

BOTANICAL SURVEY INTERIM REPORT

**Survey of Special Status Native
Plant Populations and
Sensitive Natural Communities**



APN: 314-131-073

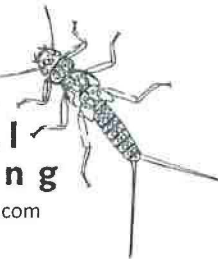
Kneeland, Humboldt County, CA

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Date Prepared:

June 14th, 2022

Legal description: Portions of section 21 of T4N, R2E, H.B. &M.
APN: 314-131-073
USGS 7.5' Quad: laqua Buttes (4012368)
Dates of survey: April 29th, 2022 and June 11th, 2022
Surveyed by: Sarah Mason
Field survey effort: 5 hours
Results: **No CRPR 1 or 2 plants were observed**

Project Description and Methods

A botanical field survey, with special focus on sensitive and special status plant species and sensitive natural communities, was completed by Sarah Mason on April 29th, 2022 and June 11th, 2022 within Project Area.

The request for this botanical survey was a result from a *permit modification*. A *permit modification* is an application process. A complete application for a *permit modification* to add an approximately 1,000,000-gallon rainwater catchment pond required a “[b]otanical survey, seasonally appropriate (springtime floristic surveys), and explicitly conducted in and around the area proposed to be disturbed by the proposed pond.”

The botanical field was completed as a measure to assess biological habitat, quality, presence of sensitive and special status species and sensitive communities and the impacts associated with the development of the proposed 1,000,000-gallon rainwater catchment pond.

Prior to conducting the field surveys, the following database information was reviewed to determine the location and types of botanical resources that possibly exist in the survey area. This pre-field investigation included searches of the California Natural Diversity Database (CNDDB, 2021) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS, 2021). This list includes CRPR (California Rare Plant Rank) 1 and 2 plants that have been observed within a 9-quadrangle search centered on the laqua Buttes quadrangle. USGS quadrangles within the search area include: Arcata South (4012471), Hydesville (4012451), laqua Buttes (4012368), Korb (4012378), Mad River Buttes (4012367), Maple Creek (4012377), McWhinney Creek (4012461), and Owl Creek (4012358).

Botanical Field Survey and Habitat Investigation

The botanical field survey for this project was completed by Sarah Mason. Sarah holds a BS in Botany from Humboldt State University. Sarah has worked as an assistant botanist and biologist with Caltrans, as a Botanical Technician for the Klamath and Bitterroot National Forests, and is currently working towards receiving her MSc in Biology with a concentration in bumblebee ecology. Sarah has experience in rare plant identification, protection and monitoring of rare plants, and teaching plant taxonomy at the university level.

Surveys were floristic in nature and conducted in a manner consistent with the Protocols for *Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). Plants were identified to the lowest taxonomic level necessary to ensure that they were not a species of concern. Plants not identifiable in the field were identified off site with the use of The Jepson Manual, Vascular Plants of California. Other resources used to identify plants can be found in the reference section towards the end of this report.

Brief Summary of Result and Recommendations

No sensitive species or habitats were encountered during the field surveys of the proposed 1,000,000-gallon rainwater catchment pond Project Area. Since no sensitive species or sensitive habitats were found within the project area, no further botanical surveys are recommended before ground-disturbing activities commence.

Interim Report Disclaimer

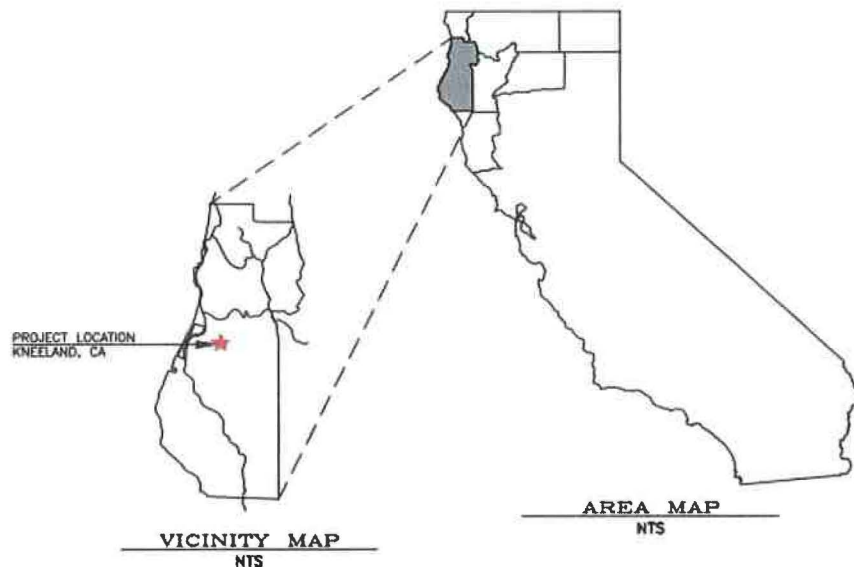
This document is an interim report describing the Botanical Survey that was performed at the proposed 1,000,000-gallon rainwater catchment pond Project Area. A complete and more thorough report will be provided to the client within 60 days of the associated site visit. For more immediate information regarding this project, please contact Naiad Biological Consulting at naiadbiological@gmail.com

BIOLOGICAL RESOURCE ASSESSMENT

Catch-A-Cloud Farms, LLC; Kneeland, California

Humboldt County APN #314-131-073

11 October, 2018



Iris Koski, Tributary Biological Consultants

PREPARED FOR TRINITY VALLEY CONSULTING ENGINEERS

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i. Abbreviations Defined:

AC: Activity Center

ACE: Areas of Conservation Emphasis

AMM's: Avoidance and Mitigation Measures

BRA: Biological Resource Assessment

BAA: Biological Assessment Area

CALFIRE: California Department of Forestry and Fire Prevention

CCLUO: Commercial Cannabis Land Use Ordinance

CDFA: California Department of Food and Agriculture

CDFW: California Department of Fish and Wildlife

CEQA: California Environmental Quality Act

CESA: California Endangered Species Act

CH: Critical Habitat

CNDDDB: California Natural Diversity Database

CNPS: California Native Plant Society

CWA: Clean Water Act

CWHR: California Wildlife Habitat Relationship

DPS: Distinct Population Segment

EC: Erosion Control

EPM: Environmental Protection Measure

ESU: Evolutionarily Significant Unit

FESA: Federal Endangered Species Act

IUCN: International Union for the Conservation of Nature

LLR: Land Resource Region

LSAA: Lake and Streambed Alteration Agreement

LWD: Large Woody Debris

MBTA: Migratory Bird Treaty Act

NHD: National Hydrology Dataset

NRCS: Natural Resources Conservation Service

NSO: Northern Spotted Owl

NSP: Nonpoint Source Pollution

POD: Point of Diversion

RPF: Registered Professional Forester

RRR: Retirement, Remediation, Relocation

SMA: Streamside Management Area

SSC: Species of Special Concern

THP: Timber Harvest Plan

TMDL: Total maximum daily load

TPZ: Timberland Production Zone

USACE: US Army Corps of Engineers

USGS: United States Geological Survey

VM: Vegetation Management

WLPZ: Watercourse and Lake Protection Zone

WOTUS: Waters of the United States

WRPP: Water Resource Protection Plan

WSS: Web Soil Survey

1. INTRODUCTION

The purpose of this document is to assess the range of possible effects of a commercial cannabis operation upon sensitive species and habitats on a rural property in northwestern California. The Biological Assessment Area (BAA), Humboldt County APN # 314-131-073, Section 16 SW, Township 04N, Range 02 East, is a 40-acre parcel owned by Carter and Aria Cox of Catch a Cloud, LLC. A Tier II, One-acre cannabis cultivation license is sought by the applicants. The California Department of Fish and Wildlife (CDFW) and California Department of Food and Agriculture (CDFA) require that each cultivation applicant conduct full Biological Resource Assessment (BRA) that analyzes the potential impacts of this operation upon biological resources. The purpose of this document is to inventory the biological resources present or potentially present onsite, assess the potential impacts, and offer mitigation strategies to prevent incidental take at individual and population levels. It is anticipated that it will be used by any concerned agencies or departments for the purposes of forming a biological opinion regarding the cannabis permit application.

CEQA (California Environmental Quality Act) designates Humboldt County as the lead agency guiding project implementation, in cooperation with jurisdictional authority from other agencies. This document is written pursuant to the Humboldt County Commercial Cannabis Land Use Ordinance (CCLUO) Version 2.0 Ordinance Number 2599, released in summer of 2018.

Land use conversions in northern California associated with cannabis farming have been linked to a wide range of ecological effects. The widespread conversion of timberland and ranches to cannabis production areas have resulted in forest fragmentation, increased sediment delivery into waterways, significant stream and spring diversions in already-depleted river systems, and various forms of pollution that are harmful to natural and human communities.

The Cox BAA is situated within a biologically diverse area that supports numerous special status wildlife and plant species as well as habitat types. A suite of species in the immediate area have been identified via field visits and available databases and documentation with the potential to occur within the BAA or in its

range of impact. Potential threats to these species or their habitats resultant of any phase of this cannabis cultivation project are evaluated. Each ecological threat is assigned a corresponding EPM (Environmental Protection Measure). An EPM is intended to mitigate activities which may result in deleterious environmental impacts.

The Cox property will require significant road, stream crossing, spillway and culvert modifications to come into compliance with CDFW, County of Humboldt Building and Planning Department, State and North Coast Regional Water Quality Control Board (RWQCB), California Department of Forestry and Fire Protection (CalFIRE), and US Army Corps of Engineers (USACE). Multiple road points, stream crossings, culverts, and points of diversion require engineering to reinstate structure and function. Significant remediation will be required at various sites throughout the property to restore channel connectivity, bank stability, seasonal flow regimes, and road integrity. Although temporary, the ground-disturbing nature of these activities may have effects upon the immediate BAA as well as downstream waterways, particularly in respects to potential sediment delivery into Waters of the State and US. Ground disturbance has the potential to increase the colonization of invasive species onsite.

2. REGIONAL SETTING AND BIOLOGICAL ASSESSMENT AREA

2.1 Regional setting

The BAA is located in Kneeland, a ridgetop community with a few hundred residents located in the Coast Ranges above the Humboldt Bay. The area is predominantly privately owned, consisting of commercial timberlands (>70%), ranches and residential properties. The area is drained by Freshwater Creek, a 31-square mile watershed with a terminus in Ryan Slough north of Eureka. The watershed is characterized by exposed, prairie-dominated ridgelines abutted by steep drainages and dense forests. The Cox parcel is located on Barry Ridge, which runs east-west and an average elevation of 2,600 feet. The area is an ecotone of

maritime and Mediterranean climates, receiving significant coastal fog and temperature buffering associated with coastal areas, yet also experiencing sunnier, drier conditions due to its abruptly higher elevation and steep river valleys.

2.2 Land use history

The Freshwater Creek and Kneeland areas have long been significant for human populations in the region. The area was a well-used hunting and gathering ground for both the Wiyot on the coast and the Athabascan tribes to the east (Rich 2017). Various tribes in the area utilized a complex trail network throughout these mountains and ridgelines that connected villages and facilitated access to game, fish, and plant resources. Arriving European settlers continued the use of these existing indigenous travel corridors. During the mid to late 1800's, the Kneeland and Barry Ridge area were stops on a well-used route of travel, known as the "Trail from Humboldt to Trinity" (Rich 2017).

The Kneeland prairies and oak savannas were historically managed with the use of prescribed fire by both indigenous and ranching communities. Indigenous people would light low-intensity, high-frequency burns along the ridgelines that enhanced certain forest compositions and preferred food species. Later, European settlers continued the practice of intentional burning to maintain grasslands for pastured animals. These burning regimes had the effect of maintaining open oak savannas while preventing the conifer-dominated, even-aged forest compositions and heavy fuel loads now prevalent today throughout the Freshwater Creek watershed.

The Freshwater Creek watershed has experienced heavy logging beginning in the mid 1800's and continuing to the present. Almost the entirety of the watershed had been clearcut by the 1950's, with significant second-growth logging occurring on private timberlands to the present day. Hundreds of miles of roads, as well as railroads, have been constructed throughout the watershed to support these timber extraction activities.

The BAA was once part of a massive, 640 square mile ranch that became increasingly subdivided over time to its current 40 acres. Aerial photos dated in the mid-20th century show that the ranch was being farmed for hay and grazed for cattle stretching from the timberline up to the top of Barry Ridge. While use of the BAA by indigenous people is presumed, the extent of indigenous activity within what is now the current property boundary is unknown. A 2017 cultural resources study (Rich) of the BAA identified no cultural or archaeological resources on the property pursuant to CEQA 15064.5 (a).

The complex land use history of Kneeland and Freshwater Creek areas have contributed to the conditions now observed today. Timber extraction and other land conversion activities have cumulatively contributed to the nonpoint source sediment (NPS) load in Freshwater Creek and its tributaries. Some impacts of increased NPS include detrimental effects on salmonids, decreasing stability of soils and slopes, infiltrated domestic and agricultural water supplies, as well as increases in flooding and property damage. Freshwater Creek was listed under the Clean Water Act (CWA) Section 303 by the NCRWQB and the US Environmental Protection Agency (EPA) as a “sediment-impaired water body” (Weppner et al. 2008).

In Freshwater Creek and across the region anthropogenic activities resulting in NPS into watersheds have had particularly severe impacts upon historically strong anadromous fish populations (Pacific Watershed Associates 2012). Historic and current sources of watershed sedimentation are road construction, timber harvest, development, agriculture, mining, and, more recently, cannabis farming. These sediments make conditions inhospitable for anadromous fish by altering the biota of the food chain, clogging their gills, filling in interstitial spaces in their spawning gravel, and inhibiting their feeding efficiency (NOAA 2004).

Roads and road-related landslides deliver up to 88% of the management-related sediment load into Freshwater Creek (Glass 2003). More than 400 miles of roads were mapped in the Freshwater Creek watershed, with additional yearly road construction occurring at about 4.3 miles per year (PWA 2006). Historically, periods of heavy road construction have coincided with an increase in average total maximum daily loads (TMDL) into Freshwater Creek.

2.3 Current Conditions

The BAA is zoned U (Unclassified); the dominant landcover types on the parcel are second-growth mixed-conifer as well as oak woodland. The current homesite, outdoor cultivation area, greenhouse areas, and surrounding firesafe zones were cleared, graded and constructed from the 1980's and onward by Carter Cox without the required CalFIRE permit (14 CCR 1104.1(a)). A retroactive permit was obtained and fines have been paid to CalFIRE to redress for a <3-acre conversion. The total conversion area to date amounts to 1.51 acres.

Three impoundments onsite store the water necessary for the property (and are also utilized by CalFIRE for regional fire suppression efforts). Two instream impoundments in a class III watercourse have a combined storage capacity of 1.5 million gallons and were constructed from the 1980's to the early 2,000's. A third 0.14-acre impoundment is located above Freshwater Creek, connected via spillway and fed by a spring that supplies domestic use (400 gallons/day, pumped uphill to the homesite). This impoundment is thought to have existed since the 1930's or 1940's, when the area was first heavily logged.

