR3/1	90	5YR4/6	10	c	m	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☒ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
☐ High Water Table (A2) ☐ Salt Crust (B11)
☐ Saturation (A3) ☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (**LRR A**)
☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Geomorphic Position (D2)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)
☐ Raised Ant Mounds (D6) (**LRR A**)
☐ Frost-Heave Hummocks (D7)

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 20
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15
 Subregion (LRR): LRR-A Lat: 38.5169417995 Long: -123.254103458 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location. Area between here and nearby seasonal wetland swale may be considered a wetland by CA Coastal Comm due to presence of marginally hydrophytic vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>10</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Anthoxanthum odoratum</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
2. <u>Juncus balticus</u>	<u>15</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
3. <u>Holcus lanatus</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
4. <u>Iris douglasiana</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
5. <u>Plantago lanceolata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. <u>Hypochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				% Bare Ground in Herb Stratum <u>40</u>
Remarks:				

SOIL

Sampling Point: 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	7.5YR3/1	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 21
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.51691701 Long: -123.2540911 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks: upland location adjacent to potential a CA Coastal Comm (one-parameter) wetland			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Baccharis pilularis</u>	<u>15</u>	<u>yes</u>	<u>N/L</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Anthoxanthum odoratum</u>	<u>70</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Iris douglasiana</u>	<u>10</u>	<u>no</u>	<u>N/L</u>	
3. <u>Holcus lanatus</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>				
Remarks:				

SOIL

Sampling Point: 21[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 22
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15
 Subregion (LRR): LRR-A Lat: 38.5167443 Long: -123.25391396 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location. Area may be considered a CA Coastal Comm (one-parameter) wetland due to the presence of hydric soil and marginal herbaceous vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Pinus muricata</u>	<u>35</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>35</u>	<u>= Total Cover</u>		
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Rubus ursinus</u>	<u>25</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____	<u>25</u>	<u>= Total Cover</u>		
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Anthoxanthum odoratum</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Holcus lanatus</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Briza minor</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
4. <u>Carex obnupta</u>	<u>5</u>	<u>no</u>	<u>OBL</u>	
5. <u>Iris douglasiana</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____	<u>55</u>	<u>= Total Cover</u>		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>45</u>				
Remarks:				

SOIL

Sampling Point: 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | ³ Indicators of hydrophytic vegetation and |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | wetland hydrology must be present, |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | unless disturbed or problematic. |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 23
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 25
 Subregion (LRR): LRR-A Lat: 38.5167425 Long: -123.25384275 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to potential CA Coastal Comm wetland		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>Pinus muricata</u>	<u>20</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	<u>20</u>	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5' x 5'</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Anthoxanthum odoratum</u>	<u>60</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Cirsium vulgare</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
3. <u>Plantago lanceolata</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
4. <u>Iris douglasiana</u>	<u>10</u>	<u>no</u>	<u>N/L</u>	
5. <u>Holcus lanatus</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>5</u>				
Remarks:				

SOIL

Sampling Point: 23

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 24
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 30
 Subregion (LRR): LRR-A Lat: 38.51675612 Long: -123.25364804 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location adjacent to a potential CA Coastal Comm wetland		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Pinus muricata</u>	<u>5</u>	<u>yes</u>	<u>N/L</u>	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>5</u>	<u>= Total Cover</u>		
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				Hydrophytic Vegetation Indicators: ____ 1 - Rapid Test for Hydrophytic Vegetation ____ 2 - Dominance Test is >50% ____ 3 - Prevalence Index is ≤3.0 ¹ ____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ____ 5 - Wetland Non-Vascular Plants ¹ ____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Rubus ursinus</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	<u>15</u>	<u>= Total Cover</u>		
Herb Stratum (Plot size: <u>5' x 5'</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Iris douglasiana</u>	<u>15</u>	<u>no</u>	<u>N/L</u>	
2. <u>Anthoxanthum odoratum</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>	
3. <u>Holcus lanatus</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
4. <u>Fragaria vesca</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
5. <u>Juncus balticus</u>	<u>5</u>	<u>no</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	<u>85</u>	<u>= Total Cover</u>		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

SOIL

Sampling Point: 24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR3/1	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 25
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.516731206 Long: -123.2535819 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location. Area may be considered a wetland by CA Coastal Comm due to presence of hydric soil.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>10</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Anthoxanthum odoratum</u>	<u>50</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Plantago lanceolata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
3. <u>Poa pratensis</u>	<u>15</u>	<u>no</u>	<u>FAC</u>	
4. <u>Hypochaeris radicata</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
5. <u>Holcus lanatus</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
6. <u>Iris douglasiana</u>	<u>10</u>	<u>no</u>	<u>N/L</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

SOIL

Sampling Point: 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | ³ Indicators of hydrophytic vegetation and |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | wetland hydrology must be present, |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | unless disturbed or problematic. |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 26
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.5166683 Long: -123.25345856 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks: ephemeral drainage; OHWM delineated			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover	<u>20</u>			
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Juncus balticus</u>	<u>15</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Antoxanthum odoratum</u>	<u>25</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
3. <u>Deschampsia caespitosa</u>	<u>15</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover	<u>55</u>			Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>45</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks:				

SOIL

Sampling Point: 26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

no soil sample due to presence of gravel/cobble in bed of drainage

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input checked="" type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input checked="" type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OHWL delineated at water marks on rocks, vegetation break on eroded bank

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 27
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 20
 Subregion (LRR): LRR-A Lat: 38.51668764 Long: -123.2534694 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location adjacent to sample point 26		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Anthoxanthum odoratum</u>	<u>60</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Poa pratensis</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
3. <u>Holcus lanatus</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	
4. <u>Juncus balticus</u>	<u>2</u>	<u>no</u>	<u>FACW</u>	
5. <u>Hyphochaeris radicata</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
6. <u>Iris douglasiana</u>	<u>5</u>	<u>no</u>	<u>N/L</u>	
7. <u>Deschampsia caespitosa</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u>				
Remarks:				

SOIL

Sampling Point: 27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	7.5YR3/1	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 28
Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15
Subregion (LRR): LRR-A Lat: 38.5162764 Long: -123.25326467 Datum: NAD83
Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks: wet meadow, sloped		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)			
1. <u>Rubus ursinus</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
<u>15</u> = Total Cover			
Herb Stratum (Plot size: <u>5' x 5'</u>)			
1. <u>Deschampsia cespitosa</u>	<u>25</u>	<u>yes</u>	<u>FACW</u>
2. <u>Anthoxanthum odoratum</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>
3. <u>Carex sp.</u>	<u>5</u>	<u>no</u>	<u>FAC</u>
4. <u>Juncus balticus</u>	<u>15</u>	<u>yes</u>	<u>FACW</u>
5. <u>Holcus lanatus</u>	<u>15</u>	<u>yes</u>	<u>FAC</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
<u>75</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			
% Bare Ground in Herb Stratum <u>25</u>			
Remarks:			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:
Total % Cover of: _____ Multiply by: _____
OBL species _____ x 1 = _____
FACW species _____ x 2 = _____
FAC species _____ x 3 = _____
FACU species _____ x 4 = _____
UPL species _____ x 5 = _____
Column Totals: _____ (A) _____ (B)
Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is $\leq 3.0^1$
____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants¹
____ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No _____

SOIL

Sampling Point: 28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	7.5YR3/1	98	5YR4/2	2	c	M, PL	loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) <small>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</small>
---	--

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

HYDROLOGY

Wetland Hydrology Indicators:			Wetland Hydrology Indicators	
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)		
Field Observations:				
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 29
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 30
 Subregion (LRR): LRR-A Lat: 38.5162347 Long: -123.2532510 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location adjacent to wet meadow		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Rubus ursinus</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' x 5'</u>)				
1. <u>Plantago lanceolata</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Anthoxanthum odoratum</u>	<u>30</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
3. <u>Hypochaeris radicata</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
4. <u>Rytidosperma penicillatum/Danthonia pilosa</u>	<u>10</u>	<u>no</u>	<u>N/L</u>	
5. <u>Juncus balticus</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				
Remarks:				

SOIL

Sampling Point: 29

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 30
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 25
 Subregion (LRR): LRR-A Lat: 38.5154959 Long: -123.252955 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location on coastal bluff. point is representative of trail alignment between two drainages.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: 5' x 5')				
1. <i>Eryngium armatum</i>	15	yes	FACW	
2. <i>Calystegia purpurata</i> ssp. <i>saxicola</i>	1	no	N/L	
3. <i>Plantago lanceolata</i>	20	yes	FACU	
4. <i>Cynosurus echinatus</i>	15	yes	N/L	
5. <i>Hypochaeris radicata</i>	10	no	FACU	
6. <i>Aira caryophyllea</i>	10	no	FACU	
7. <i>Rytidosperma penicillatum</i> / <i>Danthonia pilosa</i>	10	no	N/L	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
81 = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				
Remarks:				

SOIL

Sampling Point: 30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	5YR2.5/2	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: 23 August 2018
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 31
 Investigator(s): K. Kwan / C. DeLong Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 15
 Subregion (LRR): LRR-A Lat: 38.512928849 Long: -123.253483579 Datum: NAD83
 Soil Map Unit Name: RrC Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland location. Drainage swale forms a short distance downslope but there is no evidence for water flow at this location.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: 5' x 5') 1. <u>Lupinus arboreus</u> 5 yes N/L 2. _____ 3. _____ 4. _____ 5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: 5' x 5') 1. <u>Eryngium armatum</u> 15 no FACW 2. <u>Poa sp.</u> 10 no - 3. <u>Plantago lanceolata</u> 50 yes FACU 4. <u>Hypochaeris radicata</u> 5 no FACU 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover % Bare Ground in Herb Stratum <u>20</u>				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>				
Remarks:				

SOIL

Sampling Point: 31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	7.5YR3/1	100					loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
☐ Histosol (A1) ☐ Sandy Redox (S5)
☐ Histic Epipedon (A2) ☐ Stripped Matrix (S6)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1) ☐ Depleted Dark Surface (F7)
☐ Sandy Gleyed Matrix (S4) ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

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

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: April 21, 2020
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 100
 Investigator(s): K. Kwan / T. Scofield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.513673 Long: -123.250221 Datum: NAD83
 Soil Map Unit Name: RrC-Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks: CCC (one-parameter) wetland; this area is a very shallow swale below a rock outcrop; it can be roughly described as an exaggerated cattle trail.			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: 4' x 10')				
1. <u>Deschampsia caespitosa</u>	<u>50</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Mentha pulegium</u>	<u>10</u>	<u>no</u>	<u>OBL</u>	
3. <u>Rubus ursinus</u>	<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Carex sp.</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
5. <u>Juncus balticus ssp. ater</u>	<u>5</u>	<u>no</u>	<u>FACW</u>	
6. <u>Plantago lanceolata</u>	<u>15</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>15</u>				
Remarks:				

SOIL

Sampling Point: 100

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: there is no apparent surface hydrology at this location, so the dominance of hydrophytes could be due to subsurface hydrology (from rock outcrop?) and possibly from fog		

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross State Historic Park-CA Coastal Trail Project City/County: Sonoma Sampling Date: April 21, 2020
 Applicant/Owner: CA Dept. of Parks and Recreation State: CA Sampling Point: 101
 Investigator(s): K. Kwan / T. Scofield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 5
 Subregion (LRR): LRR-A Lat: 38.513674 Long: -123.250195 Datum: NAD83
 Soil Map Unit Name: RrC-Rohnerville loam, 0 to 9 percent slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: upland adjacent to Sample Point 100		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
Herb Stratum (Plot size: <u>10'x10'</u>)				
1. <u>Rubus ursinus</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Iris douglasiana</u>	<u>40</u>	<u>yes</u>	<u>N/L</u>	
3. <u>Plantago lanceolata</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
4. <u>Deschampsia caespitosa</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>	
5. <u>Fragaria vesca</u>	<u>5</u>	<u>no</u>	<u>UPL</u>	
6. <u>Anthoxanthum odoratum</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
7. <u>Acmispon americanus</u>	<u>3</u>	<u>no</u>	<u>UPL</u>	
8. <u>Triphysaria versicolor</u>	<u>2</u>	<u>no</u>	<u>N/L</u>	
9. <u>Carex sp.</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

SOIL

Sampling Point: 101

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

ATTACHMENT B

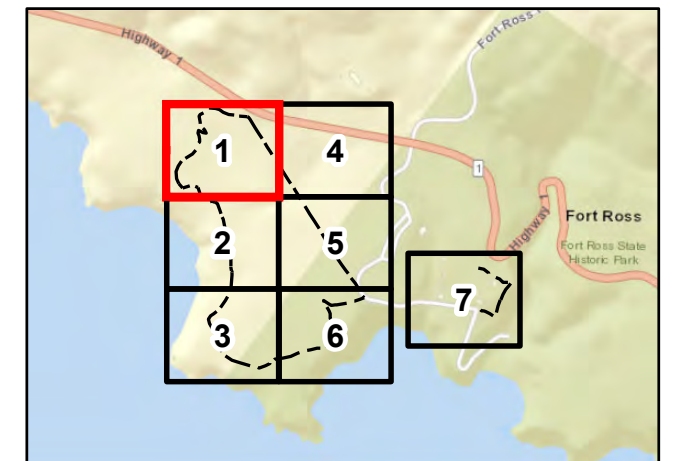
Survey Area Aerial

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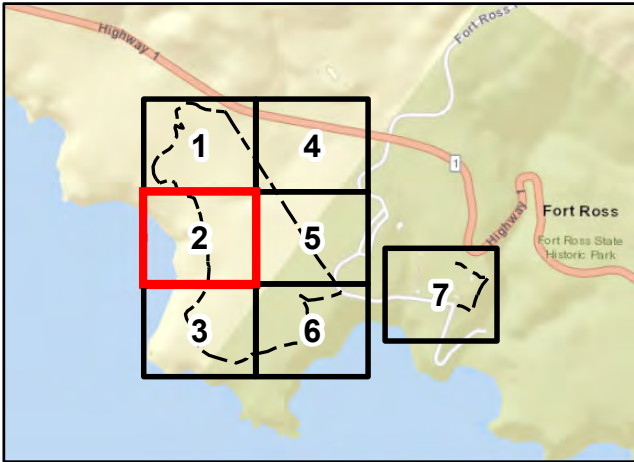


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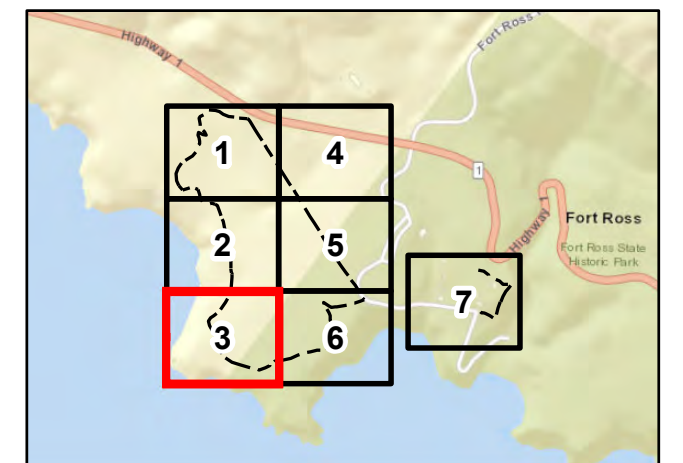


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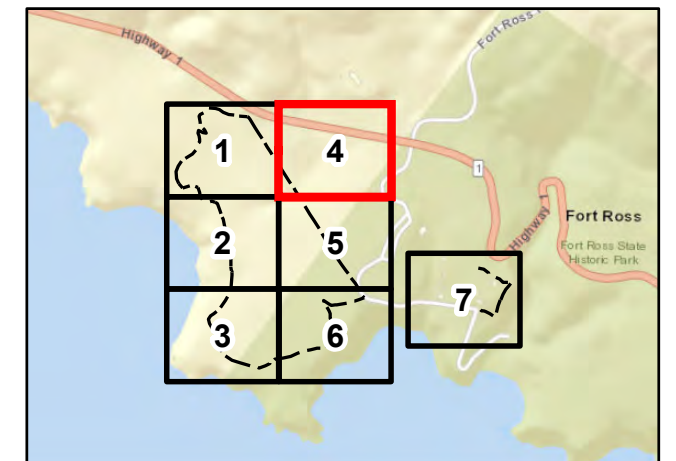


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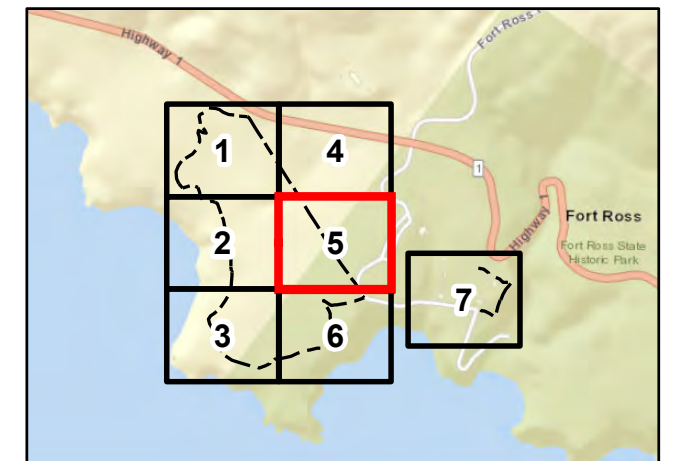


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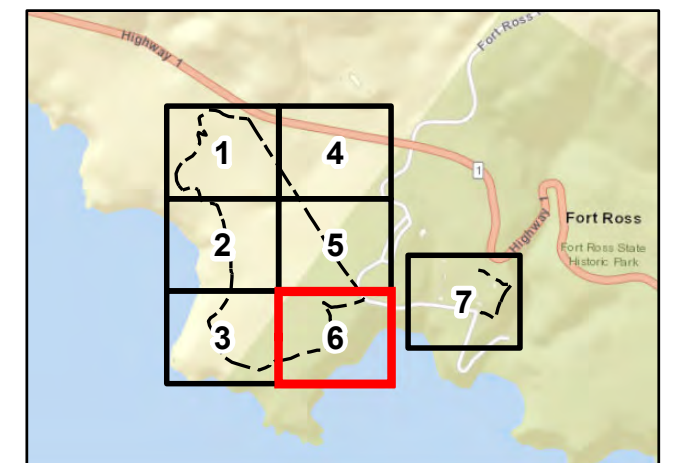


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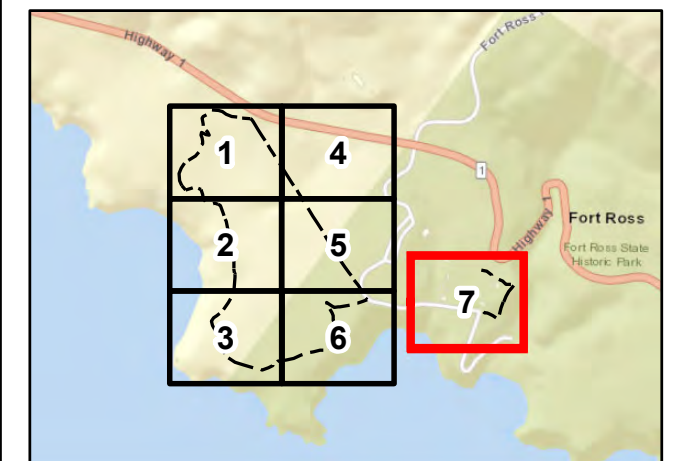


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ATTACHMENT C

Plant Species Observed Onsite

Fort Ross State Historic Park-California Coastal Trail Project:
Plant Species Observed On-Site (August 22 and 23, 2018)

SCIENTIFIC NAME	COMMON NAME	Indicator
APIACEAE	CARROT FAMILY	
<i>Eryngium armatum</i>	Coyote thistle	FACW
ASTERACEAE	SUNFLOWER FAMILY	
<i>Ageratina adenophora</i>	Sticky snakeroot	FACU
<i>Baccharis pilularis</i>	Coyote bush	N/L
<i>Carduus pycnocephalus</i> *	Italian thistle	N/L
<i>Cirsium vulgare</i> *	Bull thistle	FACU
<i>Hypochaeris radicata</i> *	Perennial cat's-ear	FACU
<i>Leontodon saxatilis</i> *	Hairy hawkbit	FACU
BLECHNACEAE	DEER FERN FAMILY	
<i>Woodwardia fimbriata</i>	Giant chain fern	FACW
CONVOLVULACEAE	MORNING-GLORY FAMILY	
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	Bodega morning glory	N/L
CUPRESSACEAE	CYPRESS FAMILY	
<i>Sequoia sempervirens</i>	Redwood	N/L
CYPERACEAE	SEDGE FAMILY	
<i>Carex obnupta</i>	Slough sedge	OBL
<i>Eleocharis macrostachya</i>	Creeping spikerush	OBL
DENNSTAEDTIACEAE	BRACKENFERN FAMILY	
<i>Pteridium aquilinum</i>	Western brackenfern	FACU
DRYOPTERIDACEAE	SWORD FERN FAMILY	
<i>Polystichum</i> sp.	Sword fern	FACU
EQUISETACEAE	HORSETAIL FAMILY	
<i>Equisetum</i> sp.	Horsetail	FACW
FABACEAE	LEGUME FAMILY	
<i>Lupinus arboreus</i>	Yellow bush lupine	N/L
<i>Lupinus</i> sp.	Lupine	N/L
GROSSULARIACEAE	GOOSEBERRY FAMILY	
<i>Ribes</i> sp.	Currant	N/L
IRIDACEAE	IRIS FAMILY	
<i>Iris douglasiana</i>	Douglas iris	N/L

Fort Ross State Historic Park-California Coastal Trail Project:
Plant Species Observed On-Site (August 22 and 23, 2018)

SCIENTIFIC NAME	COMMON NAME	Indicator
JUNCACEAE	RUSH FAMILY	
<i>Juncus balticus</i> ssp. <i>ater</i>	Baltic rush	FACW
<i>Juncus effusus</i>	Soft rush	FACW
LAMIACEAE	MINT FAMILY	
<i>Mentha pulegium</i> *	Pennyroyal	OBL
<i>Prunella vulgaris</i>	Common selfheal	FACU
<i>Stachys</i> sp.	Hedge-nettle	FAC
LINACEAE	FLAX FAMILY	
<i>Linum</i> sp.	Flax	N/L
MYRICACEAE	WAX MYRTLE FAMILY	
<i>Morella californica</i>	California wax myrtle	FACW
PHRYMACEAE	LOPSEED FAMILY	
<i>Mimulus aurantiacus</i>	Bush monkey flower	FACU
PINACEAE	PINE FAMILY	
<i>Pinus muricata</i>	Bishop pine	N/L
PLANTAGINACEAE	PLANTAIN FAMILY	
<i>Plantago lanceolata</i> *	English plantain	FACU
POACEAE	GRASS FAMILY	
<i>Aira caryophyllea</i> *	Silver hairgrass	FACU
<i>Anthoxanthum odoratum</i> *	Sweet vernal grass	FACU
<i>Briza maxima</i> *	Big quaking grass	N/L
<i>Briza minor</i> *	Little quaking grass	FAC
<i>Bromus hordeaceus</i> *	Soft brome	FACU
<i>Cynodon dactylon</i> *	Bermuda grass	FACU
<i>Cynosurus echinatus</i> *	Hedgehog dog-tail grass	N/L
<i>Deschampsia cespitosa</i>	Tufted hairgrass	FACW
<i>Festuca myuros</i> *	Rat-tail vulpia	FACU
<i>Festuca perennis</i> *	Italian Ryegrass	FAC
<i>Holcus lanatus</i> *	Velvet grass	FAC
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i> *	Mediterranean barley	FAC
<i>Poa pratensis</i> *	Kentucky bluegrass	FAC
<i>Rytidosperma penicillatum</i>	Purple awned wallaby grass	N/L

Fort Ross State Historic Park-California Coastal Trail Project:
Plant Species Observed On-Site (August 22 and 23, 2018)

SCIENTIFIC NAME	COMMON NAME	Indicator
ROSACEAE	ROSE FAMILY	
<i>Fragaria vesca</i>	Wild strawberry	FACU
<i>Prunus</i> sp.	Cherry	N/L
<i>Rosa</i> sp.	Rose	N/L
<i>Rubus ursinus</i>	California blackberry	FACU

USACE ORM Aquatic Resources Table

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
D-1	CALIFORNIA	R4	RIVERINE	Linear	179.469	FOOT	DELINEATE	38.518575	-123.251807	
D-2	CALIFORNIA	R4	RIVERINE	Linear	286.567	FOOT	DELINEATE	38.517559	-123.250963	
D-3	CALIFORNIA	R4	RIVERINE	Linear	92.878	FOOT	DELINEATE	38.515772	-123.249473	
ED-2	CALIFORNIA	R4	RIVERINE	Linear	25.957	FOOT	DELINEATE	38.516675	-123.253458	
ED-1	CALIFORNIA	R4	RIVERINE	Linear	21.893	FOOT	DELINEATE	38.514862	-123.252932	
ID-2	CALIFORNIA	R4	RIVERINE	Linear	29.462	FOOT	DELINEATE	38.517104	-123.250527	
ID-1	CALIFORNIA	R4	RIVERINE	Linear	21.093	FOOT	DELINEATE	38.514735	-123.252898	
ID-3	CALIFORNIA	R4	RIVERINE	Linear	20.429	FOOT	DELINEATE	38.515775	-123.253049	
ID-4	CALIFORNIA	R4	RIVERINE	Linear	8.999	FOOT	DELINEATE	38.517042	-123.250736	
SWS-1	CALIFORNIA	PEM	SLOPE	Area	0.029	ACRE	DELINEATE	38.519335	-123.253354	
SWS-2	CALIFORNIA	PEM	SLOPE	Area	0.026	ACRE	DELINEATE	38.518292	-123.251547	
SWS-4	CALIFORNIA	PEM	SLOPE	Area	0.008	ACRE	DELINEATE	38.517145	-123.254227	
SWS-3	CALIFORNIA	PEM	SLOPE	Area	0.002	ACRE	DELINEATE	38.518132	-123.251632	
WM-1	CALIFORNIA	PEM	SLOPE	Area	0.074	ACRE	DELINEATE	38.516456	-123.253353	

ATTACHMENT E

Representative Site Photographs



Photo 1. Intermittent drainage ID-2.



Photo 2. Intermittent drainage ID-3.



Photo 3. Ephemeral Drainage ED-1.



Photo 4. Ditch D-3.





Photo 5. Seasonal Wetland Swale SWS-2



Photo 6. California Coastal Commission Wetland CCC-2



Photo 7. Wet Meadow WM-1 looking east



Photo 8. Proposed Trail Location near Rocky Outcrop





Photo 9. Vegetation Community *Danthonia pilosa* Provisional Semi-Natural Association



Photo 11. Vegetation Community *Lupinus arboreus* Semi-Natural Alliance



Photo 10. Vegetation Community *Danthonia californica* Herbaceous Alliance



Photo 12. Proposed Trail Location on Perimeter of Fort



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Attachment E—Representative Site Photographs.

2016 –153 Fort Ross Historic State Park

ATTACHMENT F

Wetland Delineation Shape File (to be included with USACE submittal only)

ATTACHMENT G

USACE Verification Request Form (Included in USACE Submittal Only)

Wildlife Observed (August 22 and 23, 2018 and August 21, 2020)

Wildlife Observed

(August 22 and 23, 2018 and August 21, 2020)

Common Name	Scientific Name
<i>Birds</i>	
California Quail	<i>Callipepla californica</i>
Vaux's Swift	<i>Chaetura vauxi</i>
Anna's Hummingbird	<i>Calypte anna</i>
Western Gull	<i>Larus occidentalis</i>
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Great Blue Heron	<i>Ardea herodias</i>
Turkey Vulture	<i>Cathartes aura</i>
Osprey	<i>Pandion haliaetus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Hairy Woodpecker	<i>Dryobates villosus</i>
Northern Flicker	<i>Colaptes auratus</i>
American Kestrel	<i>Falco sparverius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Black Phoebe	<i>Sayornis nigricans</i>
Steller's Jay	<i>Cyanocitta stelleri</i>
Common Raven	<i>Corvus corax</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Barn Swallow	<i>Hirundo rustica</i>

Common Name	Scientific Name
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Chestnut-backed Chickadee	<i>Poecile rufescens</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Western Bluebird	<i>Sialia mexicana</i>
European Starling	<i>Sturnus vulgaris</i>
House Sparrow	<i>Passer domesticus</i>
House Finch	<i>Haemorhous mexicanus</i>
Pine Siskin	<i>Spinus pinus</i>
American Goldfinch	<i>Spinus tristis</i>
Lark Sparrow	<i>Chondestes grammacus</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Song Sparrow	<i>Melospiza melodia</i>
California Towhee	<i>Melozona crissalis</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Orange-crowned Warbler	<i>Leiothlypis celata</i>
Wilson's Warbler	<i>Cardellina pusilla</i>

APPENDIX C

Botanical Survey Report, California State Park (William Maslach) 2020

BOTANICAL SURVEY REPORT

FOR

FORT ROSS CULTURAL TRAIL
19005 COAST HIGHWAY ONE
APNs 109-100-013 & 109-110-010
JENNER, CA
SONOMA COUNTY



prepared for:

California Department of Parks and Recreation
Sonoma-Mendocino Coast District
P.O. Box 123
Duncan Mills, CA 95430

prepared by:

Spade Natural Resources Consulting
Asa B. Spade & Teresa R. Spade, AICP
31901 Simpson Lane
Fort Bragg, CA 95437
(707) 964-6947
spadenrc@gmail.com

August 02, 2018

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Appendix A. References

Appendix B. List of All Species Documented in the Study Area

1 EXECUTIVE SUMMARY

An approximately 1.5-mile-long cultural trail loop is proposed at the Fort Ross State Historic Park. A Study Area of approximately 92 acres surrounding the proposed trail alignment was surveyed for special status plants and natural communities. Floristic botanical surveys were conducted May 17, 19, 20, 26, & 27, June 9 & 10 and July 04, 2018, by Spade Natural Resources Consulting.

Spade Natural Resources Consulting observed and mapped twenty natural communities within the Study Area, eleven of which are special status or likely coincided with Coastal Act wetlands. These natural communities included:

- *Calamagrostis nutkaensis* Herbaceous Alliance (S2)
- *Anthoxanthum odoratum* – *Deschampsia cespitosa* wet meadow (likely Coastal Act wetland)
- *Carex obnupta* Herbaceous Alliance (S3)
- *Danthonia californica* Herbaceous Alliance (S3)
- *Deschampsia cespitosa* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Eryngium armatum* seep (likely Coastal Act wetland)
- *Juncus balticus* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Juncus effusus* Herbaceous Alliance (S4, likely Coastal Act wetland)
- *Lasthenia californica* Herbaceous Alliance (S4, could potentially be considered “especially valuable”)
- *Nassella pulchra* Herbaceous Alliance (S3?)
- *Pinus muricata* Forest Alliance (S3).

Seven species of special status plants were observed and mapped.

- purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea* 1B.2)
- short leaved evax (*Hesperervax sparsiflora* var. *brevifolia* 1B.2)
- Baker’s goldfields (*Lasthenia californica* ssp. *bakeri* 1B.2)
- deceiving sedge (*Carex saliniformis* 1B.2)
- swamp harebell (*Campanula californica* 1B.2)
- Blasedale’s bentgrass (*Agrostis blasdalei* 1B.2)
- coastal bluff morning glory (*Calystegia purpurea* ssp. *saxicola* 1B.2).

Wetlands and watercourses were observed but not recorded. Some plant communities are noted as likely being or containing areas of Coastal Act wetland. Special status wildlife was not the subject of the survey,

but one species was noted during surveys: Bryant's savannah sparrow (*Passerculus sandwichensis* ssp. *alaudinus* SSC) was observed in grassland habitat throughout much of the Study Area. There is a potential for presence of California red-legged frog, foothill yellow legged frog, Sonoma tree vole, special status birds and bats, and nesting birds protected by the Migratory Bird Treaty Act.

2 Background

2.1 Purpose

On November 19, 2010, Ecologist Darren Wiemeyer conducted and wrote a botanical report for State Parks Coastal Trail for the State of California-Natural Resources Agency, Department of Parks and Recreation-Russian River District on the Salt Point State Park and Fort Ross State Park proposed Coastal Trail. Wiemeyer's surveys were performed in order to relocate past known occurrences of special status plant species identified in a 2004 botanical report by Dr. Philip T. Northern and to survey the proposed Coastal Trail alignment for additional special status plant species with the potential to occur within his study area. Wiemeyer recommended avoidance and mitigation measures that included surveys for special status plant species and plant communities prior to start of on-site construction activities.

The purpose of this survey report is to update botanical survey findings and to map and document special status plants and plant communities that occur within 100 feet of the proposed trail alignment for the Fort Ross Cultural Trail as communicated to Spade Natural Resources Consulting May 7, 2018. This document was requested as a baseline pre-construction record for use in potential adjustments in the final trail alignment, and for estimating the number and/or area of rare plants and sensitive habitats impacted by the trail construction.

3 STUDY AREA DESCRIPTION

3.1 General Site Description

The Study Area is approximately 92 acres surrounding a proposed 1.5-mile cultural trail loop. The Study Area was created by generating a 100-foot buffer around the proposed trail alignment digital layer provided by State Parks. Additional observations and mapping are included for areas south of the Study Area; ~13 acres between the official Study Area and the bluff edge. The Study Area is west of Highway 1, within the Coastal Zone, and includes portions of two parcels: APNs 109-100-013 & 109-110-010. The Study Area is located on the coastal bluff terrace, sloping gently from east to west toward the bluff edge. Elevation ranges from ~130ft along the eastern edge of the Study Area to ~60ft at the bluff edge. The parking lot and headquarters of the Fort Ross State Historic Park are to the east of the Study Area.

4 METHODS

Survey methodology conformed with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018).

This report follows the definition of special status plants in CDFW's 2018 protocol, which includes:

- Listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA) or candidates for possible future listing as threatened or endangered under the ESA (50 C.F.R., § 17.12).
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)⁴. In CESA, “endangered species” means a native species or subspecies of plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish & G. Code, § 2062). “Threatened species” means a native species or subspecies of plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA (Fish & G. Code, § 2067). “Candidate species” means a native species or subspecies of plant that the California Fish and Game Commission has formally noticed as being under review by CDFW for addition to either the list of endangered species or the list of threatened species, or a species for which the California Fish and Game Commission has published a notice of proposed regulation to add the species to either list (Fish & G. Code, § 2068).
- Listed as rare under the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish & G. Code, § 1901).
- Meet the definition of rare or endangered under CEQA Guidelines section 15380, subdivisions (b) and (d), including:
 - Plants considered by CDFW to be “rare, threatened or endangered in California.” This includes plants tracked by the California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) as California Rare Plant Rank (CRPR) 1 or 25;
 - Plants that may warrant consideration on the basis of declining trends, recent taxonomic information, or other factors. This may include plants tracked by the CNDDB and CNPS as CRPR 3 or 46.

- Considered locally significant plants, that is, plants that are not rare from a statewide perspective but are rare or uncommon in a local context such as within a county or region (CEQA Guidelines, § 15125, subd. (c)), or as designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include plants that are at the outer limits of their known geographic range or plants occurring on an atypical soil type.

To the extent possible, natural communities or vegetation alliances are described and mapped based on the Classification of the Vegetation Alliances and Associations of Sonoma County, California (CDFW 2015), and A Manual of California Vegetation (Sawyer and Keeler Wolf, 2009). Sensitive natural communities are determined by the most current version of the California Department of Fish and Wildlife's California Natural Community List (CDFW 2018).

4.1 Literature Review

Existing records of special-status plant and animal species occurrences were reviewed to determine which special-status species have the potential to occur in the project vicinity. The following sources were consulted:

- California Native Plant Society (CNPS) Electronic Inventory occurrence records for the Planation, Fort Ross, Stewarts Point, Annapolis, Tombs Creek, and Arched Rock USGS 7.5 minute quadrangles.
- California Natural Diversity Data Base (CNDDB) occurrence records for the Fort Ross and Plantation USGS 7.5 minute quadrangles
- Aerial imagery and topographic maps analysis, to gather baseline info regarding habitat in the project area.
- Botanical Survey Report State Parks Coastal Trail (Wiemeyer 2010)
- Report on the Rare Plant Survey for the Coastal Trail Project (Northern 2004).