A Retirement, Remediation and Relocation (RRR) plan pursuant to Humboldt County CMMLUO Ordinance number 2559 was implemented in 2017 to clean a historic guerilla cannabis cultivation area on the property. The abandoned cultivation site was located on the north side of Freshwater Creek and appeared to be conducted in a low-impact, dispersed manner beneath the canopy of the forest and with minimal ground disturbance. The refuse associated with the old grow was removed, and the area appears to have returned to an undisturbed site.

2.4 Physical site characteristics

The BAA traverses a steep drainage, beginning at the top of Barry Ridge, dropping into Freshwater Creek, and back up the other side. Slopes on the property range from moderate (about 30%) to steep (>65%). The parcel has multiple class I, II, and III watercourses onsite.

Soils in the upper reaches of the Freshwater Creek watershed consist primarily of Franciscan Central Belt, Wildcat, and Yager formations (USGS, Glass 2007). Components of these formations are unstable in nature, resulting in rapid hillslope erosion (Glass 2007). The streambed in this reach of upper Freshwater Creek (Class I) is characterized by steep banks, a highly constricted channel that is largely bound by bedrock.

2.5 Biological site characteristics

A variety of habitat types are found on the Cox property. **Figure 1** shows the habitat types onsite using the CalVeg CWHR (California Wildlife Habitat Relationship) spatial data.

The southern, ridgetop portion of the property is prairie and grassland. Moving down the ridge, there is a sizeable white oak woodland (*Quercus garryana*). This is a California habitat of Special Concern.

The lower, northern portion of the property is mixed conifer-hardwood forest and riparian woodland. The dominant species are second-growth Douglas fir (*Pseudotsuga mezesii*) and redwood (*Sequoia sempervirens*), tan oak (*Notholithocarpus densiflorus*), California bay laurel (*Umbellularia californica*), and red alder (*Alnus rubra*) along Freshwater Creek. There are numerous wet areas on the property with associated vegetation alliances such as horsetail (*Equisetum arvense*) and Western coltsfoot (*Petasites frigida*). Riparian and wet area habitats are also California habitats of Special Concern.

Figure 1. Natural communities of the BAA and vicinity.



LEGEND

FRESHWATER CREEK

PARCEL BOUNDARY

VEGETATION TYPE

ANNUAL GRASS

BARREN

DOUGLAS FIR

MONTANE HARDWOOD-CONIFER

MONTANE HARDWOOD

TOPOGRAPHIC CONTOURS IN FEET

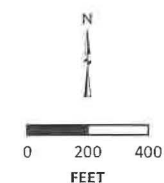


IMAGE SOURCE: GOOGLE EARTH, DATED 5/26/2016; PARCEL DATA SOURCE: COUNTY OF HUMBOLDT GIS, 2018; VEGETATION DATA SOURCE: U.S. FOREST SERVICE, DATED 1/18/2018; ELEVATION DATA SOURCE: USGS, 2013
 SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP

Landcover Type

May 2018

CARTER AND ARIA COX
 APN: 314-131-073
 BIOLOGICAL ASSESSMENT REPORT
 1001 BARRY ROAD
 KNEELAND, CA 95549

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3. PROJECT IMPACTS AND MITIGATION MEASURES

3.1 Environmental Protection Measures

For each potential impact identified within the scope of this project, a corresponding environmental protection measure (EPM) is supplied that is designed to mitigate these impacts. These EPM's are derived from mitigation measures specified in the CCLUO and by other jurisdictional agencies. The full list of mitigation measures and corresponding EPM's created for this analysis are listed in Table 1. A thorough assessment of the impacts of this proposed cannabis operation upon biological and water resources is required. CDFW is the lead agency to ensure that species protected under the California Endangered Species Act (CESA) set forth by 21000 of CEQA. Aquatic protection requirements are set forth by NCRWQB Order number R1-2015-0023 for Tier 2 qualifications.

The existing conditions of several road points throughout the BAA must be remediated in accordance with NCRWQCB and CDFW. A correction plan is proposed to adjust culverts and spillways pursuant to CDFW Lake and Streambed Alteration Agreement (LSAA) 1602. Significant engineering and ground disturbance will be necessary to restore structure and function of these roads and watercourses. Mitigation will necessary to prevent sediment transport into the watercourses. The full mitigation plan for this project is included in **Appendix 1**. BMP's for discharges into SMA's and are referenced in this document.

A mitigation and monitoring plan is proposed to address the 1.51-acre conversion pursuant to Section 55.4.10 (j) of the Humboldt County Commercial Land Use Ordinance (CCLUO). This plan mitigates for previously unauthorized timberland conversion onsite. Per the recommendations of a registered professional forester (RPF), the mitigation plan sets forth guidelines for bringing the site into compliance with the California Forest Practices Act. The mitigation plan describes the Watercourse and Lake Protection Zones (WLPZ) on the BAA, as required in Section 916.4 of the CCLUO. The plan establishes buffers for WLPZ protections.

Table 1. Environmental Protection Measures and Mitigation Descriptions.

CCLUO	EPM	Mitigation Description
3.4-1f	BIO-1	Construction activities that require vegetation removal will be planned to occur outside of bird nesting season (1 March- 15 August).
3.4-1f	BIO-2	If construction activities occur during raptor and migratory bird nesting season (1 February-31 August) a qualified biologist will conduct a pre-construction survey in areas of planned disturbance (vegetation removal, trenching, directional drilling, road construction). Bird nests will be given a 100-foot buffer and raptor nests will be given a 500-foot buffer.
3.4-1e	BIO-3	Impacts to Northern spotted owl (NSO) will be assessed. If NSO activity centers are found in the site or within auditory or visual disturbance range, 2 year of USFS protocol-level surveys will be conducted. Nests within 1.3 miles of development activities will be documented and potential risk of disturbance will be evaluated. Removal of old-growth habitat will be prohibited.
3.4-1g	BIO-2	Impacts to marbled murrelets will be assessed. If murrelets are found to be present within 0.25 miles, a protective buffer will be established around active nests. No project activity may occur within the buffer area until the breeding season ends (6 August).
3.4-1g 3.4-1j	BIO-4	A biologist will conduct surveys for denning mammals any appropriate habitat before vegetation removal or site development. Any dens or roosts found will be protected by a 400-foot buffer.
3.4-1k	BIO-9	Pre-construction bat survey.
3.4-1c	BIO-5	A biologist will conduct surveys for amphibians or Western pond turtles in any SMA's within 200 feet of proposed development or disturbance. If special status amphibians/turtles are found, development will be moved to no less than 400 feet from the SMA.
3.4-1h	BIO-6	Ambient light and noise pollution shall be minimized. Structures that emit light shall be blocked to prevent light escapement in hours of natural darkness. Noise will not exceed 50 decibels at the property line or will not be greater than ambient noise. Generators will not supply greater than 20% of the cultivation site's overall energy demands.
3.4-3a	BIO-7	Rare plants surveys will be conducted throughout the BAA, with particular emphasis on areas that will be disturbed or influenced by construction or cultivation.
3.4-4	BIO-8	Storage ponds and tanks as well as standing water on the property will be searched for signs of invasive American bullfrogs.

3.4-4	SMA-1	All site development will occur with setbacks set forth by the SMA buffer. This buffer will be established based upon habitat sensitivity, slope, and potential impacts.
3.4-4	SMA-2	All activities near the SMA will minimize erosion, sedimentation, runoff, and other pollution. BMP's described in NCRWCB's Order R1-2015-0023 shall be followed to prevent impacts to SMA and to sensitive aquatic species.
3.4-4	SMA-3	In-channel construction and modification will be limited to minimum level required to support restoration success. Maximum vegetation will be preserved to retain bank stability and canopy cover.
3.4-4	SMA-4	In-channel work will be restricted to the dry season (15 June-15 October).
3.4-4	BMP-1	Spoil sites will be set back 100 feet from the SMA to reduce runoff into watercourses or wetlands. If precipitation is expected, spoils will be appropriately covered.
3.4-4	BMP-2	Silt fencing and wattles will be installed along riparian banks and around construction zones to prevent sediment from infiltrating into watercourse.
3.4-4	WEED-1	Project personnel and contractors will be trained noxious and invasive weed identification to avoid spread of weeds from site to site. All gravel, fill, and other materials will be derived from certified weed-free sources.
3.4-4	CHEM-1	No chemical pollutants in the form of pesticides or herbicides, or fertilizers shall be permitted to run off to measurable levels. Only products meeting full approval of CDFA testing standards will be used.
3.8-5	FLOW-1	Cultivators will forbear from diversions of Surface Water for Irrigation during periods of low or reduced stream flows, in accordance with requirements of the State Water Resources Control Board.

3.2 Remediation and Rehabilitation

The process of road and stream crossing repair has the potential to increase sediment transport into the watershed in the short term (Weaver et al. 2015). At each remediation site, the amount of grading, fill removal, and vegetation removal will be limited to the minimum amount necessary to support remediation efforts (SMA-3). The channel re-construction will result in temporary reductions in

riparian vegetation and canopy in the SMA. Given the small area of disturbance at each site (<.01 acres), the impacts upon the watershed will be less than significant.

Construction will occur during the dry season from August 15 to October 15 (SMA-4). Construction will occur after the end of nesting bird season (BIO-1). All areas under construction will be thoroughly surveyed for amphibians (BIO-5). A monitor will be present for those areas where water is actively flowing or if the channel is wetted.

The disturbed areas will be thoroughly surveyed for rare or special status plants (BIO-7). For all areas under construction in the SMA, BMP's shall be applied to each site. Spoils piles will be set back 100 feet from the SMA (BMP-1) and erosion control measures such as silt fencing and wattles will prevent runoff into the SMA. Contractors conducting the restoration will be trained on invasive species identification and will take care not to spread them between work sites (WEED-1).

All identified locations are to be (a) remediated, (b) mitigated, and (c) monitored. The full mitigation and monitoring plan is included in **Appendix 1**. **Appendix 6** describes Avoidance and Minimization Measures (AMM's) set forth by the RWQCB. The ground-disturbing nature of the proposed remediation projects could have potential impacts upon the watercourses downslope from the construction and cultivation areas. Therefore, best management practices (BMP's) and monitoring are set forth that will minimize these impacts. These BMP's will reduce sedimentation into watercourses, protect sensitive species and habitats, and prevent the spread of invasive species.

3.3 Road Points Stream Crossings, Culverts and Spillways.

Pursuant to requirements by CDFW, RWQCB and CAL FIRE, corrective remediation must occur at various road points. Ten road points (RP) that are currently not compliant with Forest Practice Rules (14 CCR 923.5) or with NCRWQCB Order Number R1-2015-0023 will be mitigated. These violations have occurred over decades resultant of the land use history on the property and compounded by weather events and fluvial and geomorphological processes.

Per North Coast RWQCB Order Number R1-2015-0023 Provision 1B, seven locations (two spillways and five culverts) require remediation in Class II and Class III watercourses. These spillways and culverts are undersized and require

properly rated replacements. A Tier 2 Surface Water Correction Workplan will be submitted to the NCRWQCB for the remediation of a total of .02 acres total disturbed area. These culvert and spillway replacements will require ground disturbance and some vegetation removal. BMP's will be applied during and after the construction phase (BMP-1, BMP-2).

3.4 Points of Diversion and Impoundments

RWQCB Order Number R1-2015-0023-DWQ sets forth requirements for cannabis cultivation that create standards for water quality, diversion, impoundments, and instream flows. These standards are designed to protect natural flow regimes. Below are the points of diversion (POD) and impoundments that are currently in use on the Cox property:

POD #1:

Per State Water Codes sections 5100 and 1200, the applicants will obtain a Water Appropriation for domestic use for this diversion at a rate no greater than the rate of water flowing into the pond. This will minimize impacts upon the adjacent receiving pond and native amphibian populations, if found. Applicants will forbear diversion beyond 400 gallons per day during the dry season (May 15 to October 15). POD #1 is located is a springbox within a seep in an excavated cutbank. This gravity feeds a 1,250-gallon storage tank, with an additional 500-gallon open overflow trough. A 1.5" PVC pipe connects this overflow to an impoundment, which has been created over decades by this diversion, and is now a 0.14-acre ponded area. This impoundment is located above Freshwater Creek and is connected via spillway.

POD # 2:

Per State Water Codes sections 5100 and 1200, this impoundment supplies 100,000 gallons per year for cannabis cultivation and 30,000 gallons per year for general lawn, garden and orchard irrigation. A class III watercourse diverts water into two hydrologically connected rainwater catchment impoundments which together total 1.5 million gallons and .44 acres. This is then fed back into the class III watercourse via spillway. The impoundments feed two 1,000 gallon tanks associated with cannabis cultivation activities and are also

utilized by CALFIRE and USFS for fire suppression efforts (filling helicopter buckets).

Biological recommendations:

Per requirements described by the State Water Resources Control Board, the Cox parcel will forbear from surface water diversions for irrigation during periods of low or reduced stream flows (CCLUO 3.3-5; FLOW-1). These surface water diversions will occur at or below the allotted rates, and will be withdrawn only from permitted impoundments and POD.

These impoundments and adjacent watercourses are part of the streamside management area (SMA). Within these water bodies, multiple large egg masses were observed during field visits during April and May of 2018 (Photo 3). An amphibian survey will be completed to determine presence of species of special concern (SSC) (BIO-5). Surveys for the American Bullfrog will be conducted to ensure that they are not occupying the impounded diversion area and competing with native amphibian population (BIO-8). As required by the LSA Agreement, the open, 500-gallon trough (Photo 8) will be covered to avoid entrapment of amphibians or other animals.

4. METHODS

4.1 Field Observations

Field observations were gathered on the site over a period of multiple visits. Habitat data were gathered by a qualified biologist with more than ten years of experience surveying for various taxa in this region. Visits were timed to capture maximal biodiversity onsite in respects to animal denning, bird migration and nesting, and inflorescence for vegetation. Slopes were assessed using a Suunto PM-5/360 PC Clinometer.

Wildlife habitat suitability was assessed onsite. All bird species observed aurally or visually were recorded. Trees, standing dead snags, and grassland areas throughout the property were scanned for signs of nests or nest construction. The

area was searched for signs of mammal activity, denning and roosting. Standing water was sampled with a dip net for amphibians and egg masses.

4.2 Agency Consult

CDFW, CalFIRE, USACE, and the California State Water Board and NCRWQB were consulted throughout the process of this Biological Assessment. A field visit with CDFW and State waterboard personnel occurred in April of 2018 and a site visit with USACE personnel occurred in July of 2018.

4.3 Database and Document Review

Potential biological resources and species of special concern within the project area were analyzed using available databases and documentation. The California Natural Diversity Database (CNDDDB) was queried for all occurrences of special status species within the nine-quad area of the BAA. The BIOS Rarefind function was used to map exact distances and locations of species of with likelihood to occur in the BAA. Species listed as Threatened or Endangered under either the federal (FESA) or California (CESA) endangered species act were included. The Spotted Owl Data Viewer was used to find exact locations of nearest spotted owl Activity Centers (AC's) and Critical Habitat (CH). Plant species of special concern were assigned threat levels using the California Native Plant Society (CNPS) ranking system.

Based upon these vegetation and site characteristics, the California Wildlife Habitat Relationship (CWHR) and CalVeg spatial data provide an assemblage of corresponding animal species that these habitat types generally support. **Figure 1** depicts CWHR habitat types on the property. Those species that are likely or potentially found on the BAA and have special status at either state or federal levels, or are otherwise of concern locally, are discussed in detail in Section 6.

NatureServe was queried to obtain the G rank (global conservation status) and S rank (subnational status) of each species. Further information on G and S ranking system is in **Appendix B**. Habitat was classified using the CWHR system. Hydrology was assessed using the United States Geological Survey (USGS) National Hydrology Dataset (NHD). Soils were classified using the Munsell soil

color chart in the field, and cross referenced with the Web Soil Survey (WSS) available via the Natural Resource Conservation Service (NRCS). Any available documentation available about the property such as timber harvest plans and other surveyor and landowner reports, were considered for this biological assessment.

5 SURVEYS REQUIRED FOR SPECIAL STATUS WILDLIFE, PLANTS AND HABITATS

A suite of animal and plant species and habitats with special status that have some likelihood to occur onsite according to the CNDDDB, CWHR, and CNPS data must be given additional consideration. These special species and the ways in which this project could impact them are identified and discussed. Surveys for sensitive species that may be required based upon their likelihood of occurrence and potential impacts in the BAA are described in **Table 2**.

When conducting CEQA analysis, CESA requires state agencies to consult CDFW to ensure that actions of the lead agency do not harm state-listed species or their habitats. Any projects with potential to jeopardize these species or habitats must be analyzed and a determination must be made by CDFW. In addition to species listed as threatened or endangered at state or federal levels, CDFW has developed a list of “Species of Special Concern” (SSC) that includes species whose populations, reproduction, or habitat may be declining.

Table 2 below provides the biological surveys that are likely relevant to this parcel based upon habitat types, observed stand structure, and species occurrences in the CNDDDB.

Table 2. Biological Surveys required.

CCLUO Section Number	Survey Type	Method	Timing	EPM
3.4-1a	Biological Reconnaissance	Using available databases such as CNDDDB, CNPS and IPAC, a master list of species of concern for scoping of the BAA will be generated.	Any time of year, prior to biological surveys.	N/A

3.4 1b	Special-status amphibian	Search all impacted areas within 200 feet of SMA or identified wet areas for special-status amphibians.	Any time; within 7 days of construction or vegetation removal.	BIO-5, SMA-2
3.4 1c	Western pond turtle	A biologist will search all impacted areas within 200 feet of SMA or areas with standing water for Western pond turtles.	Any time; within 7 days of construction or vegetation removal.	BIO-5
3.4 1d	Nesting raptor	A 500-foot buffer around construction area will be searched for signs of raptor nesting or roosting.	1 March-15 August, within 7 days of construction.	BIO-2
3.4 1e	Northern spotted owl	If NSO activity centers are within 0.7 miles of the BAA, two years of protocol-level surveys (USFWS 2012) will be conducted by a qualified biologist.	Two consecutive years; six visits total, spaced at least 1 week apart (1 March-31 July). 3 surveys must occur before 30 June.	BIO-3
3.4 1f	Special-status nesting bird	Areas scheduled for construction or vegetation removal will be thoroughly searched for active nests.	1 March-31 August, no more than two weeks prior to disturbance.	BIO-2
3.4 1g	Marbled murrelet habitat suitability	Habitat structure will be assessed by a qualified murrelet biologist for appropriate stand structure and size. If appropriate habitat is identified, area within 0.25 miles will be searched for nests.	15 April- 5 August	BIO-2
3.4 1k	Fisher and Humboldt marten	Survey methods involve the use of bait combined with detection devices such as track plates and game cameras.	Can be conducted any time of year.	BIO-4
3.4 1l	Denning/roosting bat	Areas with planned construction or vegetation removal will be searched for signs of roosting bats. Acoustic and Radar detection are often required to identify bats to species level.	Can be conducted any time of year. Can be	BIO-4
3.4-3a	Vole	Typical survey methods use baited traps in suitable vole habitat.	Can be conducted any time of year.	BIO-4

3.4-4	Special-status plant	Impacted areas of the parcel will be searched for species of concern. If found, buffers will be placed around their populations.	Two surveys in a season; peak inflorescence.	BIO-7
3.4-5	Sensitive natural communities, riparian habitat, wetland vegetation	Sensitive natural communities and riparian or wetland habitats should be delineated and mapped using GPS and available spatial data.	Can be conducted any time of year.	SMA-1
3.4-6b	Waters of the United States	Any potential WOTUS will be assessed by a qualified wetland delineator. If found to be WOTUS, appropriate SMA buffers will be applied. Can occur any time of year.	Can be conducted any time of year.	SMA-1
N/A	Retention of Fisher and Humboldt Marten habitat features	Habitat features that could support fisher and marten will be identified and a 100-foot buffer applied around them for retention.	Can be conducted any time of year.	BIO-4
N/A	Invasive Species-American Bullfrog	Storage ponds and tanks will be surveyed by listening for the bullfrog's characteristic call as well as by searching with lights.	Between 1 May-31 July; after dark.	BIO-8
N/A	Invasive Species-Plants	Areas of the BAA with notable populations of invasive plants will be flagged and mapped.	Two surveys in a season; peak inflorescence (late spring-early summer).	WEED-1

5.1 Biological Reconnaissance

Biological Reconnaissance has been ongoing for the Cox property over the past year. Using the databases described in the methods section above, available information from CNDDDB, IPAC, CNPS were queried. Other documents such as historic THP's were examined. Agencies were consulted about any other information that would be relevant to the site.

5.2 Special Status Amphibians

Fully Protected amphibians and reptiles are described in Section 5050 of CESA. A northern red-legged frog, (*Rana aurora*, photo 3) was found on an initial site visit with CDFW in April 2018. Multiple egg masses for this species as well as other unknown amphibian were observed on the same site visit in impoundment #1 (photo 4). The BAA will be surveyed regularly for the presence of special status amphibians with the potential to occur onsite (BIO-5). All work occurring within 200 feet of water bodies, SMA's and stream crossings will include a biological monitor and will employ the use of amphibian exclusion fencing where appropriate. Any amphibians found during construction will be moved out of harms way if necessary, and a report documenting all individuals found will be submitted to CDFW. **Appendix 3** includes a full description of each amphibian species potentially found in the BAA.

Table 3. Amphibians in the nine-quad area of the BAA.

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Ascaphus truei</i>	Pacific tailed frog	None	None	G4 S3S4	High. Appropriate habitat.
<i>Plethodon elongatus</i>	Del Norte salamander	None	Threatened	G4 S3	High. Appropriate habitat.
<i>Rana aurora</i>	Northern red-legged frog	None	None	G4 S3	High. Appropriate habitat.
<i>Rana boylei</i>	Foothill yellow-legged frog	None	Candidate threatened	G3 S3	Medium. Some juvenile habitat.
<i>Rhyacotriton variegatus</i>	Southern torrent salamander	None	None	G3G4 S2S3	Medium. Some appropriate habitat.
<i>Taricha rivularis</i>	Red-bellied newt	None	None	G4 S2	High. Appropriate habitat.

5.3 American bullfrog

Amphibian species are particularly susceptible to predation and competition by the non-native American bullfrog (*Lithobates Catesbeianus*), which preys upon native amphibians and fish. A nocturnal bullfrog survey by a qualified biologist is required, which includes both listening for calls and searching for eyeshine and movement with lights. If found onsite, they will be managed by de-watering water bodies or by directly culling (BIO-8).

5.4 Western pond turtle

There is potential habitat for the Western pond turtle (*Emys marmorata*) in the BAA's multiple water bodies. A qualified biologist will perform pre-construction surveys for all water bodies, wet areas, or within 200 feet of SMA's within 24 hours of construction (there are several on the BAA) (BIO-5). If turtles are found, exclusion fencing will be installed and a biologist will be onsite to ensure that they are relocated out of harm's way.

Table 4. Western Pond Turtle

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Emys marmorata</i>	Western pond turtle	None	None	G3G4 S3	High. Appropriate habitat.

5.5 Nesting Raptor

All raptors (birds of prey) are protected under state and federal regulations. The Bald and Golden Eagle Protection Act prohibits the take of any eagles in the state. Fully protected birds of prey are described in CESA Section 3511. One potential raptor nest was located on the BAA (Photo 5; **Appendix 2**), 20" in diameter, near a potential road point remediation site. The nest tree was flagged for future observation. Snags utilized by raptors are found throughout the property.

Any nests or cavities will be monitored for activity and if found a 500-foot buffer will be placed around each nest tree. If any construction is planned during nesting bird season, the area will be surveyed for raptor activity and nesting within one week of construction (BIO-2). Any tree removal planned will occur outside of nesting season (1 September- 31 January. Wildlife snags in the BAA with potential to support raptors for nesting or roosting will be retained.

Table 5. Raptors Potentially Occurring in the BAA.

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Accipiter cooperii</i>	Cooper's hawk	None	None	G5 S4	High. Suitable habitat.
<i>Accipiter gentilis</i>	Northern goshawk	None	None	G5 S3	Medium. Some habitat.
<i>Accipiter striatus</i>	Sharp-shinned hawk	None	None	G5 S4	High. Suitable habitat.
<i>Aquila chysaetos</i>	Golden eagle	None	None	G5 S3	Medium. Some habitat.
<i>Haliaeetus leucocephalus</i>	Bald eagle	Delisted	Endangered	G5 S3	High. Suitable habitat.
<i>Pandion haliaetus</i>	Osprey	None	None	G5 S4	Medium. Some habitat.

5.6 Northern Spotted Owl

Tree removal or disturbance in areas that are suitable nesting, roosting or foraging habitat for NSO will require protocol-level surveys. Consultation with CDFW will be necessary if active spotted owl territories are identified within a 1.3 mile buffer of the project site. **Appendix 7** shows records of NSO locations in the vicinity of the Cox property, as generated from the CNDDDB spotted owl viewer.

Table 6. Northern Spotted Owl

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Strix occidentalis caurina</i>	Northern spotted owl	Threatened	Threatened	G3T3 S2S3	High. Suitable habitat.

5.7 Special Status Nesting Birds

The Federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Of these fully protected bird species, Section 3503 prohibits the killing of birds or destruction of nests. Snags utilized by raptors, woodpeckers, and other birds are found throughout the property. Any nests or cavities will be monitored for activity and if found active no construction activity will occur within 200 feet during nesting bird season (BIO-2).

Vegetation removal and ground disturbance that occur within Nesting bird season (1 February- 31 August) will require a biological survey within two weeks of planned disturbance. If active nests are found, they will be given a minimum of 100 feet of buffer, until nest fledges or is no longer active.

Table 7. Special Status Birds in the 9-quad area of the BAA.

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Brachyramphus marmoratus</i>	Marbled murrelet	Threatened	Endangered	G3G4 S1	Medium. Some habitat.
<i>Ardea Herodias</i>	Great blue heron	None	None	G5 S4	Medium. Some habitat.
<i>Botaurus lentiginosus</i>	American bittern	None	None	G4 S3S4	Low. Coastal.
<i>Nycticorax nycticorax</i>	Black-crowned night heron	None	None	G5 S4	Medium. Some habitat.

<i>Chaadrius montanus</i>	Mountain plover	None	None	G3 S2S3	Low. Coastal.
<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	G4T4 S3S4	High. Suitable habitat.
<i>Riparia riparia</i>	Bank swallow	None	None	G5 S2	Medium. Some habitat.
<i>Poecile atricapillus</i>	Black-capped chickadee	None	None	G5 S3	Medium. Some habitat.
<i>Icteria virens</i>	Yellow-breasted chat	None	None	G5 S3	Medium. Some habitat.
<i>Pelecanus occidentalis</i>	California brown pelican	Delisted	Delisted	G4T3 S3	Low. Coastal.
<i>Phalacocoax auratus</i>	Double-crested cormorant	None	None	G5 S4	Low. Requires more open habitat.
<i>Coturnicops noveboracensis</i>	Yellow rail	None	None	G4 S1S2	Low. Requires marsh vegetation.
<i>Numenius americanus</i>	Long-billed curlew	None	None	G5 S2	Low. Coastal.
<i>Contopus cooperi</i>	Olive-sided flycatcher	None	None	G4 S4	High. Suitable habitat.

5.8 Pacific Fisher and Humboldt Marten Habitat

Suitable forest structure and composition for Pacific fisher and Humboldt marten habitat exists in the BAA. To preserve their habitat, removal of features such as old growth forests, wetland and riparian vegetation, and potential denning sites will be prohibited. If signs of fisher or marten are found on the BAA (such as potential den sites or their tracks), survey methods including track plates or camera traps will be used to verify their presence. If found, a buffer will be established around denning areas in consultation with CDFW.

Table 8. Pacific fisher and Humboldt marten

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Martes caurina humboldtensis</i>	Humboldt marten	None	Endangered	G5T1 S1	Moderate. Some suitable habitat.
<i>Pekania pennant</i>	Fisher- West coast DPS	Proposed threatened	Candidate threatened	G5T2T3Q S2S3	High. Sufficient suitable habitat.

5.9 Special status bats

A qualified biologist will survey for roosting sites for Townsend's big-eared bats. If potential roosting sites are observed, a full survey protocol for bats will be implemented. If found to be roosting, a mitigation program will be established in consultation with CDFW, which will include establishing a buffer around maternity colonies, and reducing noise and ground disturbance on the property.

Table 9. Special Status Bats

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	G3G4 S2	High. Sufficient suitable habitat.

5.10 White-footed Vole

Vole habitat features such as old growth habitat, wetland vegetation and riparian habitat will be retained. Before vegetation removal, a qualified biologist will conduct a vole nest search of the trees in the project area. If vole nests are

found, they will be given a buffer of a minimum of 100 feet, and project location may be adjusted if it will result in vole disturbances.

Table 10. White-footed vole

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Arborimus albipes</i>	White-footed vole	None	None	G3G4 S2	High. Sufficient suitable habitat.

6 SPECIAL STATUS PLANTS AND SENSITIVE COMMUNITIES

6.1 Special Status Plants

Two rounds of rare plant surveys have been conducted to date on the Cox property. Surveys were conducted in spring and summer during peak inflorescence. The coast fawn lily, *Erythronium revolutum*, was found on the parcel near RP # 6 (photo 1). Below are the special status plants found in the nine-quad area, potentially occurring on the BAA. California Native Plant Society (CNPS) and Global Threat rankings are provided below in Table 11.

Table 11. Special Status plants in the nine-quad area of the BAA.