4.2 Field Methods

Field surveys were conducted May 17, 19, 20, 26, & 27, June 9 & 10 and July 04, and were scheduled based on the known blooming periods of these species, their geographic location, the natural communities present, and the weather patterns of the year in which the surveys were conducted. Plant species are identified with the Jepson Manual (Hickman 2012) to the taxonomic level necessary to determine rarity and listing status. Nearby accessible known occurrences of sensitive plant species were observed to determine that the plants were identifiable at the time of the survey.

Botanical surveys were conducted by field observers walking throughout the property in a systematic method sufficient to ensure thorough coverage. Surveyors wove back and forth across an area at a

distance appropriate to the vegetation cover so that all areas of ground could be observed. A handheld GPS receiver was checked periodically while in the field to ensure that all areas were covered. In some cases, survey pin flags were used to temporarily mark plant occurrences while adjacent areas were checked to determine rare plant population extent. Individual plants, plant populations, and plant communities were delineated with a series of points or a track recorded with a GPS unit. All plant species detected within the project area were recorded. The location of special status plants and plant communities were recorded using a Global Positioning System (GPS) where available, or by use of a detailed map (1:24,000 or larger) showing the locations and boundaries of each special status plant community and population in relation to the project area, with occurrences and boundaries marked as accurately as possible. Where the number of individual species was small, that number was counted; and where large populations were observed, the number of individuals was estimated by counting individuals in meter square plots at ten locations. To the extent possible, information was provided on the percentage of each special status plant in each life stage observed such as seeding, vegetative, flowering, and fruiting. The density of populations was provided, describing whether special status plants are present in a relatively low, medium or high density. Photographs were also taken of special status plants and vegetation alliances, showing identifying features.

For known occurrences, any adverse conditions, such as disease, drought, predation, fire, herbivory or other disturbances that may preclude the presence or identification of potentially present special status plants or vegetation alliances are considered when making a negative finding. If adverse conditions exist during survey efforts, the known occurrence is considered still potentially present until surveys are repeated during appropriate times of the year for proper identification, when normal conditions are present and known reference sites are consulted to verify that blooms or other identifying features should be visible.

5 RESULTS

5.1 Documented Special Status Plants

5.1.1 Purple Stemmed Checkerbloom (*Sidalcea malviflora* ssp. *purpurea* 1B.2)

This perennial herb occurred scattered throughout the Study Area in native grassland. Three subspecies of *Sidalcea malviflora* are reported to occur in Sonoma County according to occurrences on CalFlora: *S. m.* ssp. *laciniata*, *S. m.* ssp. *malviflora*, and *S. m.* ssp. *purpurea*. Some variation was present from plant to plant but the plants most closely matched subspecies *purpurea* in leaf shape, number of flowers per inflorescence, and due to purple calyx coloration (Figure 1). The population within the Study Area is estimated to be 250-325 plants. Approximately 15-25 plants (~7% present) could be affected by the trail.



Figure 1. Few flowers and purple calyxes on *Sidalcea malviflora* found within the Study Area.

5.1.2 Short Leaved Evax (*Hesperevax sparsiflora* var. *brevifolia* 1B.2)

This annual herb occurred in three main areas: within the rocky area in the southeastern portion of the study area, at the southwestern tip of the Study Area, and in another area along the middle of the western Study Area boundary. This plant occurred mostly within area of rocky outcrops, California oatgrass, and brome fescue meadows. To estimate the population all plants within a square-meter grid (Figure 2) were counted at ten locations within the mapped occurrences. Populations numbers were as high as 1,500 plants per square meter but averaged around 580 plants per square meter. The estimated total population within the mapped habitat is 20 to 40 million plants. The trail may impact 150-300 thousand plants (an insignificant percentage of those present).



Figure 2. A square-meter grid being used to inform *Hesperevax* population estimates at the site.

5.1.3 Baker's Goldfields (*Lasthenia californica* ssp. *bakeri* 1B.2)

A perennial subspecies of *Lasthenia californica* was present in one small area (~0.25 acres) just outside the western edge of the Study Area. These plants may have been *L. c.* ssp. *bakeri* or *L. c.* ssp. *macrantha* either of which have a rarity ranking of 1B.2. A decision to treat them as *L. c.* ssp. *bakeri* in this report was made based on observations of erect unbranched stems and relatively narrow leaf width compared to a reference population of ssp. *macrantha* examined. A population estimate of 500-700 plants was made by counting all individuals in a fraction of the area where they occurred and multiplying that number in proportion to the total area where they were present at that density. None of these plants were within the proposed trail alignment. At least one plant that displayed characteristics of *Lasthenia californica* ssp. *macrantha* was observed in the Study Area during an initial scouting/scoping visit but was not observed on subsequent visits when identification and mapping was performed.



Figure 3. Perennial *Lasthenia californica* observed within the Study Area.

5.1.4 Deceiving Sedge (*Carex saliniformis* 1B.2)

This perennial sedge (Figure 4) occurred along several wet depressions in the middle of the southern half of the Study Area as well as one location near the northern end of the Study Area. The population of the plant was dense in the relatively narrow areas (Figure 5) where it occurred, with an average of ~1050 plants per square meter where it occurred. Population estimates were made by counting all individuals in a meter square at ten locations throughout the documented populations. An estimated population of this plant within the Study Area is 3-5 million plants. None occurred within the proposed trail alignment.



Figure 4. *Carex saliniformis* observed at the site.



Figure 5. *Carex saliniformis* population within a linear depression near the middle of the Study Area.

5.1.5 Swamp Harebell (*Campanula californica* 1B.2)

This perennial herb (Figure 6) was observed in two locations within *Calamagrostis nutkaensis* grassland. One of the populations occurred along the western side of the proposed trail alignment. A population estimate was made by noting an average number of plants at each location where a GPS point was taken to record their presence and then multiplying that range by the number of points recorded. The estimated population within the Study Area is 80-120 plants with 10-15 plants (~12.5%) along the trail alignment.



Figure 6. *Campanula californica* observed at the site.

5.1.6 Blasedale's Bentgrass (*Agrostis blasdalei* 1B.2)

This perennial grass occurred along the bluff edge, mostly along the southern portion of the peninsula, outside of the official Study Area but within the area surveyed. This plant (Figure 7) occurred in medium to high density within a narrow band of habitat near the eroded edge of the bluff. An estimated 150-200 plants were present based on noting an average number of plants at each location where a GPS point was taken to record presence of the plant and multiplying it by the number of points recorded. None would be likely to be affected by the trail.



Figure 7. Blasedale's bentgrass observed at the site.

5.1.7 Coastal Bluff Morning Glory (*Calystegia purpurea* ssp. *saxicola* 1B.2)

This perennial herb was found at relatively low density throughout the dryer portions of the Study Area especially within areas dominated by non-native grasses. Two subspecies of *Calystegia purpurea* are described in the Jepson Manual. *C. p.* ssp. *purpurea* is described as having a strongly climbing stem greater than 1 meter in length, triangular leaves with acute tips and V-shaped sinus. *C. p.* ssp. *saxicola* is described as having a stem that is trailing to weakly climbing and is generally less than one meter long, leaves that are ovate-triangular to reniform in shape, with a tip that is generally rounded to notched, and sinuses that are generally more or less closed. The plants on the site showed a mixture of these characters, sometimes in the same or directly adjacent plants (Figure 8). All *C. purpurea* that was not strongly climbing was mapped and treated as *C. p.* ssp. *saxicola* in this report. In some areas where this plant occurred, there were often several individual plants (Figure 9) separated by approximately one meter. In other areas there was a distance of around 10 meters between plants. SpadeNRC estimates that there were 600-800 individual plants in the Study Area combined with the additional area surveyed to the south of the Study Area bases on the observations of their density multiplied over the area where they were mapped as present. An estimated 20-30 plants (~3.5%) could be impacted by the trail.



Figure 8. *Calystegia purpurea* at the site with rounded reniform leaves at photo left and pointed triangular leaves to the right.



Figure 9. Small population of *Calystegia purpurata* ssp. *saxicola* at the site.

5.2 Documented Natural Communities

Within this report plant community classification conforms primarily to two sources, The Manual of California Vegetation (Manual) (Sawyer 2009) and Vegetation Alliances and Associations of Sonoma County, California (Veg of Sonoma) (CDFW 2015). In several instances vegetation did not fit well into any published alliance or association. In those cases, this document refers to those areas of vegetation using naming scheme based on the dominant overstory species, consistent with the methodology of the Manual, and has provided a description of the vegetation present. When appropriate the nearest match in the source has also been listed. Conducting rapid assessment or relevé studies was beyond the budgeted scope of the work conducted for this report. Some other areas mapped and described consist of primarily a single dominant plant species covering less area than the minimum mapping unit considered by the methodology of the Manual and Veg of Sonoma, which is 1 acre for wetland and 0.5 acres for special stands. For example, Douglas iris patches are mappable at a relatively fine scale but do not usually occur in stands large enough to be considered their own plant community. SpadeNRC has chosen to map and describe some of these here, rather than fold them into the adjacent classifiable natural communities.

The majority of the Study Area was within an area actively grazed by cattle (Figure 10). The grazing has a dramatic effect on species composition and the identifiability of herbaceous plants.



Figure 10. Cattle grazing in the Study Area.



Figure 11. On the eastern side of this fence coyote brush and non-native grasses dominate, while on the west side of the fence native grasses are more prevalent.



Figure 12. Another dramatic comparison of a grazed area vs a non-grazed area

5.2.1 *Anthoxanthum odoratum* Seminatural Association

This plant community occurred mostly in the drier areas in the northeastern portion of the Study Area and along the non-grazed east side of the road at the east side of the Study Area. Sweet vernal grass (*Anthoxanthum odoratum*) was the dominant grass with rattlesnake grass (*Briza maxima*), Douglas iris (*Iris douglasiana*), English plantain (*Plantago lanceolata*), California blackberry (*Rubus ursinus*), blue eyed grass (*Sisyrinchium bellum*), colonial bentgrass (*Agrostis capillaris*), and spring vetch (*Vicia sativa*) present.



Figure 13. *Anthoxanthum odoratum* grassland at the site.

5.2.2 *Anthoxanthum odoratum* – *Deschampsia cespitosa* wet meadow

A relatively large area in the middle of the northern portion of the Study Area was dominated by sweet vernal grass but contained enough tufted hairgrass (*Deschampsia caespitosa*) and other wet tending vegetation that it warranted separate mapping and classification from other areas dominated by sweet vernal grass, which tended to be much drier. Other vegetation that shares this area co-dominated by sweet vernal grass and tufted hairgrass included California blackberry (*Rubus ursinus*), coastal rush (*Juncus hesperius*), western bracken (*Pteridium aquilinum*), Douglas iris (*Iris douglasiana*), Nootka rose (*Rosa nutkana*), cascara buckthorn (*Frangula purshiana*), Baltic rush (*Juncus balticus*), brown headed rush (*Juncus phaeocephalus*), pennyroyal (*Mentha pulegium*), changing forget me not (*Myosotis discolor*), slough sedge (*Carex obnupta*), American vetch (*Vicia americana* var. *americana*), coyote thistle (*Eryngium armatum*), California buttercup (*Ranunculus californica*), dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*), purple velvetgrass (*Holcus lanatus*) and wild hyacinth (*Triteleia hyacinthina*). Portions of this plant community likely meet the definition of Coastal Act wetland.

5.2.3 *Baccharis pilularis* Shrubland Alliance (S5)

This natural community occurred mostly in the non-grazed portion at the southeastern edge of the Study Area. The dominate overstory plant was coyote brush (*Baccharis pilularis*). Other plants present included stunted Douglas fir (*Pseudotsuga menziesii*), sticky monkeyflower (*Diplacus aurantiacus*), California bee plant (*Scrophularia californica*), western bracken (*Pteridium aquilinum*), sheep sorrel (*Rumex acetosella*), Pacific reedgrass (*Calamagrostis nutkaensis*), California blackberry (*Rubus ursinus*), scarlet pimpernel (*Lysimachia arvensis*), rattlesnake grass (*Briza maxima*), yarrow (*Achillea millefoliata*), coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*), Douglas iris (*Iris douglasiana*), and pale flax (*Linum bienne*).



Figure 14. *Baccharis pilularis* shrubland at the site.

5.2.4 *Briza maxima* Provisional Semi-Natural Association

One non-grazed area at the southeastern corner of the Study Area was dominated by rattlesnake grass (*Briza maxima*). Other species present included wild oat (*Avena barbata*), California blackberry (*Rubus ursinus*), Coyote brush (*Baccharis pilularis*), yarrow (*Achillea millefoliata*), sheep sorrel (*Rumex acetosella*), western bracken (*Pteridium aquilinum*), brome fescue (*Festuca bromoides*), sticky

monkeyflower (*Diplacus aurantiacus*), slender lotus (*Lotus angustissimus*), coastal bluff morning glory (***Calystegia purpurata* ssp. *saxicola***), rattlesnake weed (*Daucus pusillus*), lizard tail (*Eriophyllum staechadifolium*), Douglas iris (*Iris douglasiana*), coyote mint (*Monardella villosa* ssp. *villosa*), poison oak (*Toxicodendron diversilobum*), brownie thistle (*Cirsium quercetorum*), California brome (*Bromus carinatus*), perennial ryegrass (*Festuca perennis*), seaside lupine (*Lupinus variicolor*), pale flax (*Linum bienne*), rigid hedge nettle (*Stachys rigida*), and common catchfly (*Silene gallica*).



Figure 15. *Briza maxima* grassland at the site.

5.2.5 *Calamagrostis nutkaensis* Herbaceous Alliance (S2)

Pacific reedgrass meadow occurred in several large patches within the wetter portions of the Study Area. These areas were dominated by Pacific reedgrass (*Calamagrostis nutkaensis*) and supported California blackberry (*Rubus ursinus*), Douglas iris (*Iris douglasiana*), sweet vernal grass (*Anthoxanthum odoratum*), harlequin lotus (***Hosackia gracilis***), slough sedge (*Carex obnupta*), coast rush (*Juncus hesperius*), changing forget me not (*Myosotis discolor*), Nootka rose (*Rosa nutkana*) and swamp harebell (***Campanula californica***).



Figure 16. *Calamagrostis nutkaensis* grassland at the site.

5.2.6 *Carex obnupta* Herbaceous Alliance (S3)

An area along a stream in the northwestern portion of the Study Area was thickly vegetated with slough sedge (*Carex gynodinema*). This area is likely to be Coastal Act wetland.

5.2.7 *Danthonia californica* Herbaceous Alliance (S3)

This natural community occurred along much of the southern and western edge of the Study Area in relatively flat areas. The dominant grass was California oatgrass (*Danthonia californica*). Other species present included brome fescue (*Festuca bromoides*), rattail fescue (*Festuca myros*), small quaking grass (*Briza minima*), seaside lupine (*Lupinus variicolor*), miniature lupine (*L. bicolor*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), meadow barley (*Hordeum brachyantherum*), English plantain (*Plantago lanceolata*), silver hairgrass (*Aira caryophyllea*), and common rush (*Juncus patens*). In some lower lying areas within the California oatgrass meadow coyote thistle (*Eryngium armatum*), Johnny nip (*Castilleja ambigua*), Johnny tuck (*Triphysaria eriantha*), yellowbeak owl's clover (*T. versicolor*) and California goldfields (*Lasthenia californica* ssp. *californica*) were present.



Figure 17. *Danthonia californica* grassland at the site.

5.2.8 *Deschampsia cespitosa* Herbaceous Alliance (S4)

This natural community was present through the middle of the southern part of the Study Area. These areas were dominated by tufted hairgrass (*Deschampsia cespitosa*). The density and relative cover of the *Deschampsia* varied as did the moisture in the soil. Other vegetation present in relatively drier areas included California blackberry (*Rubus ursinus*), brome fescue (*Festuca bromoides*), English plantain (*Plantago lanceolata*), rough cat's ear (*Hypochaeris radicata*), hairy woodrush (*Luzula comosa*), purple velvetgrass (*Holcus lanatus*), Douglas iris (*Iris douglasiana*), purple stemmed checkerbloom (*Sidalcea*

malviflora ssp. purpurea), sheep sorrel (*Rumex acetosella*), and sweet vernal grass (*Anthoxanthum odoratum*). In somewhat wetter areas harlequin lotus (*Hosackia gracilis*), golden eyed grass (*Sisyrinchium californicum*), smooth cat's ear (*Hypochaeris glabra*), Harford's sedge (*Carex harfordii*) wonder woman sedge (*C. gynodynamis*), low bulrush (*Isolepis cernua*), brown headed rush (*Juncus phaeocephalus* var. *phaeocephalus*) were present. In low spots within this grassland there were occurrences of coyote thistle (*Eryngium armatum*), low bulrush (*Isolepis cernua*), toad rush (*Juncus bufonius*), pennyroyal (*Mentha pulegium*), and deceiving sedge (*Carex saliniformis*). Much of the area vegetated with this plant community could meet requirements to be considered Coastal Act wetland.



Figure 18. *Deschampsia cespitosa* grassland at the site.

5.2.9 *Eryngium armatum* seep

One location in the northern portion of the Study Area was a seep dominated by coyote thistle (*Eryngium armatum*). Vegetation in this location was heavily grazed. Species that could be identified included sweet vernal grass (*Anthoxanthum odoratum*), blue eyed grass (*Sisyrinchium bellum*), California blackberry (*Rubus ursinus*), western panicum (*Panicum acuminatum* var. *acuminatum*), small quaking grass (*Briza minima*), California oatgrass (*Danthonia californica*), California buttercup (*Ranunculus californicus*), pale flax (*Linum bienne*), wonder woman sedge (*Carex gynodynamis*), deceiving sedge (*Carex saliniformis*), pennyroyal (*Mentha pulegium*), and Douglas iris (*Iris douglasiana*). This area likely meets requirements to be considered a Coastal Act wetland.