Scientific Name	Common Name	CNPS Rank	G/S Rank
<i>Usnea longissimi</i>	Methuselah's beard lichen	4.2	G4/S4
<i>Angelica lucida</i>	Sea-watch	4.2	G5/S3
<i>Sanicula tracyi</i>	Tracy's sanicle	4.2	G4/S4
<i>Erigeron robustior</i>	Robust daisy	4.3	G3/S3
<i>Hemizonia congesta</i> ssp. <i>Tracyi</i>	Tracy's tarplant	4.3	G5T4/S4
<i>Microseris borealis</i>	northern microseris	2b.2	G5/S1
<i>Packera bolanderi</i> var. <i>bonanderi</i>	seacoast ragwort	2b.2	G4T4/S2S3
<i>Wyethia longicaulis</i>	Humboldt county wyethia	4.3	G4/S4
<i>Cardamine angulate</i>	Seaside bittercress	2b.1	G4G5/S3
<i>Nocca</i> fenderli ssp. <i>Californica</i>	Kneeland prairie pennycress	1B.1	G5?T1/S1

<i>Spergularia canadensis</i> var. <i>occidentalis</i>	Western sand-spurrey	2B.1	G5T4/S1
<i>Cornus canadensis</i>	Bunchberry	2B.2	G5/S2
<i>Sedum laxum</i> ssp. <i>Flavidum</i>	Pale yellow stonecrop	4.3	G5T4Q/S4
<i>Carex arcta</i>	Northern clustered sedge	2b.2	G5/S1
<i>Carex leptalea</i>	Bristle-stalked sedge	2b.2	G5/S1
<i>Carex praticola</i>	Northern meadow sedge	2b.2	G5/S2
<i>Carex lyngbyei</i>	Lyngbye's sedge	2b.2	G5/S3
<i>Eleocharis parvula</i>	Small spikerush	4.3	G5/S3
<i>Astragalus rattanii</i> var. <i>rattanii</i>	Rattan's milk-vetch	4.3	G4T4/S4
<i>Astragalus umbraticus</i>	Bald mountain milk-vetch	2b.3	G4/S2
<i>Hosackia gracilis</i>	Harlequin lotus	4.2	G3G4/S3
<i>Lathyrus glandulosus</i>	Sticky pea	4.3	G3/S3
<i>Ribes laxiflorum</i>	Trailing black currant	4.3	G5?/S3
<i>Erythronium oregonum</i>	Giant fawn lily	2b.2	G4G5/S2
<i>Erythronium revolutum</i>	Coast fawn lily	2b.2	G4G5/S3
<i>Lilium kelloggii</i>	Kellogg's Lily	4.3	G3/S3
<i>Lilium occidentale</i>	Western lily	1b.1	G1/S1
<i>Lilium rubescens</i>	Redwood lily	4.2	G3/S3
<i>Lilium washingtonianum</i> ssp. <i>Purpurascens</i>	Purple-flowered Washington lily	4.3	G4T4/S3S4
<i>Lycopodium clavatum</i>	Running-pine	4.1	G5/S3
<i>Iliamna latibracteata</i>	California globe mallow	1b.2	G4/S3
<i>Sidalcea malachroides</i>	Maple-leafed checkerbloom	4.2	G3/S3
<i>Sidalcea malviflora</i> ssp. <i>Patula</i>	Siskiyou checkerbloom	1b.2	G5T2/S2
<i>Sidalcea oregana</i> ssp. <i>Eximia</i>	Coast checkerbloom	1b.2	G5T1/S1
<i>Pityopus californicus</i>	California pinefoot	4.2	G4G5/S4
<i>Montia howellii</i>	Howell's montia	2b.2	G3G4/S2
<i>Epilobium septentrionale</i>	Humboldt county fuschia	4.3	G4/S4
<i>Listera cordata</i>	Heart-leafed twayblade	4.2	G5/S4
<i>Pipera candida</i>	White-flowered rein orchid	1b.2	G3/S3
<i>Platanthera stricta</i>	Slender bog-orchid	4.2	G5/S3
<i>Castilleja ambigua</i> var. <i>humboldtensis</i>	Humboldt bay owl's clover	1b.2	G4T2/S2
<i>Chloropyron maritimum</i> ssp. <i>Palustre</i>	Point Reye's salty bird's beak	1b.2	G4?T2/S2
<i>Pleuropogon refractus</i>	Nodding semaphore grass	4.2	G5T3/S3
<i>Collomia trraci</i>	Tracy's collomia	4.3	G4/S4
<i>Gilia capitata</i> ssp. <i>Pacifica</i>	Pacific gilia	1b.2	G5T3/S2
<i>Coptis lacnata</i>	Oregon goldthread	4.2	G4?/S3?
<i>Sanguisorba officinalis</i>	Great burnet	2b.2	G5?/S2
<i>Bensoniella orgona</i>	Bensoniella	1b.1	G3/S2
<i>Chrysosplenium glechomifolium</i>	Pacific golden saxifrage	4.3	G5/S3

<i>Mitellastrum caulescens</i>	Leafy-stemmed mitrewort	4.2	G5/S4
<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	Trifoliate laceflower	3.2	G5T5/S2S3
<i>Viola palustris</i>	Alpine marsh violet	2b.2	G5/S1S2

6.2 Sensitive natural communities, riparian habitat, and wetland vegetation

The Cox property contains habitats that are considered sensitive, unique, and high in wildlife habitat value. Thus, any plans for development must be sure to understand these communities and to mitigate all potential impacts to them. Below are some of the natural communities on the parcel.

The property has an abundance of coastal white oak woodland (COW), which is protected under the California Oak Woodlands Protection Act (AB 2162). Oak woodlands are considered to be one of CDFW's Terrestrial Significant Habitats (DS2723) Areas of Conservation Emphasis (ACE). The Cox family have been attempting to maintain these oak trees by preventing conifer encroachment into the oak woodland area.

Regionally, oaks are being lost due to conifer encroachment. 84% of the oaks in the North Coast are on private lands (Gaman and Firman 2006). Many ranchers in the Kneeland area have been known to manage their land for oak savanna via prescribed burning or thinning of conifers. Presently, 50% of the Freshwater Creek watershed has become Condition Class 3, meaning its fire regime is highly altered from its historical conditions, and a further 20% of the watershed is Condition Class 2, moderately altered from its historical fire regime (CALFIRE 2007).

The parcel also contains extensive riparian and seasonally wet areas, which have high biodiversity and provide valuable wildlife habitat. Thus, any development plans must avoid these areas to the extent possible, and must mitigate in instances where they are impacted. For these specific sites, see the attached Mitigation and Monitoring plan in **Appendix 1**.

7 POLLUTION IMPACTS AND MITIGATIONS

Over time, a cannabis cultivation site such as the one proposed by Catch a Cloud LLC may have many impacts within the BAA and beyond the parcel boundaries on the surrounding ecosystem. Three documented impacts resulting from cannabis cultivation operations upon surrounding ecosystems are noise pollution, light pollution, and chemical pollution in the form of pesticides, herbicides, and fertilizers.

7.1 Noise Pollution

Anthropogenic noise pollution is known to effect animals in a variety of ways, such as acoustic communication, nesting and breeding disruption, and elevation of stress levels (Francis et al. 2009). Noise disturbance from heavy equipment, generators, etc. on a cannabis cultivation site has the potential to incur such effects. Certain species, such as the Northern spotted owl (NSO) may be particularly susceptible to ambient noise beyond baseline levels. Because there are known spotted owl activity centers within one mile of the BAA, all activities elevating noise exceeding 50 decibels from the edge of habitat will be restricted during the NSO breeding period (CCLUO 55.4.12.6; BIO-3). For all construction activities that occur which may temporarily raise ambient noise above levels tolerable to wildlife, precautions will be taken to avoid impacts (BIO-6). This site has a fully grid-tied electrical source, meaning that generators are not used on a regular basis. Potential noise disturbances resulting from this operation will occur on an acute basis and will be less than significant in relation to existing ambient conditions.

7.2 Light Pollution

Mixed Light cannabis cultivation operations employ supplemental lighting to extend the growing period for vegetative plants. The effects of light pollution upon wildlife populations are known to be significant. Artificial lighting presents a range of potential effects including disruption in movement, foraging, interspecific behavior, reproduction and rearing of young (Gaston et al. 2012). Some nocturnal animals such as NSO, bats, and some amphibians may be particularly susceptible to these effects. To mitigate potential effects upon sensitive wildlife species (BIO-6), supplemental light will not be used between sunset and sunrise, and if it is it will be blocked from radiating out from the viewshed of the BAA pursuant to Humboldt County CCLUO 55.4.1.4.

7.3 Chemical Pollution

California's Cannabis farms have been shown to have significant impacts upon wildlife resulting from their use of pesticides, herbicides, and chemical fertilizers. Necropsies of deceased wild animals found throughout the region regularly show elevated levels of pesticides such as carbofuran, a neurotoxin that bioaccumulates up the food chain and achieves lethal levels in mesocarnivores in particular. For example, of 58 fisher carcasses tested in a northern California sample, 80% had rodenticides in their systems (Smith 2017). Organophosphates used for various phases of cultivation can be detected in water sources far from the nearest farm, indicating their ability to disperse throughout the watershed.

To mitigate these potential toxins and pollutants from entering the food chain or watershed, only approved substances may be used on the cannabis cultivation site. These must be compliant with the County Agricultural Commissioner's Office, Humboldt County Department of Environmental Health, and the California Department of Pesticide Regulation.

Given its position on a steep slope above a class I watercourse, the project must employ measures to reduce chemical pollution into these areas or into upland areas (CHEM-1). Such measures would include using only amendments and products approved by CDFA, irrigating via drip system, and using weed-free mulch to reduce runoff into sensitive areas. The steep roads on the property with deep rills that convey runoff from upslope areas into watercourses should continue

to be remediated or de-commissioned. The watercourses and impoundments on the BAA are habitat for amphibians, which are particularly sensitive to toxins or foreign substances in the environment and are also considered to be indicator species of ecosystem health (Pollet and Young 2000).

8 CUMULATIVE IMPACTS AND CONCLUSIONS

Cumulative Impacts are defined as “two or more individual effects which, when considered together, are considerable” and that account for “the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects” (CEQA Section 15355). The cumulative effects of cannabis cultivation are challenging to quantify, but likely significant in the greater watershed of the BAA that is the subject of this analysis. Some cultivation sites rely upon undocumented and unpermitted diversions and are sources of sedimentation into the watershed and may also be a point sources for chemical pollution.

Forest clearing for cannabis farming has significant landscape-scale effects that are only beginning to be understood. A recent study found that deforestation associated with cannabis farming creates landscape patchiness by forming gaps from the forest interior outward, reducing the core areas of contiguous forest (Wang et al. 2017). The gap-creating tendency of many cannabis operations has significant implications for species which rely upon remote forest interiors particularly for reproduction and nesting/denning, such as NSO, northern goshawk and Pacific fisher. These increased edge effects also facilitate the spread of invasive species, which colonize recently deforested areas which take advantage of loss of native plant cover and increased access to light. The miles of fencing that often accompany cannabis farms for the purposes of security and wildlife exclusion (and that is also required for permitted cultivation sites) can have significant effects upon wildlife movement on the landscape. This fencing, when not used properly, can entrap wildlife within gardens or can block their movement corridors and their access to critical habitats. With hundreds of individual cannabis

farms dispersed throughout the watershed, the effects at the landscape scale are variable, difficult to measure, but clearly significant.

Illegal water diversions throughout California continue to imperil organisms such as salmonids that depend upon viable flow regimes. Humboldt County developed a list of planning watersheds (pub. May 2018) that are particularly impacted by diversions thought to originate from cannabis cultivation. Freshwater Creek (Eureka Plain planning watershed) is not among these watersheds. This is not to say that diversions from this watershed are without ecological effects, but rather to note that with adherence to diversion and impoundment requirements (e.g. SWRCB WQ 2017-0023-DWQ) mandated by state and regional water boards as well as CDFW, water for the Cox BAA may be stored and judiciously withdrawn without significant effects upon water quality and rates of flow.

The remediation proposal for the Cox BAA has the potential to acutely impact the sediment load being transported into Freshwater Creek in the short term. The work period associated with remediation will occur within a short window of time and all impacts will be mitigated. Every effort will be made to minimize transportable sediment. Restoration and rehabilitation of the road and water networks is a critical component of restoring water quality at the watershed level.

The ability to improve watercourse integrity while mitigating for the process of doing so indicate that there will be measurably less sediment runoff into watercourses after the project is complete than before it was initiated. The proposed mitigations have the potential to confer positive cumulative effects to the greater Freshwater Creek watershed and therefore there is a mitigated negative declaration for this project.

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APPENDIX 1

Mitigation and Monitoring Plan

Catch-A-Cloud Farms, LLC; Kneeland, California
Humboldt County APN #

SEPTEMBER 22, 2018
PREPARED FOR TRINITY VALLEY CONSULTING ENGINEERS

APPENDIX 1: MITIGATION AND MONITORING PLAN

I. INTRODUCTION

1.1 Responsible Parties

The permittees are Carter and Aria Cox, for Humboldt County Parcel APN # 314-131-073. The Cox site is located at 1001 Barry Road, Kneeland CA 95549.

This mitigation and monitoring report is prepared by Iris Koski, MS, on behalf of Trinity Valley Consulting Engineers, 67 Walnut Way, Willow Creek, CA 95573.

1.2 Project Description and Current Conditions

The intent of this project is to restore hydrological function and to enhance native vegetation on the Cox parcel, and to contribute positively to cumulative effects at the watershed scale. The project scope will include the replacement of five undersized culverts and two spillways on the site, which will require earth moving and some removal of vegetation. (**Figure A**).

This is a 3:1 mitigation site, meaning that for each one square foot of disturbance, three square feet will be replanted, for a total of 0.06 acres of revegetated area. The project will replace native vegetation that is removed in the process of culvert and spillway replacement *en situ* at a ratio of 1:1. It will furthermore enhance existing riparian habitat elsewhere on the property at ratio of 2:1. The site chosen for this 2:1 riparian enhancement is the storage pond area at the upper portion of the property (**Figure A**).

3. Goals and Objectives

The following are the goals for the rehabilitation and restoration of the Cox property:

APPENDIX 1: MITIGATION AND MONITORING PLAN

1. Revegetate using native plant assemblages and increase terrestrial and aquatic wildlife habitat
2. Enhance existing riparian habitat
3. Reduce sediment transport into Freshwater Creek
4. Restore structure and function of original watercourses
5. Lower velocity of surface flow and increase groundwater recharge
6. Reduce invasive species onsite
7. Improve the aesthetic values of the property

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Table A. Mitigation Site Locations

Site	Site-Specific Description (pre/post condition, longitudinal stream grade, spillway grade, and lateral riparian slopes)	Proposed Mitigation Measures and functional improvement quantified (e.g. planting plans, laying back stream banks to restore slope stability, culvert size upgrade, quantified sediment reduction)	Vegetation necessary to remove/ relocate for construction	Vegetation Mitigation
Spillway #1	Existing spillway from smaller "off-stream" to "on-stream" comprised of two (2) 4 inch PVC pipes; Proposed removal of existing pipes and install trapezoidal spillway constructed to accommodate 100-year flow design requirements. Rock armor (6"-1' RSP) shall be placed around outlet.	Sediment savings of ~2-3 CY from scour/gully reduction at spillway and risk reduction by install properly sized spillway; Replant <i>120 SF</i> riparian area upon construction completion	Native Forbs	Seed/Straw; Enhance an additional 240 SF of riparian area with riparian vegetation planting
Spillway #2	Existing spillway from smaller "off-stream" to "on-stream" pond comprised of two (2) 4 inch PVC pipes; Proposed removal of existing pipes and install trapezoidal spillway (L1= 6ft, L2=4ft, H = 1 ft) constructed to accommodate 100-year flow design requirements. Rock armor (6"-1' RSP) shall be placed around outlet.	Sediment savings of ~2-3 CY from scour/gully reduction at spillway and risk reduction by install properly sized spillway; Replant <i>160 SF</i> riparian area upon construction completion	Native Forbs	Seed/Straw; Enhance additional <i>320 SF</i> of riparian area with riparian vegetation planting.

Spillway #3	Existing spillway from smaller pond that received outflow from POD#1 comprised of 4 inch PVC pipe; Proposed removal of existing pipes and install 18" culvert with downspout constructed to accommodate 100-year flow design requirements. Rock armor (6"-1' RSP) shall be placed around outlet.	Sediment savings of ~2-3 CY from scour/gully reduction at spillway and risk reduction by install properly sized spillway; Replant 48 SF riparian area upon construction completion	Native Forbs	Seed/Straw; Enhance an additional 96 SF of riparian area with riparian vegetation planting.
Site	Site-Specific Description (pre/post condition, longitudinal stream grade, culvert grade, and lateral riparian slopes)	Proposed Mitigation Measures and functional improvement quantified (e.g. planting plans, laying back stream banks to restore slope stability, culvert size upgrade, quantified sediment reduction)	Vegetation necessary to remove/ relocate for construction	Vegetation Mitigation
Culvert #1	Spillway outfall of an onstream Class III pond. Current culvert is at ~30% grade and undersized with scouring occurring at outfall; Secondary spillway (#3) will be constructed to accommodate 100-year flow design requirements. Rock armor (6"-1' RSP) shall be placed around outlet.	Sediment savings of ~1-2 CY from scour/gully reduction at outfall; Replant 6 SF riparian area upon construction completion	Native Forbs	Seed/Straw; Enhance an additional 12 SF of riparian area with riparian vegetation planting (See Revegetation Plan)
Culvert #2	Class III tributary crossing. Current culvert is at ~3-5% grade, undersized, shotgunned, with scouring at outfall; New culvert will be set at ~10% grade with rock armor placed around inlet/outlet	Sediment savings of ~5 CY from scour/gully reduction at outfall and flow diversion risk reduction by installing properly sized culvert; Replant 68 SF riparian area upon construction completion; Install critical dip	Native Forbs, Sword Ferns	Seed/Straw; Enhance an additional 136 SF of riparian area with riparian vegetation planting (See Revegetation Plan)

Culvert #3	Class II tributary crossing. Current culvert is at ~3% grade, undersized, shotgunned, with scouring at outfall; New culvert will be set at ~10% grade with rock armor placed around inlet/outlet	Sediment savings of ~5 CY from scour/gully reduction at outfall and flow diversion risk reduction by installing properly sized culvert; Replant 80 SF riparian area upon construction completion; Install critical dip	Native Forbs, Sword Ferns	Seed/Straw; Enhance an additional 160 SF of riparian area with riparian vegetation planting
Culvert #4	Class III tributary crossing. Current culvert is at ~3% grade, misaligned, undersized;; New culvert will be set at ~10% grade with rock armor placed around inlet/outlet	Sediment savings of ~5 CY from scour/gully reduction at outfall and flow diversion risk reduction by installing properly sized culvert; Replant 27 SF riparian area upon construction completion; Install Critical dip	Native Forbs, Sword Ferns	Seed/Straw; Enhance an additional 54 SF of riparian area with riparian vegetation planting.
Culvert #5	Class I crossing on Freshwater Creek that impounds a 0.21 onstream pond .Culvert is currently undersized by 12"-18"; DFW agreement to monitor location	Risk reduction of impoundment failure and culvert damage associated with critical dip installation	N/A	Seed/Straw to stabilize adjoining disturbed areas.

4 Restoration and Revegetation

The Society for Ecological Restoration (SER) defines ecological restoration as “the process of assisting the recovery and management of ecological integrity. Ecological integrity includes a critical range of variability in biodiversity, ecological processes and structures, regional and historic context, and sustainable cultural practices” (Society for Ecological Restoration 2004).

Revegetation is used specifically to describe how re-establishing native plant species mitigates the impacts of sites that are denuded of vegetation. Re-introducing native vegetation confers many benefits, such as reducing the erosive impact of precipitation and wind, reducing surface runoff and erosion, sequestering nutrients and microorganisms in soil, and rendering slopes less susceptible to

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failure (SER). Revegetation is a necessary component of forming new soil, which requires an availability of nitrogen, exchange of nutrients, and active soil organisms.

Habitat enhancement uses both ecological restoration and revegetation to alter a site to “produce conditions that did not previously exist in order to accentuate one or more values of a site” (Lewis 1989).

Restoration and habitat enhancement are types mitigation, which is a required component of the Cox culvert and spillway replacement project. Section 404 of the Clean Water Act states that mitigation encompasses restoration, creation, or enhancement of habitats to compensate for permitted habitat losses. Thus, a sensitive habitat or community may be destroyed or removed legally, however it must be replaced, resulting in “no net loss”. The Cox project will replace lost habitat at a ratio of 3:1.

5.1 Restoration Features and Reference Site Characteristics

Restoration activities on the Cox property include correcting watercourses and slopes, replacing undersized and failing culverts, and improvement of habitat values and functions via the reintroduction of native vegetation cover. It may be necessary to replace culverts and spillways over time if they exhibit risk factors for impeded flow. Impeded flow may result in blocking passage of aquatic and amphibious organisms, excessive sedimentation, or complete failure resulting in risk to humans or property.

Revegetation is planned on the Cox property by selecting a reference ecosystem for the site, meaning the habitat that the restoration practitioner is modeling (Goebel et al. 2005).

The reference ecosystem selected for this site is coastal/montane riparian woodland. Riparian woodland is generally considered to be a feasible target ecosystem, as these habitats are naturally prone to disturbance and are relatively resilient to it (Newton and Claassen). The planting palette selected for the

APPENDIX 1: MITIGATION AND MONITORING PLAN

revegetation component of the project incorporates common understory plant associations found in riparian habitats near the Cox mitigation site and throughout the region.

6.0 Project Implementation and Work Plan

The following steps describe the process for remediation and restoration of the Cox property:

1. Obtain necessary permits and contracted professionals.
2. Conduct earth moving activities.
3. Stabilize disturbed areas by applying erosion control seed mix, weed-free straw, wattles, and bonded fiber matrix.
4. Re-vegetate the area with an appropriate assemblage of native herbaceous and woody plants.
5. Establish success criteria for the project.
6. Monitor the success of revegetation and assess success of restoration efforts.
6. Use adaptive management to alter the revegetation strategy if necessary to achieve success criteria.
7. Report annually on findings to relevant agencies over the project duration.

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6.1 Permits

Lead agencies will determine how CEQA and NEPA are applied to the permits concerning the Cox restoration project. At a minimum, permits from the following agencies *may* be required:

1. State Water Resources Control Board
2. North Coast Regional Water Quality Control Board
4. California Department of Fish and Wildlife (LSA 1600 and Biological Assessment)
5. Humboldt County (Grading permit)
6. Army Corps of Engineers

6.2 Earthwork and Mitigation Measures

The use of grading with heavy equipment will be a necessary to replace undersized culverts and spillways and recontour slopes. The current road prism and adjacent areas will be adjusted to the gradient of the slope.

Avoidance measures will be in place to mitigate for any potential impacts. All activities will follow BMP's described in North Coast RWQCB's Order number R1-2015-0023 to minimize impacts to the SMA and to aquatic life by minimizing erosion and sediment runoff (SMA-2). In-channel construction and modification will be limited to the minimum level required to support restoration success, and will preserve as much vegetation as possible to maintain bank stability and canopy (SMA-3).

A biological monitor will be present during construction to prevent incidental take of special status species and to ensure that construction complies

APPENDIX 1: MITIGATION AND MONITORING PLAN

with all avoidance and mitigation measures (AMM's) set forth by the RWQCB/CDFW. Exclusion fencing for amphibians will be used for all work in watercourses and wet areas, and areas with hydrophytic vegetation (BIO-5).

Earth work will occur after nesting bird season ends (31 August) (BIO-2) and before average seasonal rainfall (15 October). Construction work will avoid compaction of soil by occurring only during dry conditions.

By implementing the above mitigation measures, significant effects beyond the construction zone are expected to be less than significant.

6.4 Erosion Control Plan (ECP)

An erosion control plan (ECP) is necessary prevent sediment runoff and to retain nutrients and organic material onsite. Implementation of an ECP should be site specific, referring to slopes, soils, temperatures, and precipitation (CalTrans 2011). An effective ECP seed mix is hardy, quick-growing, and tolerant of a range of conditions. The seed mix selected for this site is provided in Table 2. All species are native to California per the Jepson manual.

After organic material and mulch are introduced, an ECP seed mix will be distributed at a rate of at roughly 300 pounds per acre. The ECP seed mix will be applied within two weeks of the end of construction. A bonded fiber matrix and/or hydroseeding will be used to apply seed mix. A minimum of 6" of sterile rice straw will be applied over the seeded area will improve germination of seed mix and prevent erosion. Care will be taken to ensure straw brought onsite is from a weed-free source to prevent the further spread of invasive species.

An ECP may confer the added benefit of preventing the spread of invasive species, which are often quick to colonize after disturbance, and replace them with hardy, fast-growing native species.

APPENDIX 1

Table B. Erosion Control Seed Mix (hydro-seed and bonded fiber).

Erosion Control Seed Mix

California brome	(<i>Bromus carinatus</i>)
Blue wildrye	(<i>Elymus glaucus</i>)
Three weeks fescue	(<i>Vulpia microstachys</i>)
Tomcat clover	(<i>Trifolium willdenovii</i>)
California oatgrass	(<i>Danthonia californica</i>)
California meadow barley	(<i>Hordeum bachyantherum</i>)
Common yarrow	(<i>Achillea millefolium californica</i>)
California poppy	(<i>Eschscholzia californica</i>)
Three weeks fescue	(<i>Vulpia microstachys</i>)

6.5 Re-Vegetation Plan

The re-vegetation plan consists of two phases: (1) *en situ* 1:1 revegetation, and (2) 2:1 habitat enhancement, which will occur on the perimeter of the pond. The re-vegetation plan consists of plants that are native to the area, hardy, and provide functions such as bank stabilization and wildlife habitat. Plants will be purchased from nurseries and will be grown from local stock (within approximately 30 miles of project). The nursery should be selected well in advance so that adequate quantities and sizes of species will be available at time of planting.

The ideal time for plant installation is after the first storm of the season (generally in October or November) when soil begins to saturate. This allows for higher likelihood of plant establishment without supplemental irrigation. Installation should occur prior to the first freeze, which allows plants to go dormant naturally before being killed off by frost. Riparian palette 1 and 2 include recommended species assemblages and are based on 80% survival rates and successional vegetation communities.

APPENDIX 1: MITIGATION AND MONITORING PLAN

Riparian Planting Palette #1:

The first revegetation palette is riparian herbaceous layer meant to revegetate the 1:1 mitigation area at the culvert and spillway replacement sites.

Table C. Riparian Planting Palette 1 (1:1)

Riparian Herb Layer

Mugwort	(<i>Artemisia douglasiana</i>)
Sheathed sedge	(<i>Carex fraxa</i>)
Common rush	(<i>Juncus effusus</i>)
California blackberry	(<i>Ubis ursinus</i>)
Horsetail	(<i>Equisetum hyme</i>)

Riparian Planting Palette #2:

The second riparian planting palette will be installed on the perimeter of the holding pond. Willows and big leaf maple have been selected, which will provide functions such as bank stability, wildlife habitat, and canopy cover for the pond.

Table D: Riparian Planting Palette # 2 (2:1)

Tree and Shrub Layer

Hooker's willow	(<i>Salix hookeriana</i>)
Bigleaf maple	(<i>Acer macrophyllum</i>)

APPENDIX 1: MITIGATION AND MONITORING PLAN

6.6 Plant establishment and maintenance

Maintenance over time is crucial to survival and success once plants are installed. The establishment and maintenance plan includes < 0.1 acres of revegetated area. These sites will be monitored and maintained during the two-year plant establishment period.

All planted areas will be mulched to prevent competition from invasive plants and to buffer plants from fluctuating temperature and moisture levels. Mulch could be derived from onsite chipped material, sterile weed-free straw, or other sources.

Exclosures will be placed around each individual planting. Herbivory by native species such as deer and introduced species such as cattle is the primary deterrent to revegetation efforts. Exclosures can also protect against other threats such as vehicular traffic and trespass.

6.7 Invasive Species Management

Invasive Plants are identified by the California Invasive Species Council (Cal-IPC) and by the Regional Water Board. Invasive species found onsite will be eradicated mechanically (pulled by roots and removed in contractor bags). They will continue to be removed in future maintenance and monitoring visits to the site.

6.8 Special Status Species

The restoration sites and adjacent areas on the property will be surveyed for special status plants as identified by the CNPS (California Native Plant Society)

APPENDIX 1: MITIGATION AND MONITORING PLAN

database. If found onsite, they will be flagged and protected with exclusion fencing. If no special status plants propagate after restoration has occurred, these plants will continue to be protected and monitored. The status of their population onsite will be discussed during annual monitoring reporting, including photo documentation. If possible, seeds will be collected for future propagation onsite.

7.0 Success Criteria, Monitoring and Reporting Per the CDFW 1600 LSAA (#1600-2017-0886-R1)

Per LSAA 1600, the success of re-vegetation efforts on the Cox property will be measured by the following performance standards. Within five years, the mitigated areas should be dominated by the native plant assemblage as shown in the Planting Plan. Survival rate of planting will be at least 80%. Water will flow naturally into restored watercourse channels during periods of surface flow.

Condition 1.1: The permittee will re-plant > 0.06 acres of riparian woodland habitat at suitable locations onsite.

Condition 1.2: The permittee shall ensure that supplemental watering during the two-year period of plant establishment prior to installation, if required.

Condition 1.3: The permittee will ensure that the survival and health of the plantings are monitored for three years following installation. The restoration will be deemed successful if 80% of plantings have survived at the end of three years.

Condition 1.4: The permittee shall submit an annual monitoring report to CDFW by 1 January of each year during the three-year monitoring period. This will describe the survival of replantings, and adaptive management used to improve performance during this period. A final report on the restoration project will be submitted at the end of three years.

APPENDIX 2: SITE PHOTOGRAPHS

Photo 1. Coast fawn lily, *Erythronium elegans*Photo 2. Fetterid adder's tongue, *Scoliopus bigelovii*

APPENDIX 2: SITE PHOTOGRAPHS

Photo 3. Egg masses, unknown species, found in POD # 2

Photo 4. Northern red-legged frog, *Rana aurora* found in class II watercourse.

APPENDIX 2: SITE PHOTOGRAPHS

Photo 5. Passerine or small raptor nest on BAA.



Photo 6. Rabbit denning site



APPENDIX 2: SITE PHOTOGRAPHS

Photo 7. Wildlife snag adjacent to greenhouse to be retained.