5.2.10 *Festuca bromoides* Semi-Natural Association

Brome fescue (*Festuca bromoides* aka *Vulpia bromoides*) was the dominant overstory plant in the driest areas around rocky outcrops in the south western and middle-western portion of the Study Area. Other species in these areas included purple awned wallaby grass (*Rytidosperma penicillatum*) Douglas iris (*Iris douglasiana*), silver hairgrass (*Aira caryophyllea*), rattlesnake weed (*Daucus pusillus*), slender lotus (*Lotus angustissimus*), California plantain (*Plantago erecta*), rough cat's ear (*Hypochaeris radicata*), sheep sorrel (*Rumex acetosella*), hedgehog dogtail grass (*Cynosurus echinatus*), western bracken

(*Pteridium aquilinum*), common catchfly (*Silene gallica*), short leaved evax (*Hesperevax sparsiflora* var. *brevifolia*) scarlet pimpernel (*Lysimachia arvense*), and maritime brome (*Bromus maritimus*). The two described natural communities in Veg of Sonoma that most closely fit these areas are *Avena* spp. – *Bromus* spp. Provisional Semi-Natural Alliance, and the *Danthonia californica* – (*Briza maxima* – *Vulpia bromoides*) Provisional Association. The first is a better fit because it is a bit of a catch-all for areas dominated by non-native grasses in a dry topographic position. In addition, the namesake *Avena* and *Bromus* did not make a great showing anywhere else within the grazed portion of the Study Area and may have been less evident and identifiable due to grazing. The *Danthonia* association, on the other hand is a less likely match because *Danthonia* was apparent in adjacent areas during the survey but was not significantly present at the same time in the areas mapped as *Festuca bromoides* Semi-Natural Association.

5.2.11 *Iris douglasiana* patch

A few areas at the south end and one at the north end of the Study Area had patches of Douglas iris (*Iris douglasiana*) large enough to map with a GPS and were apparent in aerial photos. These patches occurred in areas of transition between several other plant communities and were not necessarily “belong” to any one of these communities. Other vegetation in these patches included California goldfields (*Lasthenia californica* ssp. *californica*), English plantain (*Plantago lanceolata*), California ponysfoot (*Dichondra donelliana*), New Zealand geranium (*Geranium retrorsum*), annual bluegrass (*Poa annua*), English daisy (*Bellis perennis*), California buttercup (*Ranunculus californica*), purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*), sheep sorrel (*Rumex acetosella*), rigid hedge nettle (*Stachys rigida*), Johnny tuck (*Triphysaria eriantha* ssp. *rosea*), brownie thistle (*Cirsium quercetorum*), silver hairgrass (*Aira caryophyllea*), rattlesnake grass (*Briza maxima*), brome fescue (*Festuca bromoides*), Italian thistle (*Carduus pycnocephalus*), and changing forget-me-not (*Myositis discolor*).

5.2.12 *Juncus balticus* Herbaceous Alliance (S4)

Baltic rush (*Juncus balticus*) was present in the northwestern portion of the Study Area. A couple of areas were dominated by this plant. Other species present in these areas were coyote brush (*Baccharis pilularis*), sheep sorrel (*Rumex acetosella*), Pacific reedgrass (*Calamagrostis nutkaensis*), Henderson’s angelica (*Angelica hendersonii*), wonder woman sedge (*Carex gynodynema*), split awn sedge (*C. tumulicola*), California blackberry (*Rubus ursinus*), harlequin lotus (*Hosackia gracilis*), purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*), California horkelia (*Horkelia californica*), California buttercup (*Ranunculus californicus*), sweet vernal grass (*Anthoxanthum odoratum*), purple velvetgrass (*Holcus lanatus*), Douglas iris (*Iris douglasiana*), and changing forget me not (*Myosotis discolor*). This alliance is likely to meet requirements to be considered Coastal Act wetland.

5.2.13 *Juncus effusus* Herbaceous Alliance (S4)

Coast rush (*Juncus hesperius* aka *Juncus effusus*) was the dominant plant in a small area in the northwestern portion of the Study Area. The marsh was narrow and other vegetation present was similar in composition to the surrounding areas. This natural community is likely a Coastal Act wetland.



Figure 19. *Juncus effusus* marsh at the site.

5.2.14 *Lasthenia californica* Herbaceous Alliance (S4)

This natural community occurred along a drainage near the southwestern point of the Study Area. Predominant vegetation included California goldfields (*Lasthenia californica* ssp. *californica*), California oatgrass (*Danthonia californica*), meadow barley (*Hordeum brachyantherum*), and coyote thistle (*Eryngium armatum*). Other vegetation present included Johnny tuck (*Triphysaria eriantha* ssp. *rosea*), purple everlasting (*Gamochaeta ustulata*), yellow hairgrass (*Aira praecox*), short leaved evax (*Hesperovax sparsiflora* var. *brevifolia*), and a very significant population of purple stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*). While *Lasthenia californica* Herbaceous Alliance is ranked S4, not a rare plant community, this area could also be considered a less abundant Association within the *Danthonia californica* Herbaceous Alliance, which has a rare ranking. Because it is also habitat for two rare plants and likely a significant resource for native pollinators it could also be considered to provide an “especially valuable” role in the ecosystem.



Figure 20. *Lasthenia californica* flower field.

5.2.15 *Lupinus arboreus* Semi-Natural Alliance

Yellow bush lupine (*Lupinus arboreus*) is purportedly not native to the Study Area. It was the predominant overstory vegetation in a large area at the southern end of the Study Area. The density of the shrubs varied but there was usually space between individual shrubs. Species with significant cover between the shrubs included brome fescue (*Festuca bromoides*), sheep sorrel (*Rumex acetosella*), and patches of Italian thistle (*Cardus pycnocephalus*). Other species in this natural community included bull thistle (*Cirsium vulgare*), tidy-tips (*Layia platyglossa*), rough hedge nettle (*Stachys rigida*), purple velvetgrass (*Holcus lanatus*), Japanese cudweed (*Euchiton japonicus*), California goldfields (*Lasthenia californica* ssp. *californica*), rough cat's ear (*Hypochaeris radicata*), California plantain (*Plantago erecta*), English plantain (*P. lanceolata*), and coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*). Many of the shrubs had relatively fresh mounds of dirt beneath them which may be tailings from California ground squirrel burrowing. No squirrels were seen during the surveys.



Figure 21. *Lupinus arboreus* shrubland at the site.

5.2.16 *Nassella pulchra* Herbaceous Alliance (S3?)

A couple of patches of purple needle grass (*Stipa pulchra* aka *Nassella pulchra*) occurred within the rocky dry areas in the middle-eastern portion of the Study Area. Other than the presence of purple needlegrass the species composition was similar to the surrounding *Festuca bromoides* Semi-Natural Association.



Figure 22. Purple needle grass meadow at the site.

5.2.17 *Pinus muricata* Forest Alliance (S3)

Bishop pine (*Pinus muricata*) dominated forest stands occurred in three locations in the northern portion of the Study Area. Bishop pine forest in this area is in decline due to drought and disease. Understory vegetation included coyote brush (*Baccharis pilularis*), cascara buckthorn (*Frangula purshiana*), sword fern (*Polystichum munitum*), California blackberry (*Rubus ursinus*), strongly climbing morning glory (*Calystegia purpurata* ssp. *purpurata*), California ponysfoot (*Dichondra donelliana*), Pacific sanicle (*Sanicula crassicaulis*), little false Solomon's seal (*Maianthemum stellatum*), California huckleberry (*Vaccinium ovatum*), coast manroot (*Marah oreganus*), bedstraw (*Gallium aparine*) and Douglas iris (*Iris douglasiana*).

A stream flows through the southernmost stand of Bishop pine forest. At a location just below the road the following plants were observed in the understory: pink flowering current (*Ribes sanguineum* var. *glutinosum*), thimbleberry (*Rubus parviflorus*), giant chain fern (*Woodwardia fimbriata*), cow parsnip (*Heracleum maximum*), seep monkeyflower (*Erythranthe guttata*), coast rush (*Juncus hesperius*), miner's lettuce (*Claytonia perfoliata*), orchard grass (*Dactylis glomerata*), western sword fern (*Polystichum munitum*), California blackberry (*Rubus ursinus*), coastal burnweed (*Senecio minimus*), giant horsetail (*Equisetum telmatia*), California bee plant (*Scrophularia californica*), coast hedge nettle (*Stachys chamissonis*), cascara buckthorn (*Frangula purshiana*), bedstraw (*Galium aparine*), slender foot sedge (*Carex leptopoda*), pennyroyal (*Mentha pulegium*), broadleaf forget me not (*Myotis latifolia*), chickweed (*Stellaria media*), sweet vernal grass (*Anthoxanthum odoratum*), bull thistle (*Cirsium vulgare*), field mustard (*Brassica rapa*) and Italian thistle (*Carduus pycnocephalus*).



Figure 23. *Pinus muricata* forest in the northern portion of the Study Area.

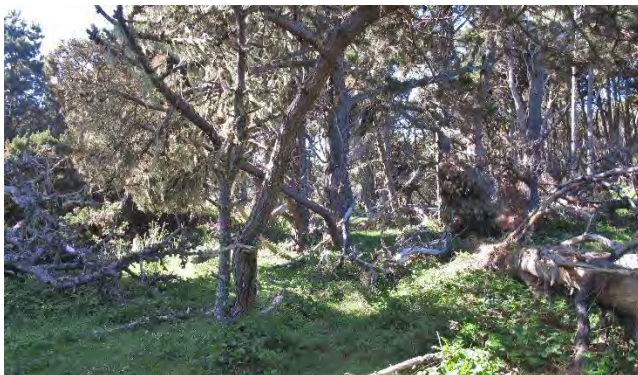


Figure 24. Understory within the Bishop pine forest at the site.

5.2.18 Rocky Outcrops

Outcroppings of rock were present in the southeastern portion and a couple other locations of the Study Area. They occurred mostly within areas mapped as *Festuca bromoides* Semi-Natural Association in the eastern portion of the Study Area, or within the *Danthonia californica* Herbaceous Alliance further west. These areas were characterized with bare or lichen covered rock and relatively dry conditions, though a variety of microclimates and therefore a higher diversity of plant species were present here than surrounding areas. Plants present around the rocks included western bracken (*Pteridium aquilinum*), coyote brush (*Baccharis pilularis*), beach strawberry (*Fragaria chiloensis*), California plantain (*Plantago erecta*), California sandaster (*Corethrogyne filaginifolia* var. *californica*), silver hairgrass (*Aira caryophyllea*), short leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), purple velvetgrass (*Holcus lanatus*), seaside lupine (*Lupinus variicolor*), sheep sorrel (*Rumex acetosella*), brome fescue (*Festuca bromoides*), hairy woodrush (*Luzula comosa*), Pacific reedgrass (*Calamagrostis nutkaensis*), Japanese cudweed (*Euchiton japonicus*), purple everlasting (*Gamochaeta ustulata*), dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*), tidy-tips (*Layia platyglossa*), rattlesnake grass (*Briza maxima*), pussy ears (*Calochortus tolmiei*), footsteps of spring (*Sanicula arctopoides*), Douglas iris (*Iris douglasiana*), California milkwort (*Polygala californica*), north coast dudleya (*Dudleya farinosa*), common catchfly (*Silene gallica*), corn spurry (*Spergula arvensis* ssp. *arvensis*), California brome (*Bromus carinatus*), California goldfields (*Lasthenia californica* ssp. *californica*), New Zealand geranium (*Geranium retrorsum*), and red maids (*Calandrinia ciliata*). In addition to supporting many microclimates and plant species, these areas area also provide refugia for wildlife, are visually interesting, and are potentially more easily impacted by human activities than the surrounding grassland.



Figure 25. Rocky outcrops at the site.

5.2.19 *Rubus (ursinus)* Provisional Alliance

In a couple areas at the middle-eastern portion of the Study Area significant enough stand of California blackberry (*Rubus ursinus*) to map. Other vegetation was consistent with the surrounding natural communities.

5.2.20 *Rytidosperma penicillatum* Semi-Natural Association

This grassland was dominated by purple awned wallaby grass (*Rytidosperma penicillatum*) which is referred to by the name *Danthonia pilosa* in Veg of Sonoma. Within this source the closest matching association is the *Cynosurus echinatus* – (*Danthonia pilosa* – *Nassella manicata*) Provisional Semi-Natural Association, however neither the namesake *Cynosurus echinatus* nor *Nassella manicata* were present and the proportions of vegetation cover did not match the stand tables well.

These areas were dominated by purple awned wallaby grass (*Rytidosperma penicillatum*). Other species present included common velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), rough cat's ear (*Hypochaeris radicata*), brome fescue (*Festuca bromoides*), Douglas iris (*Iris douglasiana*) and western bracken (*Pteridium aquilinum*).



Figure 26. *Rytidosperma penicillatum* grassland at the site.

5.2.21 Northern Coastal Bluff Scrub

Northern Coastal bluff scrub is a Holland type plant community with no direct Alliance that describes it well. This natural community occurred at and below the break in slope of the bluff edge along the southern and western edges of the peninsula. These areas were not safely accessible, and all were more than 100 feet from the proposed trail alignment. Therefore, these natural communities were not fully surveyed and are not mapped. Plants observed from the bluff top included north coast dudleya (*Dudleya farinosa*), coast buckwheat (*Eriogonum latifolium*), lizard tail (*Eriophyllum staechadifolium*), onion (*Allium dichlamydeum*), seaside daisy (*Erigeron glaucus*), Blasedale's bentgrass (***Agrostis blasdalei***), short leaved evax (***Hesperevax sparsiflora* var. *brevifolia***), California phacelia (*Phacelia californica*), California poppy (*Eschscholzia californica*), cream cups (*Platystemon californicus*), maritime brome (*Bromus maritima*), maritime plantain (*Plantago maritima*), yellow hairgrass (*Aira praecox*), brome fescue (*Festuca bromoides*) and scarlet pimpernel (*Lysimachia arvensis*).



Figure 27. Two views of Coastal bluff scrub observed at the site.

6 Discussion

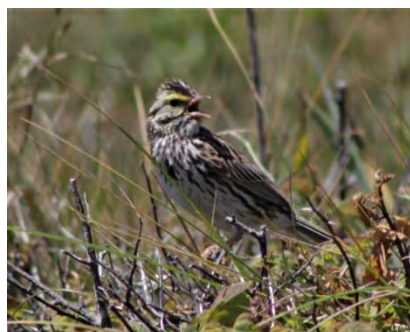
In the professional opinion of Spade Natural Resources Consulting, eleven natural communities and seven species of rare plant are present on the property that warrant protection and/or compensatory mitigation if unavoidably impacted. Table 1 below shows the sensitive resources potentially impacted by the current trail alignment. An assumption has been made that the trail will be six feet wide. Estimated number of rare plants, area of sensitive communities, and relative percentages of each of these resources potentially impacted is presented.

The trail should avoid the swamp harebell (*Campanula californica*) patch at the western edge of the northern portion of the Study Area.

In SpadeNRC's opinion coastal bluff morning glory (*Castilleja purpurata* ssp. *saxicola*) and short leaved evax (*Hesperisparisiflora* var. *brevifolia*) are under reported and likely not as rare as their ranking suggests. SpadeNRC biologists have also observed that these two species are more resilient to disturbance than many other species, even favoring areas of recent disturbance such as trails, mowing, and grazing.

SpadeNRC biologists have observed that *Sidalcea malviflora* does best in undisturbed soils and suggested that the southern portion of the proposed trail alignment be moved further south, into the yellow bush lupine scrub, in order to avoid areas where purple stemmed checkerbloom currently occurs. Further correspondence revealed that other sensitive resources that must not be impacted occur to the south of the trail alignment, within the area that would be least impacting to the *Sidalcea malviflora*. If the trail cannot be constructed in a manner that precludes impact to the other sensitive resource, then realigning the trail slightly further north of its current alignment should be considered.

Cattle grazing has been utilized as a vegetation management tool within most of the area surveyed. The much higher presence of invasive plant within the ungrazed areas is remarkable. In our professional opinion cattle grazing at the levels used has greatly benefited the habitat present and should continue.



Although the survey did not focus on wildlife one species of special concern, Bryant's savannah sparrow (Figure 28) was noted during surveys.

Figure 28. Bryant's savannah sparrow observed in the grassland at the site.

Table 1. Sensitive resources potentially impacted by the proposed trail alignment.

Rare plant species	Plants impacted		Total plants on site	Impacted %
<i>Sidalcea malviflora</i>	15-25		250-325	6.8%
<i>Hesperovax sparsiflora</i> ssp. <i>brevifolia</i>	150,000 – 300,000		20-40 million	<0.01%
<i>Campanula californica</i>	10-15		80-120	12.5%
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	20-30		600-800	3.5%
Sensitive natural community	Linear trail (ft)	Trail area (sqft)	Total community area mapped	Area impacted %
<i>Calamagrostis nutkaensis</i>	192	1152	186477	0.62%
<i>Carex obnupta</i>	21	126	4078	3.09%
<i>Danthonia californica</i>	1714	10284	699495	1.47%
<i>Deschampsia cespitosa</i>	103	618	724127	0.09%
<i>Juncus balticus</i>	112	672	56999	1.18%
<i>Lasthenia californica</i>	383	2298	35449	6.48%
<i>Pinus muricata</i>	737	4422	414620	1.07%
Rocky outcrops	62	372	125261	0.30%

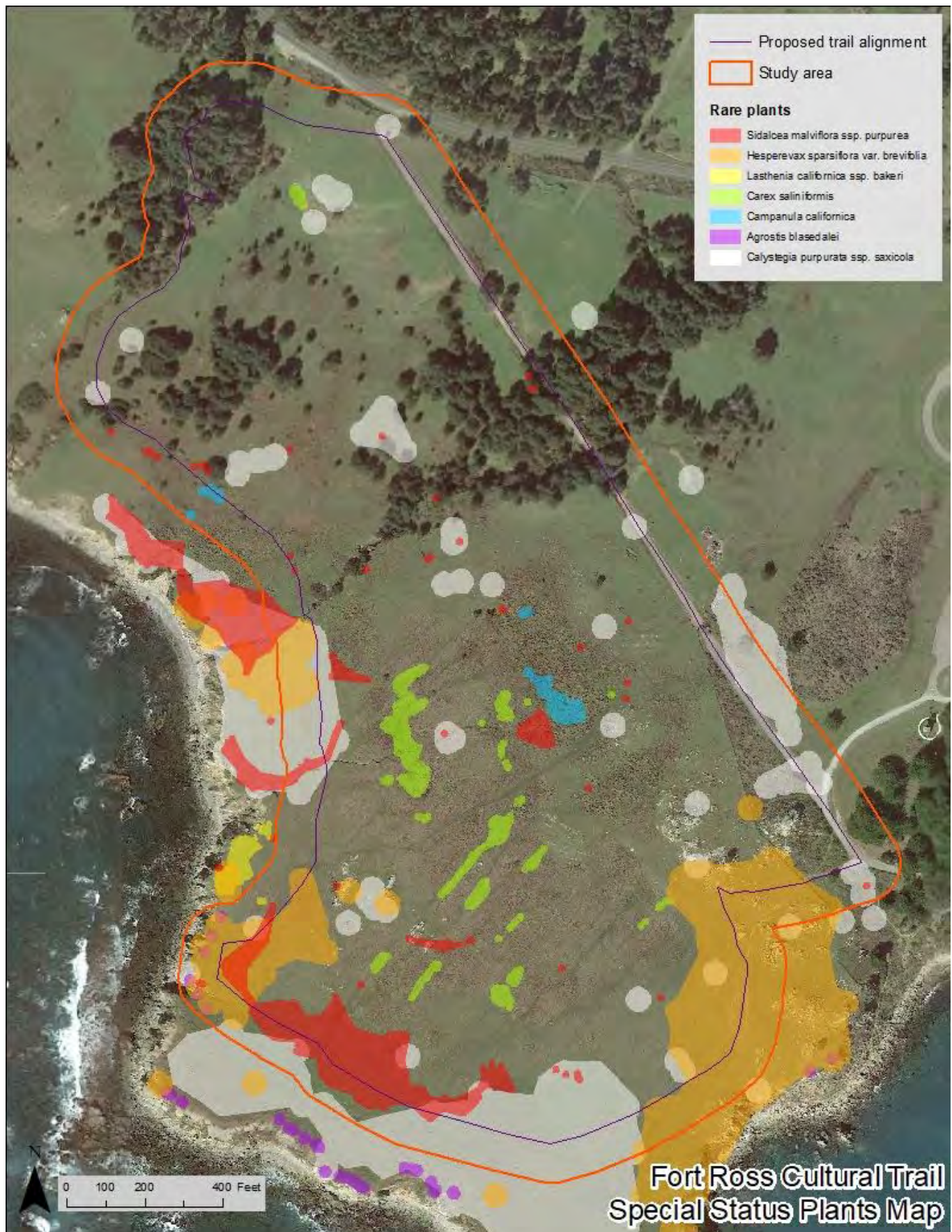


Figure 29. Rare plants map.

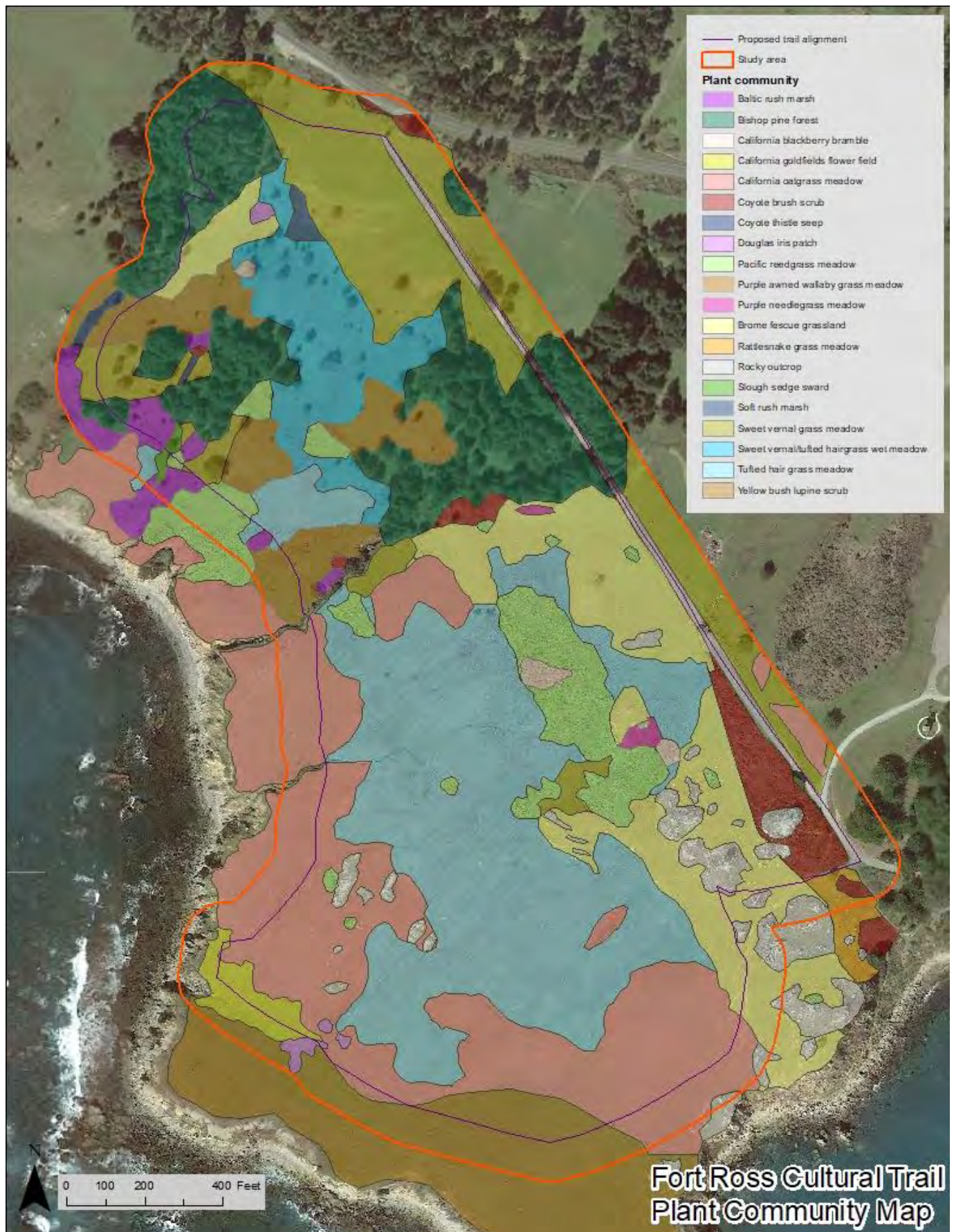


Figure 30. Plant community map.

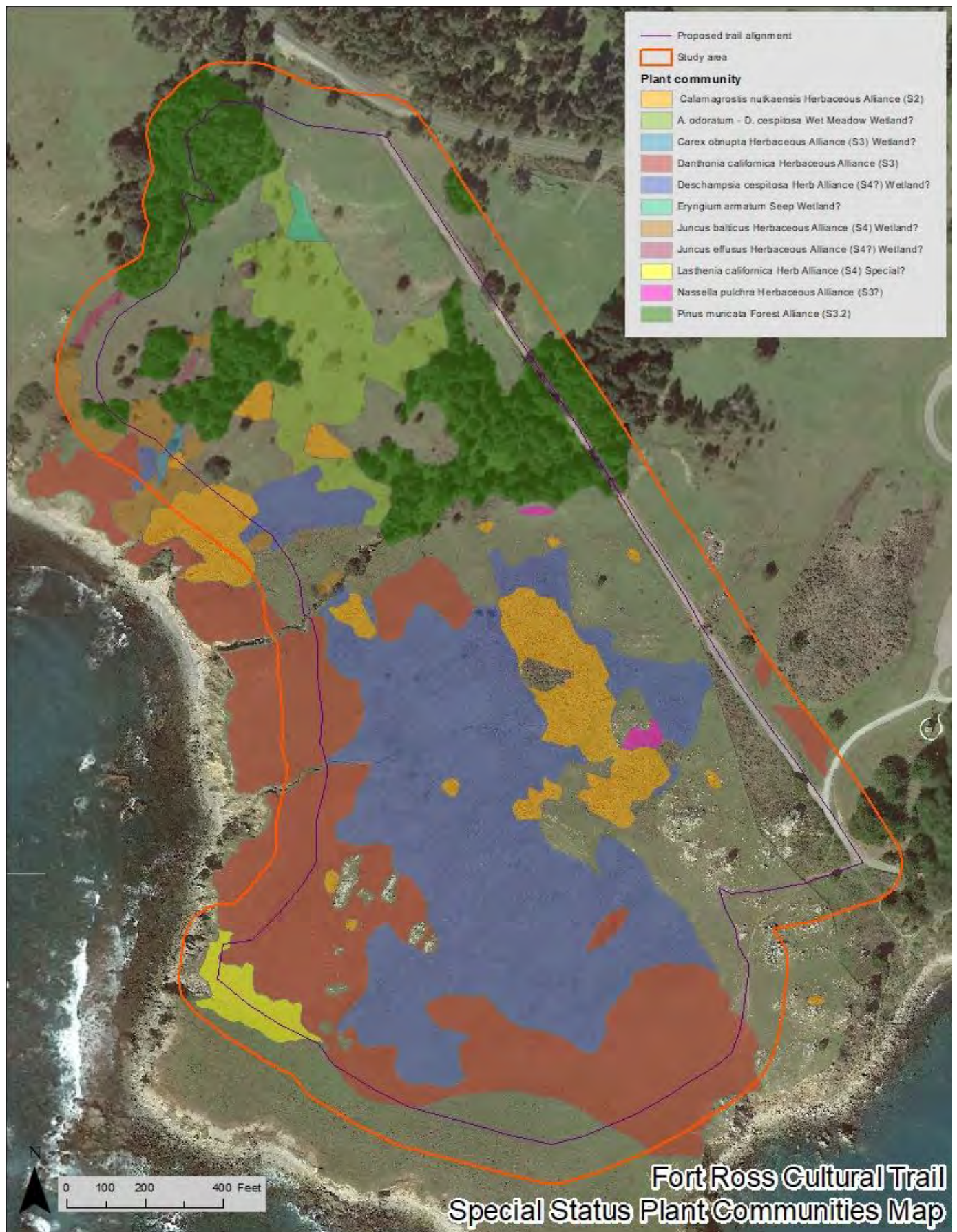


Figure 31. Special status plant communities map.

Appendix A. References

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Appendix B. List of All Plant Species Documented in the Study Area.

GROUP	Family	Latin binomial	Common name	Native
FERNS AND ALLIES				
	Dennstaedtiaceae			
		<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken; western bracken; hairy bracken fern	Y
	Dryopteridaceae			
		<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	subarctic lady-fern; lady fern	Y
		<i>Dryopteris expansa</i>	wood fern	Y
		<i>Polystichum munitum</i>	western sword fern	Y
	Equisetaceae			
		<i>Equisetum arvense</i>	field horsetail; common horsetail	Y
		<i>Equisetum telmateia</i> ssp. <i>braunii</i>	giant horsetail	Y
GYMNOSPERMS				
	Pinaceae			
		<i>Pinus muricata</i>	Bishop pine; prickly-cone pine; bull pine	Y
		<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas fir	Y
DICOTS				
	Aizoaceae			
		<i>Carpobrotus chilensis</i>	sea fig	N
	Anacardiaceae			
		<i>Toxicodendron diversilobum</i>	poison oak	Y
	Apiaceae			
		<i>Angelica hendersonii</i>	Henderson's angelica	Y
		<i>Conium maculatum</i>	poison hemlock	N
		<i>Daucus pusillus</i>	rattlesnake weed, American wild carrot	Y
		<i>Eryngium armatum</i>	prickly coyote thistle, coastal eryngo	Y
		<i>Heracleum maximum</i>	common cow parsnip	Y
		<i>Sanicula arctopoides</i>	yellow mats, footsteps of spring	Y
		<i>Sanicula crassicaulis</i>	Pacific sanicle, gamble weed, Pacific black snakeroot	Y
	Apocynaceae			
		<i>Vinca major</i>	greater periwinkle, periwinkle	N
	Asteraceae			
		<i>Achillea millefolium</i>	yarrow	Y
		<i>Anaphalis margaritacea</i>	pearly everlasting	Y
		<i>Anisocarpus madioides</i>	woodland madia	Y
		<i>Artemisia douglasiana</i>	mugwort, wormwood, Douglas' sagewort	Y
		<i>Baccharis pilularis</i>	coyote brush	Y
		<i>Baccharis salicifolia</i>	mule-fat	Y
		<i>Bellis perennis</i>	English daisy	N
		<i>Carduus pycnocephalus</i>	Italian thistle	N
		<i>Cirsium quercetorum</i>	brownie thistle	Y
		<i>Cirsium vulgare</i>	bull thistle	N
		<i>Corethrogyne filaginifolia</i> var. <i>californica</i>	California sandaster	Y
		<i>Erigeron glaucus</i>	seaside daisy	Y
		<i>Eriophyllum staechadifolium</i>	lizard tail, seaside golden yarrow, seaside wooly sunflower	Y
		<i>Euchiton japonicus</i>	Japanese cudweed	N
		<i>Gamochaeta ustulata</i>	purple everlasting	Y
		<i>Helenium bolanderi</i>	Bolander's sneezeweed	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Hesperexax sparsiflora</i> var. <i>brevifolia</i>	few-flowered evax	Y
		<i>Hypochaeris glabra</i>	smooth cat's ear	N
		<i>Hypochaeris radicata</i>	rough cat's ear, hairy cat's ear	N
		<i>Lasthenia californica</i> ssp. <i>californica</i>	common goldfields; sunshine	Y
		<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	Y
		<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	Y
		<i>Layia platyglossa</i>	tidy-tips	Y
		<i>Madia sativa</i>	coast tarweed	Y
		<i>Pseudognaphalium stramineum</i>	Chilean cudweed, cottonbatting plant	Y
		<i>Senecio glomeratus</i>	cut-leafed erectites, New Zealand fireweed	N
		<i>Senecio minimus</i>	coastal burnweed	N
		<i>Senecio vulgaris</i>	common groundsel, Old man of spring	N
		<i>Silybum marianum</i>	milk thistle	N
		<i>Soliva sessilis</i>	common soliva, Field burnweed	N
		<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle	N
		<i>Sonchus oleraceus</i>	common sow thistle	N
		<i>Symphyotrichum chilense</i>	california aster	Y
	Boraginaceae			
		<i>Myosotis discolor</i>	Forget me not, changing forget me not	N
		<i>Myosotis latifolia</i>	Broadleaf forget me not, Wide leaved forget me not	N
	Brassicaceae			
		<i>Brassica rapa</i>	field mustard, turnip	N
		<i>Raphanus sativus</i>	wild radish	N
	Cactaceae			
		<i>Opuntia ficus-indica</i>	tuna	N
	Campanulaceae			
		<i>Campanula californica</i>	swamp harebell	Y
	Caprifoliaceae			
		<i>Lonicera hispidula</i>	hairy honeysuckle	Y
	Caryophyllaceae			
		<i>Polycarpon tetraphyllum</i>	four-leaved allseed	N
		<i>Silene gallica</i>	windmill pink, Common catchfly	N
		<i>Spergula arvensis</i> ssp. <i>arvensis</i>	stickwort, sandwort, corn spurry	N
		<i>Stellaria media</i>	common chickweed	N
	Convolvulaceae			
		<i>Calystegia purpurata</i> ssp. <i>purpurata</i>	Purple western morning glory	Y
		<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	Bodega morning-glory	Y
		<i>Dichondra donelliana</i>	California ponysfoot, dichondra	Y
	Crassulaceae			
		<i>Dudleya farinosa</i>	north coast dudleya, Bluff lettuce, Powdery liveforever	Y
	Cucurbitaceae			
		<i>Marah oreganus</i>	coast wild-cucumber; wild cucumber, coast manroot	Y
	Ericaceae			
		<i>Gaultheria shallon</i>	salal	Y
		<i>Vaccinium ovatum</i>	California huckleberry	Y
	Euphorbiaceae			
		<i>Euphorbia lathyris</i>	gopher plant, caper spurge, compass plant	N
	Fabaceae			
		<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish clover, American bird's foot trefoil	Y
		<i>Hosackia gracilis</i>	coastal lotus	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Lathyrus vestitus</i> var. <i>vestitus</i>	common Pacific pea, Hillside pea, Wild sweetpea	Y
		<i>Lotus angustissimus</i>	slender bird's foot trefoil, slender lotus	N
		<i>Lotus corniculatus</i>	bird's-foot trefoil, Birdfoot deervetch	N
		<i>Lupinus arboreus</i>	coastal bush lupine, yellow bush lupine	Y
		<i>Lupinus bicolor</i>	miniature lupine	Y
		<i>Lupinus variicolor</i>	varied lupine, varied-color lupine	Y
		<i>Medicago polymorpha</i>	California burclover, Bur clover, Bur medic	N
		<i>Melilotus indica</i>	sourclover, yellow sweetclover	N
		<i>Trifolium dubium</i>	shamrock, Shamrock clover, Suckling clover	N
		<i>Trifolium hirtum</i>	rose clover	N
		<i>Trifolium wormskioldii</i>	cow's clover, coast clover	Y
		<i>Vicia americana</i> var. <i>americana</i>	American vetch	Y
		<i>Vicia sativa</i>	vetch	N
	Geraniaceae			
		<i>Erodium cicutarium</i>	red-stemmed filaree	N
		<i>Erodium moschatum</i>	white-stem filaree	N
		<i>Geranium dissectum</i>	cut-leaved geranium	N
		<i>Geranium retrorsum</i>	New zealand geranium	N
	Grossulariaceae			
		<i>Ribes sanguineum</i> var. <i>glutinosum</i>	pink-flowering currant	Y
	Hydrophyllaceae			
		<i>Phacelia californica</i>	California phacelia	Y
	Hypericaceae			
		<i>Hypericum anagalloides</i>	tinker's penny	Y
	Lamiaceae			
		<i>Mentha pulegium</i>	pennyroyal	N
		<i>Monardella villosa</i> ssp. <i>villosa</i>	coyote-mint	Y
		<i>Prunella vulgaris</i> var. <i>lanceolata</i>	lance-leaf self-heal	Y
		<i>Stachys rigida</i>	rigid hedge-nettle	Y
		<i>Stachys chamissonis</i>	coast hedge-nettle	Y
	Linaceae			
		<i>Linum bienne</i>	pale flax	N
	Lythraceae			
		<i>Lythrum hyssopifolium</i>	loosestrife	N
	Malvaceae			
		<i>Sidalcea malvaeflora</i> ssp. <i>malvaeflora</i>		Y
		<i>Sidalcea malvaeflora</i> ssp. <i>purpurea</i>	purple checkerbloom	Y
	Myricaceae			
		<i>Morella californica</i>	wax-myrtle	Y
	Onagraceae			
		<i>Clarkia davyi</i>	Davy's clarkia	Y
		<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	willowherb	Y
		<i>Taraxia ovata</i>	goldeneggs, sun cups	Y
	Orobanchaceae			
		<i>Castilleja affinis</i> ssp. <i>affinis</i>	coast Indian paintbrush, Wight's Indian Paint brush	Y
		<i>Castilleja ambigua</i>	johnny nip	Y
		<i>Castilleja wightii</i>	Wight's paintbrush	Y
		<i>Parentucellia viscosa</i>	yellow glandweed, yellow parentucellia	N
		<i>Triphysaria eriantha</i> ssp. <i>rosea</i>	pink butter 'n' eggs, Johnny tuck	Y
		<i>Triphysaria versicolor</i> ssp. <i>versicolor</i>	yellowbeak owl's clover, yellow owl's clover	Y