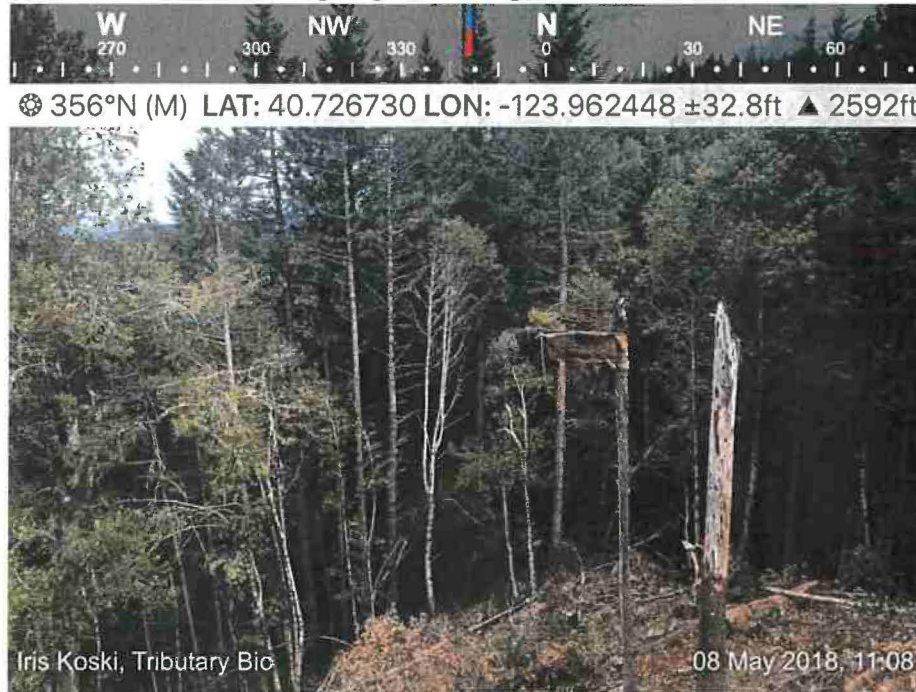


Photo 8. Open 500-gallon storage trough.



PHOTO 9. Oak woodland (*Quercus garryana*)



APPENDIX 2: SITE PHOTOGRAPHS

Photo 10. Impoundment 1.

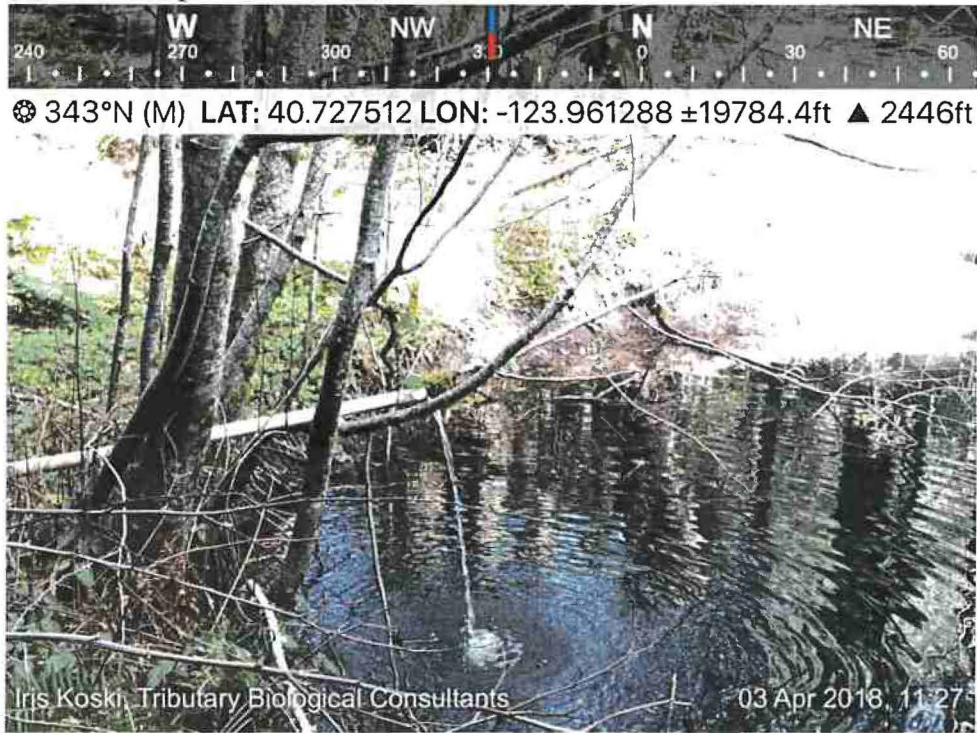


Photo 11. Looking towards Culvert # 5, impoundment on Freshwater Creek.

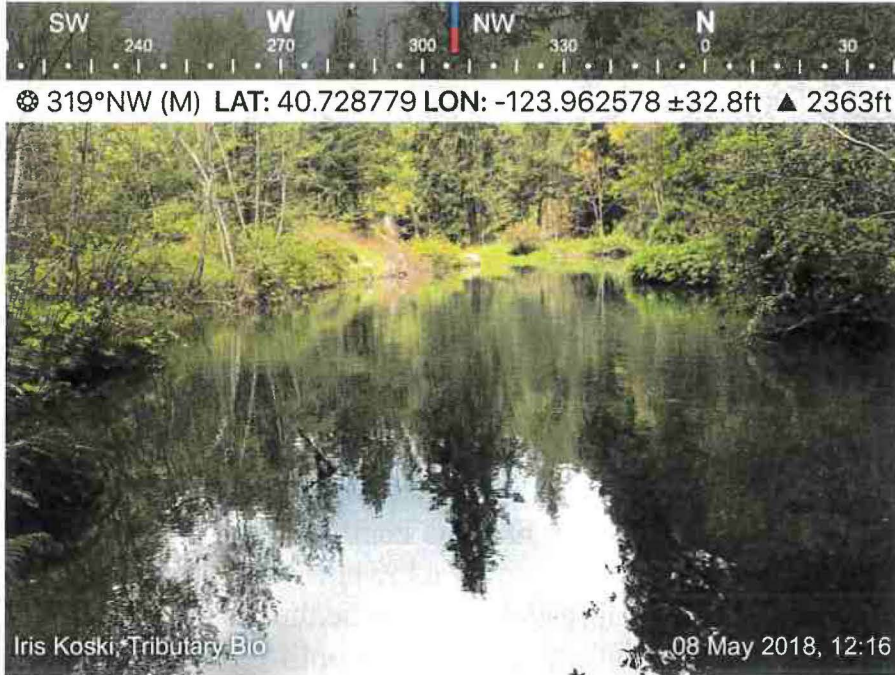
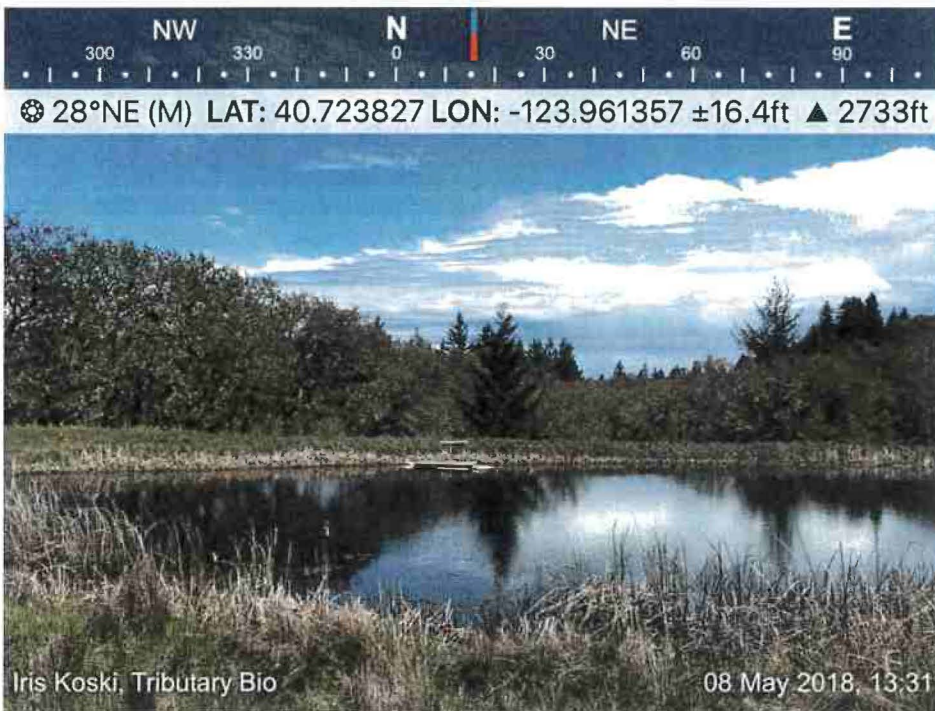


Photo 12. POD 3.



APPENDIX 3: Species Accounts- Species of Special Concern

1. Amphibians

Pacific tailed frog (*Ascaphus truei*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S3S4

Family: Ascaphidae

Habitat/Life-history Requirements: The Pacific tailed frog requires permanent, cool streams in conifer-dominated habitats including redwood, Douglas fir, mixed-conifer, and ponderosa pine habitats (Zeiner et al. 1988). They prefer turbulent waters with rocky substrates in steep-walled valleys with dense vegetation, where the water temperature remains low (Zeiner et al.) The Pacific tailed frog is preferential to non-fish-bearing streams which pose a lower risk of predation. Increased water temperature and siltation from logging pose threats to the amphibian (Zeiner et al.) Additionally, invasive American bullfrogs may pose a threat to native amphibians through competition, predation, and spread of disease.

Potential Impact/Mitigation There is ample habitat for the Pacific tailed frog is on the BAA. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the North Coast Regional Water Board to minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

Del Norte salamander (*Plethodon elongatus*)

Family: Plethodontidae

Special Status: CDFW Species of Special Concern; Threatened CESA; Global Ranks G4 S3

Habitat/Life History Requirements: The del Norte salamander is a cryptic animal associated with rocky areas in the vicinity of old-growth forests, often on cooler, north-facing aspects (Stebbins). Humboldt County is the southernmost extent of its range. The nocturnal salamander preys upon invertebrates under logs, rock slides, and other damp, protected areas (Zeiner et al.)

APPENDIX 3: Species of Special Concern- Species Accounts

Potential Impact/Mitigation: There are some rocky, north-facing slopes in the vicinity of old growth forest that are potential habitat for the del Norte salamander. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the North Coast Regional Water Board to minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

Northern red-legged frog (*Rana aurora*)

Family: Ranidae

Special Status: US Forest Service Sensitive; CDFW Species Special Concern; NatureServe Ranks: N3N4, S2?

Habitat/Life History Requirements: The Northern red-legged frog occupies wetlands, marshes, streams, and ponds throughout the coast ranges of Northern California below 1200 meters (Zeiner et al. 1998). The frog requires standing water for development of eggs and tends to occupy shoreline areas that provide vegetation and cover (Zeiner et al.) The species is primarily aquatic, but can also inhabit wet forested areas further from water, and may be found on roads during periods of rain as it moves away from rising streams (Zeiner et al.)

Potential Impacts/Mitigation: Permanent streams, ponds, and wet areas on the parcel and in the surrounding area are habitat for the Northern red-legged frog. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the NCRWQB that minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

Foothill yellow-legged frog (*Rana boylei*)

Special Status: State Candidate for listing as Threatened; CDFW Species of Special Concern; NatureServe Ranks: G3, S3

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Family: Ranidae

Habitat/Life-history Requirements: The foothill yellow legged frog inhabits permanent, broad rivers and streams, both fish-bearing and non-fish bearing, in many habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows (Zeiner et al. 1988). Habitat modification, as well as invasive American bullfrog and introduced fish species contribute to the reduction of foothill yellow legged frog populations (Zeiner et al.)

Potential Impact/Mitigation: The project will avoid impacts to potential wetland habitat. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the NCRWQB that minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

Southern torrent salamander (*Rhyacotriton variegatus*)

Family: Rhyacotritonidae

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S2S3

Habitat/Life-history Requirements: The southern torrent salamander primarily occupies cold, shaded permanent streams and seeps in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats in Sonoma, Mendocino, Humboldt and Lake Counties (Zeiner et al. 1988). The newt requires rapid, permanent streams with rocky substrate for breeding and larval development (Zeiner et al.)

Potential Impact/Mitigation: Permanent, non fish-bearing, rocky streams within the BAA are suitable habitat for the southern torrent salamander. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the NCRWQB that minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

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Red-bellied newt: (*Taricha rivularis*)

Special Status: California species of special concern; Global threat ranks G4 S2

Family: Salamandridae

Habitat/Life History Requirements: The range of the red-bellied newt includes, Mendocino, Humboldt, Lake, and Sonoma counties (Zeiner et al.) The newt inhabits a variety of habitats but is generally associated with redwood forest and requires rocky, permanent, fast-moving streams for egg-laying and breeding, which occurs from late February through May (Stebbins). The newts may migrate throughout their lives, but always return to their natal streams (Zeiner et al.)

Potential Impacts/Mitigations: The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the NCRWQB that minimize erosion, runoff, sedimentation, and other pollution (SMA-2). Indirect impacts to native amphibians by using water storage ponds that provide potential American bullfrog habitat will be mitigated by surveying for, and removing any American bullfrogs (BIO-8). The potential impact with mitigation incorporated is less than significant.

Western pond turtle (*Emys marmorata*)

Special Status: CDFW Species of Special Concern; Global threat ranks: G3G4, S3

Family: Emydidae.

Habitat/Life-history Requirements: The western pond turtle is associated with permanent or nearly permanent water in ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams (Zeiner et al. 1988). Invasive American bullfrogs prey upon hatchlings and juveniles (Zeiner et al.)

Potential Impact/Mitigation: Areas with permanent water should be considered potential habitat, including water storage ponds. The project will avoid impacts to potential amphibian habitat. No sites shall be located within the applicable SMA buffer distance (BIO-5). The project shall follow BMPs for cannabis cultivators outlined by the NCRWQB that minimize erosion, runoff, sedimentation, and other pollution (SMA-2).

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2. Invertebrates

Special Status invertebrates in the nine-quadrant area of the BAA.

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Margaritifera falcata</i>	Western pearlshell	None	None	G4G5 S1S2	Unlikely. Requires host fish.
<i>Anodonta californiensis</i>	California floater	None	None	G3W S2?	Unlikely. No suitable habitat.
<i>Bombus caliginosus</i>	Obscure bumble bee	None	None	G4? S1S2	High. Suitable habitat.
<i>Bombus occidentalis</i>	Western bumble bee	None	None	G2G3 S1	High. Suitable habitat.
<i>Cicindela hirticollis grvida</i>	Sandy beach tiger beetle	None	None	G5T2 S2	Unlikely. No suitable habitat.

Western pearlshell (*Margaritifera falcata*)

Special Status: California Species of Special Concern; NatureServe Ranks G4G5 S1S2

Family: Margaritiferidae

Habitat/Life History Requirements:

The western pearlshell is a freshwater mussel common in the Pacific Northwest. It inhabits perennial streams, creeks, and rivers that are 1.5-5 feet deep and contain a wide distribution of sediment sizes (Xerces). They typically occupy areas with deep pools and eddies, where they are protected from scour during high flows (Xerces). The filter-feeder is an indicator of water quality because it is highly sensitive to environmental change and intolerant of sedimentation (Xerces). The western pearlshell is sedentary in the adult life stage and depends upon host fish for reproduction and dispersal during the larval and juvenile stages, like most other mussels (Xerces). Most of the host species for the mussel are native salmonids (Xerces). The native mussel is threatened by sedimentation, pollution, channel modification, water withdrawal, increased temperatures, grazing, loss of host fish, and invasive aquatic species (Xerces).