GROUP	Family	Latin binomial	Common name	Native
	Oxalidaceae			
		<i>Oxalis albicans</i> ssp. <i>pilosa</i>		Y
	Papaveraceae			
		<i>Eschscholzia californica</i>	California poppy	Y
		<i>Platystemon californicus</i>	cream cups	Y
	Phrymaceae			
		<i>Diplacus aurantiacus</i>	sticky monkeyflower	Y
		<i>Erythranthe guttata</i>	common yellow monkeyflower, seep monkey flower	Y
	Plantaginaceae			
		<i>Plantago erecta</i>	California plantain dotseed plantain	Y
		<i>Plantago lanceolata</i>	English plantain, ribwort, ribgrass	N
		<i>Plantago maritima</i>	maritime plantain, seaside plantain, goose tongue	Y
	Plumbaginaceae			
		<i>Armeria maritima</i> ssp. <i>californica</i>	California sea-pink	Y
	Polemoniaceae			
		<i>Navarretia squarrosa</i>	skunkweed	Y
	Polygalaceae			
		<i>Polygala californica</i>	California milkwort	Y
	Polygonaceae			
		<i>Eriogonum latifolium</i>	coast buckwheat	Y
		<i>Rumex acetosella</i>	common sheep sorrel	N
		<i>Rumex crispus</i>	curly dock	N
		<i>Rumex salicifolius</i>	willow dock, willow leaf dock	Y
	Portulacaceae			
		<i>Calandrinia ciliata</i>	red maids	Y
		<i>Claytonia perfoliata</i>	miner's lettuce	Y
	Primulaceae			
		<i>Lysimachia arvensis</i>	scarlet pimpernel, poor man's weathervane	N
	Ranunculaceae			
		<i>Ranunculus californicus</i>	California buttercup	Y
	Rhamnaceae			
		<i>Ceanothus thyrsiflorus</i>	blueblossom	Y
		<i>Frangula purshiana</i>	cascara sagrada, chittum, cascara buckthorn	Y
	Rosaceae			
		<i>Fragaria chiloensis</i>	beach strawberry	Y
		<i>Horkelia californica</i> ssp. <i>californica</i>	California horkelia	Y
		<i>Potentilla anserina</i> ssp. <i>pacifica</i>	Pacific potentilla, silverweed	Y
		<i>Rosa nutkana</i> var. <i>nutkana</i>	Nootka rose	Y
		<i>Rubus parviflorus</i>	thimbleberry	Y
		<i>Rubus ursinus</i>	California blackberry	Y
	Rubiaceae			
		<i>Galium aparine</i>	common bedstraw; cleavers; goose-grass	Y
		<i>Sherardia arvensis</i>	field madder	N
	Salicaceae			
		<i>Salix lasiolepis</i>	arroyo willow	Y
	Saxifragaceae			
		<i>Heuchera micrantha</i>	crevice alumroot	Y
	Scrophulariaceae			
		<i>Myoporum laetum</i>	lollypop Tree, ngaio tree	N
		<i>Scrophularia californica</i>	California figwort, California bee plant	Y

GROUP	Family	Latin binomial	Common name	Native
	Solanaceae			
		<i>Solanum americanum</i>	common nightshade, American nightshade	Y
	Violaceae			
		<i>Viola adunca</i>	western dog violet	Y
MONOCOTS				
		<i>Chlorogalum pomeridianum</i>	amole, soaproot	Y
	Araceae			
		<i>Zantedeschia aethiopica</i>	calla lily, Calla-lily	N
	Cyperaceae			
		<i>Carex gynodynamis</i>	wonder woman sedge	Y
		<i>Carex harfordii</i>	Harford's sedge, Monterey sedge	
		<i>Carex leptopoda</i>	slender footed sedge	Y
		<i>Carex obnupta</i>	slough sedge	Y
		<i>Carex saliniformis</i>	salt sedge, deceiving sedge	Y
		<i>Carex tumulicola</i>	split-awn sedge	Y
		<i>Cyperus eragrostis</i>	tall flatsedge	Y
		<i>Isolepis cernua</i>	low lateral bulrush	Y
	Iridaceae			
		<i>Iris douglasiana</i>	Douglas' iris	Y
		<i>Romulea rosea</i> var. <i>australis</i>	rosy sand crocus, rosy sandcrocus	
		<i>Sisyrinchium bellum</i>	blue-eyed grass	Y
		<i>Sisyrinchium californicum</i>	California golden-eyed grass	Y
	Juncaceae			
		<i>Juncus balticus</i>	Baltic rush, wire rush	Y
		<i>Juncus bolanderi</i>	Bolander's rush	Y
		<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	Y
		<i>Juncus effusus</i>	common bog rush	Y
		<i>Juncus hesperius</i>	coast rush, bog rush	Y
		<i>Juncus patens</i>	common rush	Y
		<i>Juncus phaeocephalus</i> var. <i>phaeocephalus</i>	brown-headed rush	Y
		<i>Luzula comosa</i>	hairy wood rush	Y
	Liliaceae			
		<i>Allium dichlamydeum</i>	coastal onion	Y
		<i>Calochortus tolmiei</i>	pussy ears	Y
	Melanthiaceae			
		<i>Toxicoscordion fremontii</i>	Fremont's death-camas	Y
	Poaceae			
		<i>Agrostis blasdalei</i>	Blasdale's bentgrass	Y
		<i>Agrostis capillaris</i>	colonial bentgrass	N
		<i>Aira caryophyllea</i>	silver European hairgrass, hairgrass	N
		<i>Aira praecox</i>	yellow hairgrass, little hairgrass	N
		<i>Anthoxanthum odoratum</i>	sweet vernal grass	N
		<i>Avena barbata</i>	slender wild oat	N
		<i>Briza maxima</i>	big quaking grass; rattlesnake grass	N
		<i>Briza minor</i>	little quaking grass; quaking grass	N
		<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	Y
		<i>Bromus diandrus</i>	ripgut brome; ripgut	N
		<i>Bromus hordeaceus</i>	soft chess	N
		<i>Bromus madritensis</i>	foxtail chess, foxtail brome, Madrid brome, Spanish brome	N
		<i>Bromus maritimus</i>	seaside brome	Y

GROUP	Family	Latin binomial	Common name	Native
		<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	Y
		<i>Cynosurus echinatus</i>	hedgehog dogtail-grass; annual dogtail-grass	N
		<i>Dactylis glomerata</i>	orchard-grass	N
		<i>Danthonia californica</i>	California oatgrass, wild oatgrass	Y
		<i>Deschampsia cespitosa</i> ssp. <i>holciformis</i>	coastal tufted hair-grass	Y
		<i>Festuca arundinacea</i>	tall fescue, meadow fescue	N
		<i>Festuca bromoides</i>	brome fescue	N
		<i>Festuca myuros</i>	rattail fescue	N
		<i>Festuca perennis</i>	perennial ryegrass, English ryegrass	N
		<i>Holcus lanatus</i>	common velvetgrass	N
		<i>Hordeum brachyantherum</i>	meadow barley	Y
		<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	N
		<i>Hordeum murinum</i>	foxtail barley	N
		<i>Lagurus ovatus</i>	hare's tail	N
		<i>Panicum acuminatum</i> var. <i>acuminatum</i>	western panicum	Y
		<i>Poa annua</i>	annual blue grass	N
		<i>Rytidosperma penicillatum</i>	purple awned wallaby grass; hairy oat grass	N
		<i>Stipa pulchra</i>	purple needle grass	Y
	Ruscacea			
		<i>Maianthemum stellatum</i>	little false-Solomon's-seal	Y
	Themidaceae			
		<i>Brodiaea terrestris</i> ssp. <i>terrestris</i>	dwarf brodiaea	Y
		<i>Triteleia hyacinthina</i>	white brodiaea, wild hyacinth	Y
		<i>Triteleia laxa</i>	Ithuriel's spear	Y

APPENDIX D

Update to the Wetland Delineation and Botanical Survey Reports for the Fort Ross Cultural Trail Project,
William Maslach, California State Parks

UPDATE TO THE WETLAND DELINEATION AND BOTANICAL SURVEY REPORTS FOR THE FORT ROSS CULTURAL TRAIL PROJECT

**FORT ROSS STATE HISTORIC PARK
FORT BRAGG
MENDOCINO COUNTY, CALIFORNIA**

August 17, 2020

PREPARED FOR:

Sam Frazier
Construction Supervisor II
Northern Service Center
California State Parks

PREPARED BY:

William Maslach
Senior Park and Recreation Specialist
Sonoma-Mendocino Coast District
California State Parks
(707) 937-5805
bill.maslach@parks.ca.gov

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Summary

State Parks conducted a wetland delineation in June and July 2020 in areas where the Fort Ross Cultural Trail was recently rerouted. This report summarizes the wetlands occurring in the project area as defined by the Clean Water Act (“three-parameter wetlands”) and the California Coastal Act (“one-parameter wetlands”).

Two environmental reports for the project have been done previously: one addressing botanical and vegetation and another addressing wetlands and streams. These reports were used as reference during the study. While conducting the delineation, changes were made to two vegetation communities based on a preponderance of diagnostic species. These changes were made after a discussion and concurrence with the author of the previous botanical study.

One-parameter wetlands were identified in the hydrology report but they were naturally problematic as they occurred outside of the normal wet season, did not reference the botanical report, and the vegetation generally did not coincide with that identified in the botanical resources report. From the results of this study and the previous botanical report, one-parameter wetlands were identified in the rerouted trail areas as well as all other areas throughout the entire project.

A geospatial layer of the data was produced for analysis in GIS. This data identifies the location of wetlands and special-status natural communities and can be used for analyzing any potential or direct impacts of the project on these resources.

1 Background

1.1 Purpose

State Parks has changed the original location of the Cultural Trail several times in order to avoid environmental impacts. State Parks hired the environmental consulting firm ECORP to complete a wetland delineation of the original trail design and a subsequent reroute. The third and most recent trail reroute did not occur within the boundaries of previous wetland delineations. The purpose of this report is to provide an update to the delineated wetlands in the Cultural Trail project area due to changes in the trail route. To reduce project costs, State Parks completed the wetland delineation in-house.

1.2 Scope

While the scope of this study was to delineate wetlands in and adjacent to the trail reroute, it also addressed portions of the previous wetland delineations conducted by ECORP (Draft, No Date) in 2018 and 2020 as well and the botanical resources inventory in 2018 (Spade Natural Resources Consulting, SNRC). The vegetation map (also, *natural communities* map) was used as reference to describe the hydrophytic vegetation communities in the project area.

Referencing these documents was necessary to understand how the consultants described the environmental conditions of the project area. Where there were discrepancies in previous and current environmental conditions, they were re-evaluated and disclosed. Thus, the scope of updating the wetland delineation increased to updating the vegetation map.

This report does not make calculations of wetland and upland areas.

2 Methods

2.1 Wetlands

A wetland delineation was conducted by William Maslach on June 25 and July 16 2020 to determine the presence or absence of wetlands and other waters in or adjacent to the study area. The previous aquatic resources report (ECORP, Draft – No Date) was used for reference as it contained wetland determination data forms, published wetland inventoried, soil data, and other useful information.

Each of the three wetland parameters (hydrophytic vegetation, hydric soils, and hydrology) were investigated in a wetland delineation according to federal standards (Environmental Laboratory 1987, USACE 2010).

2.1.1 Hydrophytic Vegetation

The indicator status assigned to a species designates the probability of that species occurring in a wetland. A species with an indicator of OBL, FACW, or FAC is considered to be typically adapted for life in a wetland (hydrophytic vegetation). A species indicator of FACU and UPL signifies an upland species (Table 1). For species reviewed but given no regional indicator (NI) or species with no known occurrence in the region at the time the list was compiled (NO), the indicator status assigned to the species in the nearest adjacent region is applied. If the species is listed but no adjacent regional indicator is assigned, the species is not used to calculate hydrophytic vegetation indicators. In general, species that are not listed on the wetland plant list are assumed to be upland (UPL) species. If however, it is believed that FAC, NI, NO, or unlisted plant species are functioning as hydrophytes on a particular site, certain procedures outlined in the Regional Supplement (USACE 2010) can be used.

Table 1. Wetland Indicator Status Groups

Wetland Indicator Status	Definition
Obligate Wetland (OBL)	Almost always occur in wetlands
Facultative Wetland (FACW)	Usually occur in wetlands, but may occur in non-wetlands
Facultative (FAC)	Occur in wetlands or non-wetlands
Facultative Upland (FACU)	Usually occur in non-wetlands, but may occur in wetlands
Obligate Upland (UPL)	Almost never occur in wetlands
No Indicator (NI)	Reviewed but given no regional indicator
Not Occurrence (NO)	No known occurrence in the region at the time the list was compiled

To the greatest extent possibly, vegetation is classified using the vegetation classification of alliances in Manual of California Vegetation (Sawyer et al. 2009). Each species' wetland indicator status was identified on the most recent list of hydrophytic plants (USACE 2018) and if there was a concentration of hydrophytic plants in any area, this was noted and further study recommended. Hydric vegetation is the predominant indicator that warrants further study for a wetland delineation.

Vegetation communities described in the Botanical Survey Report for Fort Ross Cultural Trail (SNRC 2018) were used, in part, during this survey to determine the extent of upland or hydrophytic plant communities.

2.1.2 Hydric Soils

The Natural Resource Conservation Service defines a hydric soil as: "... a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." (Federal Register 1994.) Soils formed over long periods of time under wetland (anaerobic) conditions sometimes possess characteristics that indicate they meet the definition of hydric soils.

Soil maps as well as other published data were used from ECORP (No Date).

2.1.3 Wetland Hydrology

Wetland hydrology is a term which encompasses hydrologic characteristics of areas that are periodically inundated or saturated within 12 inches of the surface at some time during the growing season. Recorded data can be used when available to determine wetland hydrology. Recorded data showing inundation or saturation within 12 inches of the surface for a minimum of five percent of the growing season (approximately 14 days) is considered evidence of wetland hydrology. When studies are conducted at a time of year when surface water, ground water, or saturated soils cannot be observed, evidence of wetland hydrology is based on observation of the hydrologic indicators described in the Regional Supplement (USACE 2010). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, surface sediment deposits, and drift lines, or indirect indicators (secondary indicators), such as oxidized root channels, algal mats, or geomorphic position. If indirect or secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The study area examined was examined for primary and secondary hydrologic indicators during the field visits. Special attention was given to evaluating the indicators because the survey was during the dry season, i.e. when indicators (primary and secondary) are typically not present.

2.2 Natural Communities

While the natural communities (SNRC 2018) were used to aid the mapping of hydrophytic vegetation, some of the polygons were augmented during this survey. Polygon boundaries were updated based on the dominant plant species.



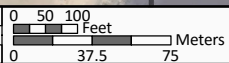
Legend

- Original Study Area for Hydric Resources by ECORP
- Subsequent Study Area for Hydric Resources by ECORP
- Current Study Area for Wetland Delineation by State Parks

SCALE: 1:3,600 1 in = 300 ft

DATE: 8/11/2020

DRAWN: Maslach



Study Area - Updated Wetland Delineation 2020 Fort Ross Cultural Trail Reroute - Fort Ross State Historic Park

NOTES: NAIP Imagery from 2018.

Fig. 1



3 Results

3.1 Wetlands

SNRC (2018) previously described and mapped the vegetation communities for the Fort Ross Cultural Trail project area. Table 2 below describes which of these vegetation communities are considered, at the least, one-parameter wetlands based on the dominant or codominant plant's indicator status in the National Wetland Plant List (USACE 2018).

Table 2. Vegetation Communities with Hydrophytic Vegetation. Vegetation communities in the project area that were mapped by SNRC (2018) and have hydrophytic vegetation are listed below.

Vegetation/Rare Plant Name	MCV2 Vegetation Alliance	Species Contributing to Wetland Determination	Wetland Indicator Status
Pacific reedgrass meadow	Calamagrostis nutkaensis Herbaceous Alliance	<i>Calamagrostis nutkaensis</i>	FACW
Tufted hair grass meadow	Deschampsia cespitosa Herb Alliance	<i>Deschampsia cespitosa</i>	FACW
Baltic rush marsh	Juncus balticus Herbaceous Alliance	<i>Juncus balticus</i>	FACW
Soft rush marsh	Juncus effusus Herbaceous Alliance	<i>Juncus effusus</i>	FACW
Sweet vernal/tufted hairgrass wet meadow	A. odoratum - D. cespitosa Wet Meadow	<i>D. cespitosa</i>	FACW
Coyote thistle seep	Eryngium armatum Seep	<i>Eryngium armatum</i>	FACW
Slough sedge sward	Carex obnupta Herbaceous Alliance	<i>Carex obnupta</i>	OBL
California goldfields flower field	Lasthenia californica Herb Alliance	<i>Eryngium armatum</i> (codominant species)	FACW

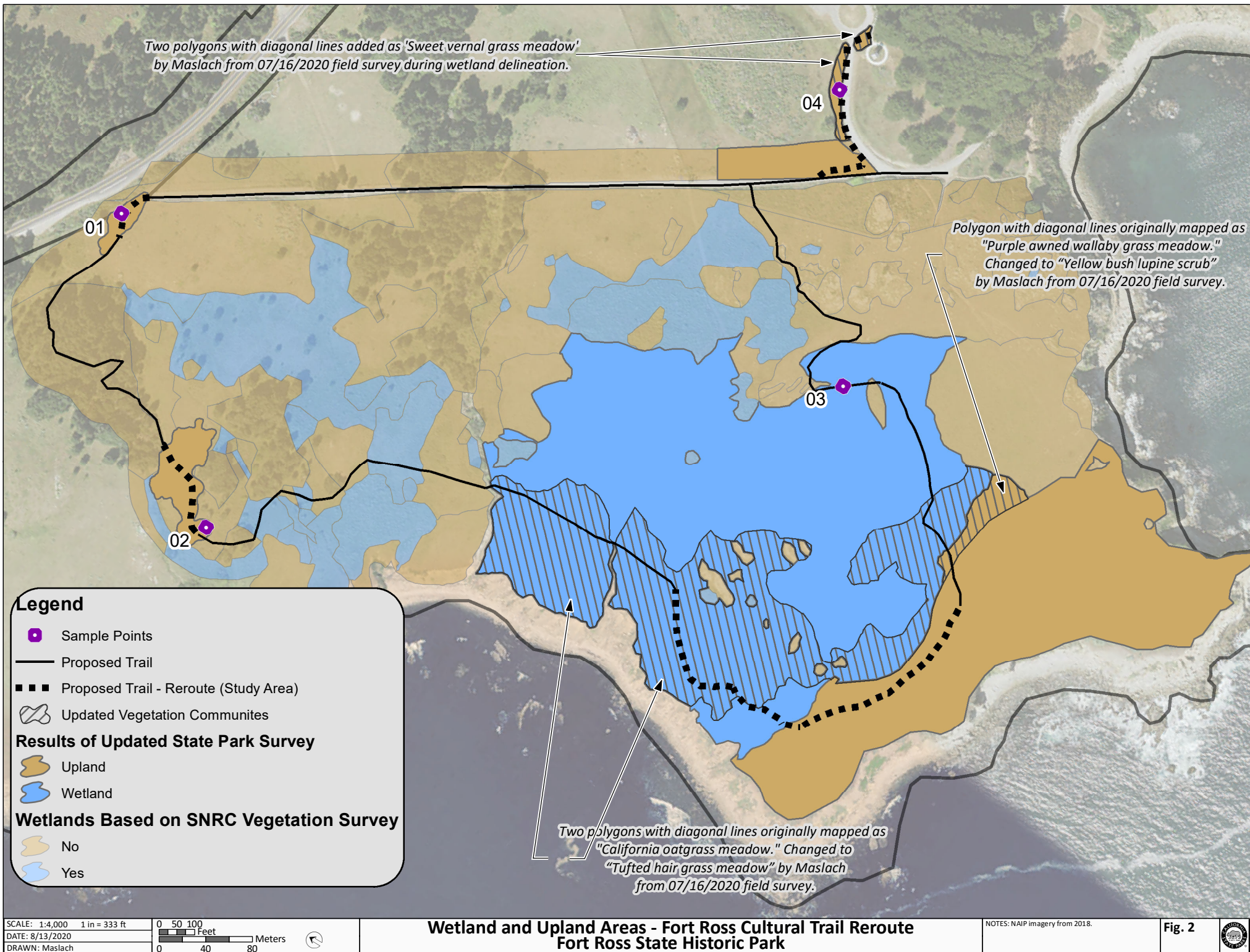
Wetlands were identified using two methods: 1. routine wetland delineation using data from a soil pit (three parameters) and 2. using previous vegetation mapping (one parameter). The second approach was used to identify wetlands based on hydrophytic vegetation outside of the study area as well to expand vegetation polygons within the study area where a sample point had hydrophytic vegetation. In other words, if one of the 6-foot radius wetland vegetation sample points was within one of the previously-mapped hydrophytic vegetation communities in Table 2, the boundary of that vegetation community was used to represent an extension of the vegetation results from the 6-foot radius sample point.

Four wetland sample points were taken in the new trail reroute areas; one was a wetland and the others were uplands (Table 3, Figure 2).

Table 3. Summary of Wetland Delineation Data Sheets.

Sample Point	Hydrological Feature	Coastal Act	Clean Water Act	Hydrophytic Vegetation	Hydric Soil	Hydrology
01	None – Upland	Not a Wetland	Not a Wetland	No	No	No
02	None – Upland	Not a Wetland	Not a Wetland	No	No	No
03	Wet Meadow	Wetland	Wetland	Yes	Yes	Yes
04	None – Upland	Not a Wetland	Not a Wetland	No	No	No

An explanation of the three wetland parameter follows.



3.1.1 Hydrophytic Vegetation

Only sample point #03 had hydrophytic vegetation. The vegetation in the 6-foot radius sample plot #03 was predominantly tufted hair grass (*Deschampsia caespitosa*), a hydrophytic plant. The predominance of this species corresponded to the previous mapping by SNRC, it did not correspond to the vegetation of the wetland sample point (#101) by ECORP. Because it corresponded with the vegetation survey, the extent of the boundaries mapped by SNRC were used to draw the perimeter of this wetland. The boundaries of the tufted hair grass meadow were mapped with a GPS.

Based on a predominance of tufted hair grass, the western boundary of this vegetation was expanded from the SNRC mapping. It was previously mapped as an upland and was changed during this survey to a wetland. Further explanation of this is in Section 3.2, Natural Communities.

3.1.2 Hydric Soils

The soil map unit name for sample point #03 is “Rohnerville loam, 0-9 % slopes.” While not listed as a hydric soil, distinct redox concentrations occurring as soft masses were present (See Figure. 3).

3.1.1 Wetland Hydrology

The California Aquatic Resources Inventory (CARI), as presented in ECORP’s report, has mapped a depressional seasonal natural emergent wetland 175 feet upslope from sample point #03. This wetland corresponds to the Pacific reedgrass meadow as mapped by SNRC.

Sample point #03 was examined for indicators of hydrology during July, which is naturally problematic since it is during the dry season. However, oxidized rhizospheres along living roots occurred and are a primary indicator of hydrology. Other primary indicators, surface water and saturation, were predictably not visible but likely occur during the wet season. Additionally, I have visited this site numerous times during the wet season and have seen saturated soils, ponding, and surface water.

Secondary indicators (“drainage patterns,” “saturation visible on aerial imagery,” and “geomorphic position”) were not evaluated but potentially occur. A 2018 aerial photo taken during February shows drainage patterns in the old furrows on the terrace. The wet meadow also corresponds to a break in slope in the terrace where water seeps to the surface, and it is downslope of the wetland identified by the California Aquatic Resources Inventory.



Figure 3. Soil from Sample Point 03. Redoximorphic features occurring as distinct soft masses and oxidized rhizospheres along living roots were indicators of hydric soil and hydrology, respectively.

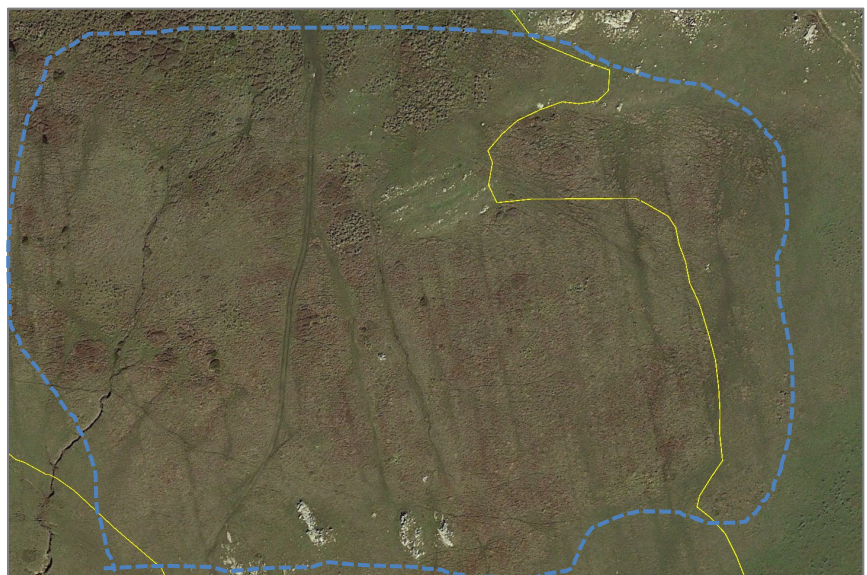


Figure 4. February 14, 2018 Aerial Photo of Wet Meadow. A Google Earth aerial photo during the wettest season on the year shows drainage patterns along field furrows. Blue line roughly estimates areas of hydrophytic vegetation. Yellow line is proposed trail.

3.2 Natural Communities

While mapping the westernmost boundary of the tufted hair grass meadow associated with sample point #03, I noticed a dominance of tufted hair grass where SNRC had mapped the vegetation as California oatgrass meadow. After discussion with Asa Spade (2020), who had originally mapped the site, we concurred that the hierarchical key in Classification of the Vegetation Alliances and Associations of Sonoma County, California, supports the classification of areas with both *Deschampsia* and *Danthonia californica* as “Deschampsia grassland.”

Figure 2 shows the polygons that were changed from “California oatgrass meadow” to “Tufted hair grass meadow.” A small portion of vegetation that was mapped as “California oatgrass meadow” by SNRC was changed to “Yellow bush lupine scrub” during this survey.

3.3 GIS Data

GIS data is provided electronically. It includes one layer, “FOROCulturalTrailVeg2020”, and listed below are the fields in the attribute table along with a description.

- AllianceCo – Common name of the vegetation alliance, also called natural community. This is either an established name in Sawyer et al., (2009) or the name given by SNRC (2018).
- AllianceSci – Scientific name of the vegetation alliance, also called natural community. This is either an established name in Sawyer et al., and if not, it is indicated as such.
- SNROrigNa – This is the common name of the vegetation alliance, also called natural community, originally given by SNRC (2018). This field is useful because it corresponds to the names of the vegetation communities in *Botanical Survey Report for Fort Ross Cultural Trail* (SNRC 2018).
- SNROrigSci – This is the scientific name of the vegetation alliance, also called natural community, originally given by SNRC (2018). This field is useful because it corresponds to the names of the vegetation communities in *Botanical Survey Report for Fort Ross Cultural Trail* (SNRC 2018).
- Rarity – This refers to the Natural Heritage State and Global Ranks as assigned by CDFW (2019). This field is useful for identifying those natural communities that may be considered sensitive under CEQA. If the natural community had no status, “NL” (*not listed*) was indicated.
- Wetland – This field indicates if the vegetation community polygon is or is not a wetland. Essentially, the field contains the same data as the field “WL_CCC.”
- WL_ACOE – This field indicates if the vegetation community polygon is or is not a wetland as defined by the Clean Water Act—that is, if it is tested positive for all three wetland parameters described by the Army Corps of Engineers (ACOE).
- WL_CCC – This field indicates if the vegetation community polygon is or is not a wetland as defined by the Coastal Act—that is, if it is tested positive for at least one wetland parameter described by the Army Corps of Engineers (ACOE).
- ESHA – This field indicates whether or not the vegetation community would be considered as an Environmentally Sensitive Habitat Area by Sonoma County’s Local Coastal Program, which is approved by the California Coastal Commission. Any polygon that is an ESHA requires a 50- and 100-foot buffer. When the proposed project is within either or both of these buffers, an explanation of the least environmentally impacting alternative, including mitigation, is required.
- Notes – Information about the source of the field data.

4 Discussion

The results of this study document a significant increase of wetlands in the project area. While the previous hydrology report did not capture the full extent of wetland vegetation, it was disclosed in the previous botanical report. Additionally, it likely was not shown on working drawings; it seems only the rare plant polygons were displayed on the project maps.

The one wetland identified during this study had all three parameters of a wetland: hydrophytic vegetation, hydric soil, and primary and secondary indicators of hydrology. However, the potential for overestimating this three-parameter wetland exists because the results of the sample pit (#03 on Figure 2) were extrapolated to the boundary of the vegetation polygon previously mapped in the botanical report. If the boundaries of this three-parameter wetland were overestimated, it would nonetheless be at least a one-parameter wetland based on vegetation (a predominance of tufted hair grass, *Deschampsia caespitosa*, a species with a wetland indicator of More sample points would identify the

As the final environmental document is being prepared for CEQA review, special-status natural communities, rare plants, and wetlands (CCC and ACOE) will need to be documented and analyzed for potential impacts. The updated GIS layer, "FOROCulturalTrailVeg2020", will aid in this analysis.

Additionally, the previous botanical report estimated numbers of rare plants and numbers of plants impacted by the trail. Since the trail has been rerouted, new estimates of individuals of rare plants will need to be calculated using the formulae in the botanical report.

5 References

California Department of Fish and Wildlife (CDFW). November 8, 2019. California Natural Community List. Website: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>

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Appendix A

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross Cultural Trail City/County: Fort Ross / Sonoma County Sampling Date: 06/25/2020
 Applicant/Owner: California State Parks State: CA Sampling Point: 01
 Investigator(s): William Maslach Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 15
 Subregion (LRR): LRR-A Lat: -123.2526 Long: 38.5193 Datum: NAD 83
 Soil Map Unit Name: Kneeland loam, 15 - 30% slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: Normal hydrologic conditions not present as survey occurred on June 25. Conditions were dry, although the area is upland (no indicators) so not problematic. Site is grazed but not significantly altering vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ r = _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ 0 (A) Total Number of Dominant Species Across All Strata: _____ 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ 0 (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: _____ r = _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Herb Stratum (Plot size: _____ r = 6')				
1. <u>Cynosorus echinatus</u>	20	Yes	NL	
2. <u>Aira caryophyllea</u>	25	Yes	FACU	
3. <u>Hypochaeris radicata</u>	20	Yes	FACU	
4. <u>Plantago lanceolata</u>	15	No	FACU	
5. <u>Rytidosperma penicillatum</u>	10	No	NL	
6. <u>Festuca bromoides</u>	10	No	NL	
7. <u>Rubus ursinus</u>	5	No	FACU	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____ r = _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____	_____	_____	_____	
% Bare Ground in Herb Stratum _____				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks:				

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	5YR 3/1-2	100	none				loam	same as previous WL delineation

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross Cultural Trail City/County: Fort Ross / Sonoma County Sampling Date: 06/25/2020
 Applicant/Owner: California State Parks State: CA Sampling Point: 02
 Investigator(s): William Maslach Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 5
 Subregion (LRR): LRR-A Lat: 477781.9037 Long: 477781.9037 Datum: NAD 83
 Soil Map Unit Name: Rohnerville loam, 0 - 9% slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: Conditions were dry, although the area has no wetland indicators so not problematic. Site is grazed but not significantly altering vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ r = _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: _____ r = _____) <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____ r = 6') <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Cynosorus echinatus</u>	<u>3</u>	<u>No</u>	<u>NL</u>	
2. <u>Anthoxanthum odoratum</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Hypochaeris radicata</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
4. <u>Plantago lanceolata</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rytidosperma penicillatum</u>	<u>50</u>	<u>Yes</u>	<u>NL</u>	
6. <u>Holcus lanatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>Iris douglasiana</u>	<u>20</u>	<u>Yes</u>	<u>NL</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____ r = _____) <div style="text-align: right;">102 = Total Cover 50% = 51.0 20% = 20.4</div>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____ <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				
Remarks: Vegetation polygon for sample point extends throughout flat meadow with Rytidosperma penicillatum, Iris douglasiana, Plantago lanceolata with some Rubus ursinus, Holcus lanatus, Anthoxanthum odoratum with occasional Baccharis pilularis, and polygon extends to the edges of wet swales where hydrophytic vegetation increases due to topography.				

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15	7.5YR 2.5/1	100	none				loam	same as previous WL delineation

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Flat meadow with some topographic depressions.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross Cultural Trail City/County: Fort Ross / Sonoma County Sampling Date: 07/16/2020
 Applicant/Owner: California State Parks State: CA Sampling Point: 03
 Investigator(s): William Maslach Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace slope Local relief (concave, convex, none): linear/concave Slope (%): _____
 Subregion (LRR): LRR-A Lat: 478169.8904 Long: 478169.8904 Datum: NAD 83
 Soil Map Unit Name: Rohnerville loam, 0 - 9% slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks: Hydrology is problematic because the survey was done during the dry season (July 16th). From previous visits, areas within this polygon were saturated. The presence of hydrophytic vegetation and hydric soils strongly supports the presence of hydrology. Site is grazed but not significantly altering vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ r = _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: _____ r = _____) <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: _____ r = 6') <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Deschampsia caespitosa</u>	<u>55</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Holcus lanatus</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>Rubus ursinus</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Plantago lanceolata</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rytidosperma penicillatum</u>	<u>2</u>	<u>No</u>	<u>NL</u>	
6. <u>Anthoxanthum odoratum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____ r = _____) <div style="text-align: right;">87 = Total Cover 50% = 43.5 20% = 17.4</div>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____ <div style="text-align: right;">0 = Total Cover 50% = 0.0 20% = 0.0</div>				
Remarks: This sample point was used to characterize a large area based on <i>D. caespitosa</i> . Presence of <i>Eryngium armatum</i> --a plant with an 'obligate' status--nearby strongly supports classification of this vegetation as hydrophytic.				

SOIL

Sampling Point: **03**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-15	7.5YR 2.5/1	100	none	4	C	M	same matrix as previous WL delineation
							however >2% distinct redox
							concentrations as soft masses

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

none to bore hole from 15-17"

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Flat meadow with some topographic depressions. July is not appropriate for determining hydrology; however, some small oxidized rhizospheres along living roots were present. Additionally, reference to past visits showed saturation and surface water.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Fort Ross Cultural Trail City/County: Fort Ross / Sonoma County Sampling Date: 07/16/2020
 Applicant/Owner: California State Parks State: CA Sampling Point: 04
 Investigator(s): William Maslach Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): LRR-A Lat: 478384.7751 Long: 478384.7751 Datum: NAD 83
 Soil Map Unit Name: Rohnerville loam, 0 - 9% slopes NWI classification: _____

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

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: Typical hydrological conditions not present as survey occurred on July 16. Conditions were dry, although the area is upland with no wetland indicators-not problematic. Site is mowed but does not obscure vegetation.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ r = _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ 0 (A) Total Number of Dominant Species Across All Strata: _____ 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ 0 (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: _____ r = _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ 0 FACW species _____ x 2 = _____ 0 FAC species _____ x 3 = _____ 0 FACU species _____ x 4 = _____ 0 UPL species _____ x 5 = _____ 0 Column Totals: _____ 0 (A) _____ 0 (B) Prevalence Index = B/A = _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: _____ r = 6')				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Erygium armatum</u>	10	No	FACW	
2. <u>Anthoxanthum odoratum</u>	50	Yes	FACU	
3. <u>Hypochaeris radicata</u>	3	No	FACU	
4. <u>Plantago lanceolata</u>	15	No	FACU	
5. <u>Rytidosperma penicillatum</u>	20	Yes	NL	
6. <u>Holcus lanatus</u>	3	No	FAC	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____ r = _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____				
Remarks: Upland vegetation along the side of the road.				