Potential Impacts: The Western pearlshell requires host fish and thus is unlikely to occur in the non-fish bearing waters within the BAA. The project will avoid

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significant impacts to streams on the property and in the downstream watershed. The potential impact with mitigation incorporated is less than significant.

Obscure bumblebee (*Bombus caliginosus*)

Special Status: California Special Animals List; NatureServe Ranks G4? S1S2

Family: Apidae

Habitat/Life History Requirements: The obscure bumble bee occupies open grassy coastal prairies and Coast Range meadows (IUCN). The obscure bumblebee does not fare well in agricultural or urban/suburban environments, where it is often outcompeted by more common bumblebees (NatureServe). The obscure bumblebee has declined in the San Francisco Bay area and may be threatened by habitat loss from development (NatureServe).

Potential Impacts: There is potential habitat for the obscure bumble bee on this parcel. The project will incorporate measures to reduce use of chemicals on the BAA (CHEM-1) as well as to reduce noise and light disturbance (BIO-6).

Western bumble bee (*Bombus occidentalis*)

Special Status: CDFW Special Animals List (2017); NatureServe Ranks: G4 S1

Family: Apidae

Habitat/Life-history Requirements: The western bumble bee is a generalist short-tongued forager that may be found in open habitats such as grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows (IUCN). Like many bumble bees, the western bumble bee nests underground in abandoned rodent holes (IUCN). The western bumble bee is threatened by disease, habitat loss and degradation, and insecticides.

Potential Impact/Mitigation: Open grassy areas with rodent holes in the surrounding area provide potential habitat for the western bumble bee. Pesticides that may be used for cannabis cultivation are limited to low-risk exempt substances approved by CDFA. The potential impact of insecticide use on pollinators shall be reduced by not spraying in the presence of pollinators and not allowing drift to flowering plants in the surrounding area (CHEM-1). The potential impact on the western bumble bee is less than significant.

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3. Birds

Cooper's Hawk (*Accipiter cooperi*)

Family: Accipitridae

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4.

Habitat/Life-history Requirements: Cooper's hawks are common year-round residents in wooded areas of California, and they can be found in urban and suburban areas as well (Cornell Lab). The medium-sized hawk builds nests made of piles of sticks over two feet wide in tall trees, typically 25-50 feet off the ground (Cornell Lab). Nesting trees include pines, oaks and Douglas firs (Cornell Lab). Dense stands are typically used for nesting and patchy open areas are commonly used for hunting (Zeiner et al. 1988).

Potential Impact/Mitigation: The area impacted by the project could provide potential nesting and foraging habitat for the Cooper's hawk. The raptor is on the CDFW Watch List and protected under the Migratory Bird Treaty Act (MBTA). A low-intensity walking survey of the timber stands on the parcel will scan for signs of raptors. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided.

Northern Goshawk: (*Accipiter gentiles*)

Family: Accipitridae

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S3.

Habitat/Life history requirements: Northern goshawks are the largest of the accipiter genus and an uncommon resident in north coast forests. They are top predators that require very large spatial areas to support their prey base (Shuford and Gardali 2008). They require old growth and mature forests with complex structure for breeding and nesting. Goshawks forage in dense forest canopies as well as forest and meadow edges. They nest in mixed conifer, conifer-redwood, and hardwood forests, but are not known to breed in pure redwood forests (Weber 2006). Goshawks build stick nests near the tops of larger trees in a stand, and

successful breeding pairs tend to require at least 80 hectares of contiguous forest (Shuford and Gardali). Their primary prey include various squirrel and chipmunk

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species, as well as smaller birds. There is concern about the northern Goshawk's low breeding density statewide.

Potential impacts/mitigation: The impacted project area could be within range of goshawk breeding or foraging territories. A low-intensity survey of the property for signs of raptors will be conducted. If suitable habitat is found, a more extensive goshawk survey may be conducted, which may include audio playback surveys (Woodbridge and Harvey 2006). The immediate project area will be surveyed for nesting birds (BIO-2) and impacts will be avoided. If raptors are found to be nesting, appropriate avoidance measures will be taken.

Sharp-shinned hawk: (*Accipiter striatus*)

Family: Accipitridae

Special Status: California Species of Special Concern, NatureServe Ranks: G5, S4.

Habitat/Life History Requirements: The sharp-shinned hawk is the smallest of all North American hawks (Cornell lab of Ornithology). It is known for its agility and ability to maneuver through dense forest canopies in search of prey. It nests in dense, mature forests, deep within stands, and forages throughout the forest and forest edges (Zeiner et al. 1988).

Potential Impacts: The impacted project area could be within range of sharp-shinned hawk breeding or foraging territories. A low-intensity survey of the property for signs of raptors will be conducted. If suitable habitat is found, a more extensive raptor survey may be conducted. The immediate project area will be surveyed for nesting birds (BIO-2) and impacts will be avoided. If raptors are found to be nesting, appropriate avoidance measures will be taken.

Golden eagle - (*Aquila chrysaetos*)

Family: Accipitridae

Special Status: CDFW Fully Protected and Watch List; Protected under Migratory Bird Treaty Act; Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3

Habitat/Life-history Requirements: The golden eagle is an uncommon migrant and year-round resident (Zeiner et al. 1988). The golden eagle typically utilizes

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open habitats away from human environments (Sibley 2003). Small mammals are the primary prey for the golden eagle (Sibley 2003). One of the largest raptors in

North America, the golden eagle builds massive nests, about 6 feet across (Cornell lab). Nests are typically located on cliffs, but may also be found on trees, man-made structures, or on the ground (Cornell lab).

Potential Impact: Some potential golden eagle foraging and nesting habitat may occur on the property. A low-intensity walking survey of the timber stands on the parcel will scan for signs of raptors. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided. The golden eagle will be included in nesting raptor surveys, which will follow eagle survey protocols to avoid nest disturbance.

Bald eagle (*Haliaeetus leucocephalus*)

Family: Accipitridae

Special Status: Federally Delisted, California Endangered, CDFW Fully Protected; Protected under Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3

Habitat/Life-history Requirements: Federally delisted, but still considered Endangered in California, bald eagles are uncommon residents or migrants. Fish are a primary source of prey, and bald eagles are typically found in forested areas near large fish-bearing waters (Cornell Lab). Bald eagles build large nests about 6 feet wide. Nests are typically found in large trees, but may be built on other available vegetation or structures (Cornell Lab).

Potential Impact: Potential nesting habitat for the bald eagle exists on the property and in the surrounding area, which contains fish bearing waters, large trees, and other structures for nesting. A low-intensity walking survey of the timber stands on the parcel will scan for signs of raptors. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided. The bald eagle will be included in nesting bird surveys, which will follow eagle protocols to avoid nest disturbance. If any bald eagle nests occur in the area, a protective buffer zone of at least 10 acres will be established in consultation with CDFW. The potential impact with mitigation incorporated is less than significant.

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Osprey: (*Pandion haliaetus*)

Family: Accipitridae

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4.

Habitat/Life-history Requirements: Ospreys primarily prey on fish and they require large fish-bearing waters for hunting (Zeiner et al. 1988). Ospreys typically make large nests in tall snags or trees high off the ground in open forest habitats (Zeiner et al.)

Potential Impact/Mitigation: Potential habitat may exist near the property beyond the project boundaries. A low-intensity walking survey of the timber stands on the parcel will scan for signs of raptors. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2). If any osprey nests occur in the area, a protective buffer zone of at least 5 acres will be established in consultation with CDFW, and impacts will be avoided.

Marbled murrelet: (*Brachyramphus marmoratus*)

Family: Alcidae

Special Status: Endangered under the ESA and threatened under the California ESA. On the CDFW List of Special Animals. Protected under Migratory Bird Treaty Act; Board of Forestry Sensitive Species; Nature Serve Rank G3, S1. IUCN Red Status: Endangered.

Habitat/Life History Requirements: Marbled murrelets are seabirds that nest up to 50 miles inland. They require dense, old growth forests with high canopy closure and decadent stand characteristics to provide nesting platforms (Center for Biological Diversity). Nesting, hatching, and fledging occur from April to August (Sibley 2003). They may require nesting adjacent to streams or rivers in order to float their young out to the ocean after fledging (Zeiner et al.). Vast reduction in old growth forests have caused a 90% reduction in murrelet populations, and they could be extinct within 50 years in California and along much of the west coast (Center for Biological Diversity).

Potential Impacts: The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided. If they are known to nest within 10 miles of the project area, appropriate seasonal time

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restrictions must be applied in order to avoid noise disturbance to nesting murrelets.

Great blue heron- (*Ardea herodias*).

Family: Ardeidae

Special Status: Protected under Migratory Bird Act Treaty; Board of Forestry Sensitive Species; NatureServe rank: G5, S4.

Habitat/Life History Requirements: Great blue herons require nearby water, which could include the ocean, rivers, streams, or ponds (Cornell lab). They nest in colonies in or immediately adjacent to water (Sibley 2014).

Potential Impacts: The project area does have significant standing water or habitat for blue herons. If there is significant standing water in the vicinity of the project area, these areas will be noted and potential for herons to enter the project area during feeding/foraging will be assessed. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided.

American peregrine falcon: (*Falco peregrinus*).

Family: Falconidae

Special Status: Federally Delisted, State Delisted, CDFW Fully Protected; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G4T4, S3S4

Habitat/Life-history Requirements: The formerly federally endangered American peregrine falcon was delisted in 1999 due to recovery (USFWS ECOS). The American peregrine falcon is an uncommon year-round resident and migrant in California (Zeiner et al. 1988). Peregrine falcons typically use cliffs and ledges near bodies of water for cover and nesting areas, but they may also nest on buildings or bridges in the city (Sibley 2003, Cornell Lab). Peregrine falcons may breed in woodland, forest, or coastal habitat (Zeiner et al. 1988). Riparian and wetland areas are important habitat yearlong (Zeiner et al. 1988).

Potential Impact: Peregrine falcons may breed in a wide variety of habitats, and they have the potential to occur in the area of impact. A low-intensity walking survey of the timber stands on the parcel will scan for signs of raptors. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided.

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Bank swallow (*Riparia riparia*)

Family: Hirundinidae

Special Status: Endangered in California; Protected under Migratory Bird Treaty Act; NatureServe Rank G5, S2.

Habitat/Life-history Requirements: Bank swallows occupy riparian and grassland areas where they feed for insects. They require sandy banks for excavating nests (Zeiner et al.) They breed from May to early July (Sibley 2014).

Potential Impact: Bank swallows are unlikely to breed within the immediate project area however they could potentially pass through during migration. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided.

Black-crowned night heron (*Nycticorax nycticorax*)

Family: Ardeidae

Special Status: California Special Animals List; NatureServe Ranks G5 S4

Life history and habitat: The black-crowned night heron is an uncommon, crepuscular species in northwestern California (Zeiner et al.) It relies upon water and wetland areas for feeding and foraging, and nests in dense vegetation near these areas, or in stands of trees. It will engage in inter-species nesting, living with multiple species such as other herons and egrets while it nests and rears its young (Cornell Lab of Ornithology). The heron's foraging and nesting grounds can be up to 5 miles apart (Zeiner et al.)

Potential Impact/Mitigation: There may be nesting or foraging habitat for the black-crowned night heron within or surrounding the BAA. A low-intensity walking survey of the suitable habitat areas on the parcel will scan for signs of nesting birds. The immediate area of impact will be intensively surveyed for signs of nesting or foraging birds prior to operations (BIO-2), and impacts will be avoided.

American bittern (*Botaurus lentiginosus*)

Family: Ardeidae

Special Status: California Special Animals List; Nature Serve Ranks G5, S3S4

Life history and habitat: The American bittern is abundant in freshwater wetland

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habitats throughout northern California, and is occasionally also found in saltwater wetlands (Zeiner et al.) They feed upon insects, fish, crustaceans, reptiles, amphibians, and small mammals, tending to forage primarily at dawn and dusk hours of lower light (Cornell lab). They nest in areas of thick herbaceous cover, in riparians or grassland areas with sufficient vegetation to offer deep cover (Cornell lab).

Potential Impact/Mitigation: The BAA is unlikely to support the American bittern.

Mountain plover: (*Charadrius montanus*)

Family: Charadriidae

Special Status: California Special Animals List; California Species of Special concern; Proposed Federally Endangered; NatureServe Ranks G3, S2?

Life history and habitat: The mountain plover is an insectivorous, uncommon seasonal migrant in northern California that does not breed locally. Mountain plover populations have declined by over 60% due to loss of wintering habitat via conversion of grasslands to development and agriculture (Hunting and Fitton 1999).

Potential Impact/Mitigation: The mountain plover has been observed in Humboldt Bay however it would be unlikely to occur within the BAA and is not present during the breeding season (April-August).

Northern Spotted Owl: (*Strix occidentalis caurina*)

Family: Strigidae

Special Status: Threatened under ESA; Threatened under CESA; California Special Animals List; Global threat ranks: N3, S3

Habitat/Life History Requirements: See **Appendix 5** for CNDDDB spotted owl map of BAA and vicinity. The nearest mapped Northern spotted owl (NSO) location is 4.1 miles west of the BAA. The nearest Critical Habitat (CH) is xxx miles away. NSO typically nest or roost in multi-layered, late seral stage coniferous or mixed conifer/hardwood forests with high canopy closure, large overstory trees, and broken-topped trees or other nesting platforms (USFWS 2012). Spotted owls are known to breed throughout the Klamath mountains of Trinity County. Northern spotted owls may use a broad range of habitats for foraging. Their favored prey, the dusky-footed woodrat (*Neotoma fuscipes*), typically inhabits the forest edge (Harris 2005).

Potential Impacts/Mitigation: USFWS protocol surveys are requisite for any

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activity that may impact nesting, roosting, or foraging habitats for northern spotted owls (BIO-3).

Black-capped chickadee: (*Poecile atricapillus*)

Special Status: G5 S3

Family: Paridae

Habitat/Life History Requirements The black-capped chickadee occurs rarely in Humboldt County and has a highly restricted range in California. The chickadee occurs coastally, generally restricted to low elevations within ten miles of the ocean, with no known inland populations (Hunter et al.) The birds occupy primarily riparian habitat, favoring red alder, willow, and other streamside vegetation (Hunter et al.) Black-capped chickadees eat insects and other invertebrates as well as foraging on seeds and nuts found in conifers, alders, and riparian trees (Zeiner et al.)

Potential Impacts/Mitigation: The BAA is unlikely to support the black-capped chickadee.

Olive-sided flycatcher (*Contopus cooperi*)

Special Status: Protected by MTBA;

Family:

Habitat/Life History Requirements: Olive-sided flycatchers are late-arriving migratory birds found in coniferous forests and forest edges throughout Humboldt County and the Klamath Mountains (Hunter et al.) They prefer mature forests with open understories and canopies (Zeiner et al.) As the name suggests, the bird feeds on insects, often perching on snags and hunting for insects before returning to their perch. They are thought to be declining due to habitat loss and alteration, that change forest structure and remove snags (Hunter et al.)

Potential Impacts/Mitigation: The BAA is likely habitat for the olive-sided flycatcher. The immediate area of impact will be intensively surveyed for signs of nesting birds prior to operations (BIO-2), and impacts will be avoided.