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except |
| <input type="checkbox"/> High Water Table (A2) | MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes _____ No ☒ Depth (inches): _____

Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B

Study Area Photographs



Figure A-1. Sample Point 01. Photo and soil pit dug on 06/25/2020. Upland area with no wetland indicators. Vegetation community is *Anthoxanthum odoratum* Semi-Natural Herb Alliance.

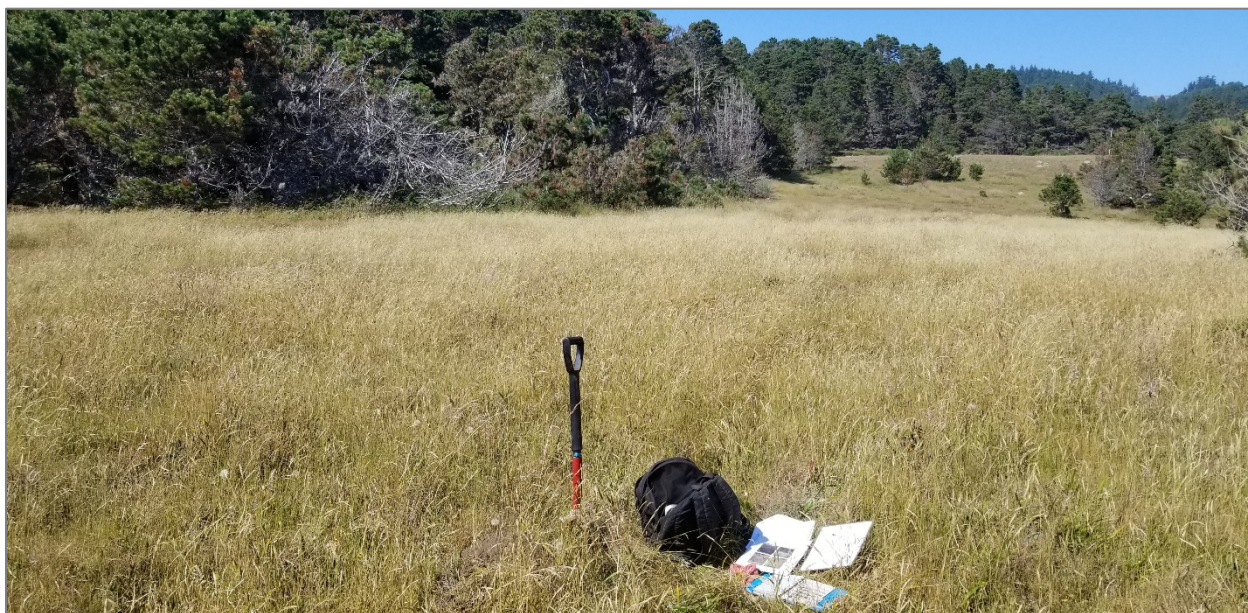


Figure A-2. Sample Point 02. Photo and soil pit dug on 06/25/2020. Upland area with no wetland indicators. Vegetation community is *Anthoxanthum odoratum* Semi-Natural Herb Alliance.



Figure A-3. Sample Point 03. Photo and soil pit dug on 07/16/2020. Wetland with all three wetland indicators. Vegetation community is *Deschampsia cespitosa* Herb Alliance (S4?).



Figure A-4. Sample Point 04. Photo and soil pit dug on 07/16/2020. Upland area with no wetland indicators. Vegetation community is *Anthoxanthum odoratum* Semi-Natural Herb Alliance.

APPENDIX E

CONFIDENTIAL REPORT – Archaeological Survey and Site Boundary Testing for the Kashia Loop Trail, Fort Ross State Historic Park, Sonoma County, California

Appendix E is not provided with this document due to confidentiality

APPENDIX F

Project Fuel Consumption, ECORP Consulting, Inc. 2020

Proposed Project
Total Construction-Related and Operational
Gasoline Usage

Action	Carbon Dioxide Equivalents (CO ₂ e) in Metric Tons	Conversion of Metric Tons to Kilograms	Construction Equipment Emission Factor ¹	Total Gallons of Fuel Consumed
Project Construction	64.9	64900	10.15	6,394
	Per CalEEMod Output Files.		Per Climate Registry Equation 13e	

Total Gallons Consumed During Project Construction: 6,394

Notes:

¹Fuel used by all construction equipment, including vehicle hauling trucks, assumed to be diesel.

Sources:

Climate Registry. 2016. *General Reporting Protocol for the Voluntary Reporting Program version 2.1*. January 2016.
<http://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf>

ECORP Consulting. 2020. Air Quality & Greenhouse Gas Impact Analysis for the Fort Ross Cultural Trail Project

Total Gallons During Project Operations

Area	Sub-Area	Cal. Year	Season	Veh_tech	EMFAC AC2007 Category	Fuel_GAS	Fuel_DSL	Daily Total	ANNUAL TOTAL
Sub-Areas	Sonoma	2021	Annual	All Vehicles	All Vehicles	3.32	0.752	4.072	1486.28

Sources:

California Air Resource Board. 2017. EMFAC2017 Mobile Emissions Model.

APPENDIX G

Emissions Modeling Outputs, ECORP Consulting, Inc. 2020

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

Fort Ross Cultural Trail

Sonoma-North Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	75
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	290	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - The current PGE CO2 intensity factor is 290 lb/Mwh.

Land Use - 1.25 mi. of new trail plus cultural stops. Additional area included to account for all soil disturbance.

Construction Phase - The Project consists of site preparation and grading, anticipated to occur over several months.

Vehicle Trips - Institute of Transportation Engineers' 9th Edition Trip Generation Manual- State Parks generate 0.65 trips per acre daily. 100% primary trips & trip length is to nearest City- Santa Rosa.

Energy Use -

Solid Waste - 15 lbs. of trash per day is anticipated to be generated by trail use. 15 lbs./day * 365 days= 5475 lbs/ year = 2.7 tons/yr.

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	3168
tblConstructionPhase	NumDays	4.00	43.00
tblConstructionPhase	NumDays	2.00	45.00
tblGrading	AcresOfGrading	16.13	1.50
tblGrading	AcresOfGrading	22.50	1.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	2.70
tblVehicleTrips	HO_TL	0.00	45.00
tblVehicleTrips	HO_TTP	0.00	100.00
tblVehicleTrips	HS_TL	0.00	45.00
tblVehicleTrips	HW_TL	0.00	45.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	0.02
tblVehicleTrips	SU_TR	0.00	0.02
tblVehicleTrips	WD_TR	0.00	0.02

2.0 Emissions Summary

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0649	0.7017	0.3222	7.3000e-004	0.2213	0.0310	0.2523	0.1198	0.0285	0.1483	0.0000	64.4233	64.4233	0.0197	0.0000	64.9167
Maximum	0.0649	0.7017	0.3222	7.3000e-004	0.2213	0.0310	0.2523	0.1198	0.0285	0.1483	0.0000	64.4233	64.4233	0.0197	0.0000	64.9167

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0649	0.7017	0.3222	7.3000e-004	0.2213	0.0310	0.2523	0.1198	0.0285	0.1483	0.0000	64.4232	64.4232	0.0197	0.0000	64.9166
Maximum	0.0649	0.7017	0.3222	7.3000e-004	0.2213	0.0310	0.2523	0.1198	0.0285	0.1483	0.0000	64.4232	64.4232	0.0197	0.0000	64.9166

[illegible]

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	0.5892	0.5892
2	6-1-2021	8-31-2021	0.1682	0.1682
		Highest	0.5892	0.5892

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.4700e-003	0.0105	0.0277	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.0000	9.3933	9.3933	3.3000e-004	0.0000	9.4015
Waste						0.0000	0.0000		0.0000	0.0000	0.5481	0.0000	0.5481	0.0324	0.0000	1.3578
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.8900e-003	0.0105	0.0283	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.5481	9.3945	9.9426	0.0327	0.0000	10.7606

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.4700e-003	0.0105	0.0277	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.0000	9.3933	9.3933	3.3000e-004	0.0000	9.4015
Waste						0.0000	0.0000		0.0000	0.0000	0.5481	0.0000	0.5481	0.0324	0.0000	1.3578
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.8900e-003	0.0105	0.0283	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.5481	9.3945	9.9426	0.0327	0.0000	10.7606

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	4/30/2021	5	45	
2	Grading	Grading	5/1/2021	6/30/2021	5	43	

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

Acres of Grading (Site Preparation Phase): 1**Acres of Grading (Grading Phase): 1.5****Acres of Paving: 1.61****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

3.2 Site Preparation - 2021**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1191	0.0000	0.1191	0.0652	0.0000	0.0652	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.3920	0.1701	3.9000e-004		0.0172	0.0172		0.0158	0.0158	0.0000	34.0164	34.0164	0.0110	0.0000	34.2914
Total	0.0350	0.3920	0.1701	3.9000e-004	0.1191	0.0172	0.1363	0.0652	0.0158	0.0811	0.0000	34.0164	34.0164	0.0110	0.0000	34.2914

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	8.2000e-004	8.1800e-003	2.0000e-005	2.2000e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9340	1.9340	6.0000e-005	0.0000	1.9356
Total	1.1200e-003	8.2000e-004	8.1800e-003	2.0000e-005	2.2000e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9340	1.9340	6.0000e-005	0.0000	1.9356

Fort Ross Cultural Trail - Sonoma-North Coast County, Annual

3.2 Site Preparation - 2021**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1191	0.0000	0.1191	0.0652	0.0000	0.0652	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.3920	0.1701	3.9000e-004		0.0172	0.0172		0.0158	0.0158	0.0000	34.0163	34.0163	0.0110	0.0000	34.2914
Total	0.0350	0.3920	0.1701	3.9000e-004	0.1191	0.0172	0.1363	0.0652	0.0158	0.0811	0.0000	34.0163	34.0163	0.0110	0.0000	34.2914

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	8.2000e-004	8.1800e-003	2.0000e-005	2.2000e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9340	1.9340	6.0000e-005	0.0000	1.9356
Total	1.1200e-003	8.2000e-004	8.1800e-003	2.0000e-005	2.2000e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9340	1.9340	6.0000e-005	0.0000	1.9356

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3.3 Grading - 2021**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0979	0.0000	0.0979	0.0535	0.0000	0.0535	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3081	0.1361	3.0000e-004		0.0137	0.0137		0.0126	0.0126	0.0000	26.6249	26.6249	8.6100e-003	0.0000	26.8401
Total	0.0277	0.3081	0.1361	3.0000e-004	0.0979	0.0137	0.1116	0.0535	0.0126	0.0661	0.0000	26.6249	26.6249	8.6100e-003	0.0000	26.8401

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	7.9000e-004	7.8200e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.8481	1.8481	6.0000e-005	0.0000	1.8496
Total	1.0700e-003	7.9000e-004	7.8200e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.8481	1.8481	6.0000e-005	0.0000	1.8496

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3.3 Grading - 2021**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0979	0.0000	0.0979	0.0535	0.0000	0.0535	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3081	0.1361	3.0000e-004		0.0137	0.0137		0.0126	0.0126	0.0000	26.6248	26.6248	8.6100e-003	0.0000	26.8401
Total	0.0277	0.3081	0.1361	3.0000e-004	0.0979	0.0137	0.1116	0.0535	0.0126	0.0661	0.0000	26.6248	26.6248	8.6100e-003	0.0000	26.8401

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	7.9000e-004	7.8200e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.8481	1.8481	6.0000e-005	0.0000	1.8496
Total	1.0700e-003	7.9000e-004	7.8200e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1100e-003	5.6000e-004	1.0000e-005	5.7000e-004	0.0000	1.8481	1.8481	6.0000e-005	0.0000	1.8496

4.0 Operational Detail - Mobile

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4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4700e-003	0.0105	0.0277	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.0000	9.3933	9.3933	3.3000e-004	0.0000	9.4015
Unmitigated	1.4700e-003	0.0105	0.0277	1.0000e-004	8.5100e-003	1.0000e-004	8.6100e-003	2.2900e-003	1.0000e-004	2.3900e-003	0.0000	9.3933	9.3933	3.3000e-004	0.0000	9.4015

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	1.40	1.40	1.40	22,932	22,932
Total	1.40	1.40	1.40	22,932	22,932

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

[illegible]

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5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Mitigated

[illegible]

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003
Unmitigated	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.8400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003
Total	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003

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6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.8400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003
Total	6.4200e-003	1.0000e-005	6.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2500e-003	1.2500e-003	0.0000	0.0000	1.3300e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.5481	0.0324	0.0000	1.3578
Unmitigated	0.5481	0.0324	0.0000	1.3578

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	2.7	0.5481	0.0324	0.0000	1.3578
Total		0.5481	0.0324	0.0000	1.3578

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	2.7	0.5481	0.0324	0.0000	1.3578
Total		0.5481	0.0324	0.0000	1.3578

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

APPENDIX H

Roadway Construction Noise Model, ECORP Consulting, Inc. 2020

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 9/16/2020
Case Description: Site Preparation

Description **Land Use**
 Visitor Center Commercial

Description			Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		658	0
Dozer	No	40		81.7	658	0
Backhoe	No	40		77.6	658	0

Calculated (dBA)

Equipment	*Lmax	Leq
Grader	62.6	58.6
Dozer	59.3	55.3
Backhoe	55.2	51.2
Total	62.6	60.8

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

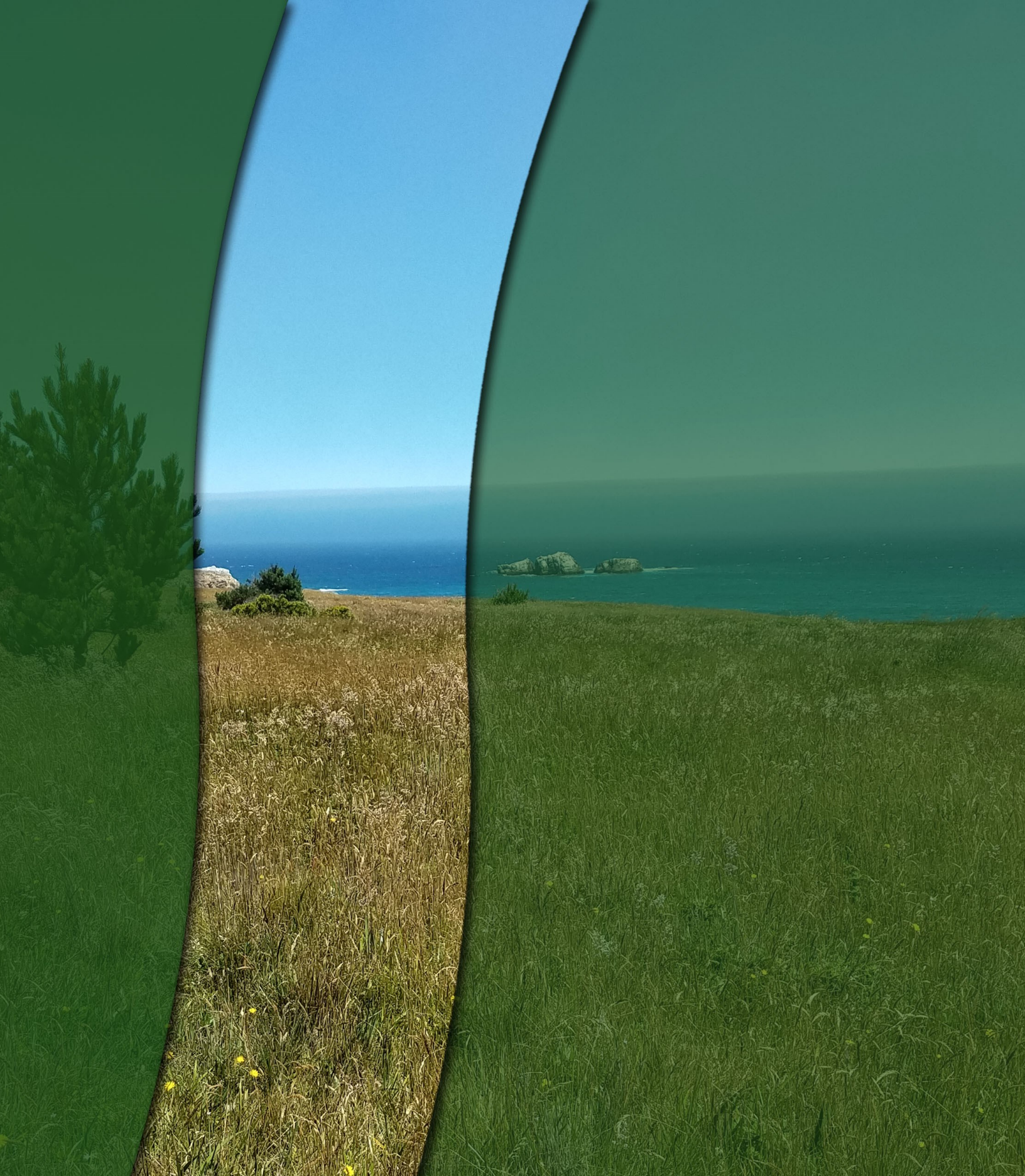
Report date: 9/16/2020
Case Description: Grading

Description **Land Use**
 Visitor Center Commercial

Description			Equipment			
	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		658	0
Dozer	No	40		81.7	658	0
Backhoe	No	40		77.6	658	0

Results			
Calculated (dBA)			
Equipment	*Lmax	Leq	
Grader	62.6	58.6	
Dozer	59.3	55.3	
Backhoe	55.2	51.2	
Total	62.6	60.8	

*Calculated Lmax is the Loudest value.



www.ecorpconsulting.com

REDLANDS, CA
(909) 307 0046
SAN DIEGO, CA

ROCKLIN, CA
(916) 782 9100
CHICO, CA
(530) 805 2585

SANTA ANA, CA
(714) 648 0630
SANTA FE, NM
(714) 222 5932