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4. Fish

Anadromous fish are not found in the portion of upper Freshwater creek which runs through the BAA due to five-meter waterfall that occurs ten miles upstream of its confluence with Ryan Slough. This waterfall serves as an anadromous barrier past which no fish passage is possible. The BAA is situated several miles above the barrier. Upstream of the barrier there is a population of resident rainbow trout; none have been observed on the BAA during field visits. Anadromous fish populations below the barrier are influenced by cumulative impacts to Freshwater creek and its tributaries occurring above the barrier, and thus are included in this document as potentially impacted species although they are not found within the BAA. Fully protected fish species are protected under CDFW Code 5515

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Acipenser medirostris</i>	Green sturgeon	Threatened	None	G3 S1S2	Negligible. Coastal.
<i>Eucyglobius newberryi</i>	Tidewater goby	Endangered	None	G3 S3	Negligible. Coastal.
<i>Spirinchus thaleichthys</i>	Longfin smelt	Candidate	Threatened	G5 S1	Negligible. Coastal.
<i>Thaleichthys pacificus</i>	Eulachon	Threatened	None	G5 S3	Negligible. Coastal.
<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	G4 S4	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus clarkii clarkii</i>	Coast cutthroat trout	None	None	G5 S3	Negligible. Blocked by anadromous barrier.

<i>Oncorhynchus kisutch</i>	Coho salmon- southern Oregon/northern California ESU	Threatened	Threatened	G4T2Q S2?	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus mykiss irideus</i>	Steelhead- Klamath mountains DPS	None	None	G5T3Q S2	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus mykiss irideus</i>	Steelhead- northern California DPS	Threatened	None	G5T2T3Q S2S3	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus mykiss irideus</i>	Summer-run steelhead trout	None	None	G5T4Q S2	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus tshawytscha</i>	Chinook salmon- California coastal ESU	Threatened	None	G5 S1	Negligible. Blocked by anadromous barrier.
<i>Oncorhynchus tshawytscha</i>	Chinook Salmon- upper Klamath and Trinity Rivers ESU	None	None	G5 S1S2	Negligible. Blocked by anadromous barrier.

5. Mammals

Fully protected mammals are protected under CDFW code 4700. A brush rabbit (*Sylvilagus bachmani*) denning site was observed during a field visit on May 5, 2018 (Photo 6).

Special Status mammals in the nine-quad area of the BAA.

Scientific Name	Common Name	FESA	CESA	Global Ranks	Likelihood to Occur
<i>Aplodontia rufa humboldtiana</i>	Humboldt mountain beaver	None	None	G5TNR SNR	Moderate. Some suitable habitat.
<i>Erethizon dorsatum</i>	North American porcupine	None	None	G5 S3	High. Sufficient

					suitable habitat.
<i>Arborimus pomo</i>	Sonoma tree vole	None	None	G3 S3	Moderate. Some suitable habitat.
<i>Myotis evotis</i>	Long-eared myotis	None	None	G5 S3	High. Sufficient suitable habitat.

Humboldt Mountain Beaver (*Aplontia rufa humboldtiana*)

Family: Apolondontiidae

Special Status: California Special Animals List, Natureserve Ranks G5TNR, SNR.

Habitat/Life-history Requirements: There are three distinct populations of mountain beaver in California considered to be subspecies (CNDDDB 2017). While the Point Arena mountain beaver located in Southern Mendocino County is considered Endangered under the ESA, the status of the Humboldt mountain beaver is poorly understood (Natureserve). Mountain beavers inhabit coastal coniferous forests, and live primarily subterranean lives, coming aboveground to feed primarily on young conifer saplings (Wheeler 2017).

Potential Impacts: The project area will be thoroughly searched for mountain beaver burrows and signs of feeding. If a burrow is found close to the project area, measures must be taken in order to assure that noise and ground disturbance to these animals is minimized (BIO-4). They may be disturbed by ground vibrations caused by heavy equipment or traffic, for example (Wheeler).

North American porcupine (*Erethizon dorsatum*)

Family: Erethizontidae

Special Status: CDFW Special Animals List (2017); NatureServe Ranks: G5, S3

Habitat/Life-history Requirements: The American porcupine is most commonly found in montane conifer, Douglas-fir, alpine dwarf-shrub, and wet meadow habitats (Zeiner et al. 1988). The herbivore feeds on a wide variety of aquatic and terrestrial herbs, shrubs, fruits, leaves, and buds in the summer (Zeiner et al.) During the winter, the porcupine diet includes evergreen leaves, twigs, bark, and cambium of trees, particularly conifers (Zeiner et al).

Potential Impact/Mitigation: Although widely distributed throughout North America and occurring in many habitats, the North American porcupine is

APPENDIX 3: Species of Special Concern- Species Accounts

considered vulnerable in California. The area should be considered potential habitat for the large rodent. The project will incorporate measures to reduce noise and light disturbance to wildlife (BIO-4), and it is not expected to significantly impact the North American porcupine.

Sonoma tree vole (*Arborimus pomo*)

Family: Muridae

Special Status: CDFW Species of Special Concern, NatureServe Ranks: G3, S3

Habitat/Life-history Requirements: The Sonoma tree vole occurs along the North Coast in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood- conifer habitats (Zeiner et al. 1988). The small rodent specializes in feeding on Douglas-fir and grand fir needles, and typically constructs nests in Douglas-fir trees (Zeiner et al.)

Potential Impact/Mitigation: The parcel is dominated by Douglas fir, and may provide habitat for the Sonoma tree vole. An area search will be conducted in order to determine occupancy. If voles are found to be present, avoidance measures will be taken (BIO-4).

White-footed vole (*Arborimus albipes*)

Special Status: Muridae

Habitat/Life-history Requirements: There are few known records of the white-footed vole, which in California is only found in Humboldt and del Norte counties. They are thought to be highly correlated with red alder stands, the leaves of which make up 40% of the vole's diet (Zeiner et al., CDFW Wildlife research 2017). The vole is found near small streams with riparian vegetation and dens in vegetation under logs, stumps, and rocks (Zeiner et al). The vole is likely preyed by snakes, weasels, and raptors.

Potential Impacts: The area should be considered potential habitat for the vole. An area search will be conducted in order to determine occupancy. If voles are found to be present, avoidance measures will be taken (BIO-4).

APPENDIX 3: Species of Special Concern- Species Accounts

Humboldt Marten (*Martes americana humboldtensis*)

Family: Mustelidae

Special Status: Endangered CESA; California Species of Special Concern; California Special Animals List; NatureServe Ranks T1, S1.

Habitat/Life-history Requirements: The Humboldt Marten is recognized as Endangered under the California Endangered Species Act as of August 2018. Two distinct marten species exist in California, the Humboldt marten from the Sonoma County border to Oregon, and the Sierra marten from Sonoma county through the Sierras (NatureServe). Martens are associated with late-successional coniferous forests with heavy canopy and dense understories and are primarily arboreal (Bolster 1998). They may require large home ranges (Fowler and Golightly 1994). They den in hollow trees and stumps as well as rock piles, and depressions (Bolster). Humboldt Martens, although not listed, are rare and poorly understood.

Potential Impacts: The parcel will be evaluated for marten habitat potential. If sufficient old growth Douglas fir is present on the property, this may necessitate an area search or the use of track plate surveys by a qualified biologist to determine presence of Martens. If they are found on the property, necessary avoidance measures will be taken (BIO-4).

Fisher - West Coast DPS (*Pekania pennanti*)

Family: Mustelidae

Special Status: Federally Proposed as Threatened, State Candidate Threatened, Species of Special Concern; NatureServe Ranks: G5T2T3Q, S2S3

Habitat/Life-history Requirements: The fisher uses large expanses of forest with moderate to high canopy closure, and will avoid open forest, grasslands, and wetlands (USFWS 2014). Fishers use cavities in live trees, snags and down logs for reproductive dens (USFWS 2014). Structural complexity is a critical element of fisher habitat, necessary to provide cover for resting and denning, and habitat for prey (USFWS 2014).

Potential Impact/Mitigation: The property will be evaluated for fisher habitat. If sufficient mature forest without gaps is present on the property, this may

APPENDIX 3: Species of Special Concern- Species Accounts

necessitate an area search or the use of track plate surveys by a qualified biologist to determine presence. If fishers are found on the property, necessary avoidance measures will be taken (BIO-4).

Townsend's big-eared bat: (*Plecotus townsendii ingens*)

Family: Vespertilionidae

Special Status: Candidate for ESA and CESA; California Special Animals List; Global Threat Rank G3G4, S2.

Habitat/Life History Requirements: The big-eared bat is considered uncommon but widespread throughout California below alpine and sub-alpine elevations (Zeiner et al.) There are two species of the big-eared bat in California; the Townsend's big-eared bat occupies a thin band along the California coast (Pierson and Fellers 1998). The bat nests in caverns but does so less cryptically than other bat species, possibly making it susceptible to predation and disturbance (Pierson and Fellers). The bat uses echolocation to feed and predated almost exclusively (90%) on moths (Zeiner et al.)

Potential Impact/Mitigation: There are areas of potential habitat on this parcel. The project will incorporate measures to reduce noise and light disturbance that may interfere with bat roosting habitat in the area (BIO-4). A biologist shall conduct surveys for roosting bats prior to any construction or vegetation in proposed development areas. If any evidence of bats roosting in the areas to be developed is detected, potential impacts to bats will be mitigated in consultation with CDFW. Any maternity colonies or hibernation roosts for the Townsend's big-eared bat will be protected by a 400-foot buffer. The potential impact with mitigation incorporated is less than significant.

Long-eared myotis: (*Myotis evotis*)

Family: Vespertilionidae

Special Status: Listed as Threatened under the ESA; California Special Mammals List; Global threat ranks G5 S3.

Habitat/Life History Requirements: The long-eared myotis is widespread but uncommon throughout California, and feeds on arthropods such as beetles, moths, spiders and other insects (Zeiner et al. 1988). It is a long-lived bat (can live to 22 years) that uses niches and crevasses both natural and human-made for roosting

APPENDIX 3: Species of Special Concern- Species Accounts

(Batwatch 2017). The long-eared myotis is particularly susceptible to White-nose syndrome, a recently-discovered fungal disease killing many cavern-dwelling bats in the myotis genus (NatureServe).

Potential Impacts/Mitigation: There may be potential habitat for the long-eared myotis on this parcel. The project will incorporate measures to reduce noise and light disturbance that may interfere with bat roosting habitat in the area (BIO-4). A biologist shall conduct surveys for roosting bats paying particular attention to areas that provide suitable roosting habitat prior to any construction or vegetation in proposed development areas. If any evidence of bats roosting in the areas to be developed is detected, potential impacts to bats will be mitigated in consultation with CDFW. Any maternity colonies or hibernation roosts for the long-eared myotis will be protected by a 400-foot buffer.

APPENDIX 4: Global Conservation Status Definition

Listed below are definitions for interpreting NatureServe global (range-wide) conservation status ranks. These ranks are assigned by NatureServe scientists or by a designated lead office in the NatureServe network.

G1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 Imperiled – At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.

G3 Vulnerable – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.

G4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 Secure – Common; widespread and abundant.

G#G# Range Rank – A numeric range rank (e.g. G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

Intraspecific Taxon Conservation Status Ranks

T# Intraspecific Taxon (trimonial) – The status of intraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S.

Appendix 4: Global Conservation Status Definition

Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

Subnational (S) Conservation Status Ranks

S1 Critically Imperiled – Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.

S2 Imperiled – Imperiled in the jurisdiction because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from jurisdiction.

S3 Vulnerable – Vulnerable in the jurisdiction due to a restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure – Common, widespread, and abundant in the jurisdiction.

S#S# Range Rank – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip more than two ranks (e.g., SU is used rather than S1S4).

Rank Qualifiers

? Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status

Appendix 4: Global Conservation Status Definition

Q Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

APPENDIX 5: RARE PLANT RANKING DEFINITIONS

California Native Plant Society List Definitions:

California Rare Plant List 1A

California Rare Plant List 1B

California Rare Plant List 2A

California Rare Plant List 2B

California Rare Plant List 3A

California Rare Plant List 3B

California Rare Plant List 4A

California Rare Plant List 4B

California Native Plant Society Threat Ranks:

Ranks at each level also include a threat rank (e.g., CRPB 4.3) and are determined as follows:

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

Notes:

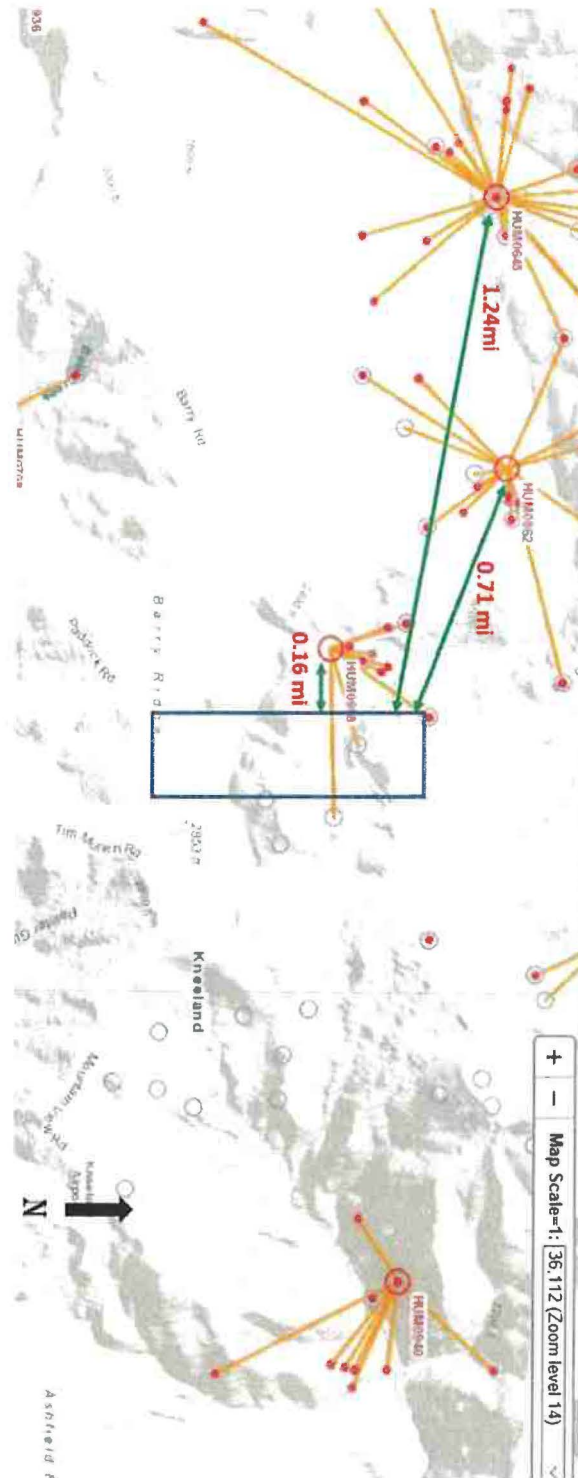
1. The above Threat Rank guidelines only represent a starting point in the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Rank.

APPENDIX 5: RARE PLANT RANKING DEFINITIONS

2. Many of the Threat Ranks have not been reassessed since the time they were first designated after implementation of the Rare Plant Status Review Process, and therefore may not represent the current level of threats associated with a given taxon.
3. The Threat Ranks do not designate a change of environmental protections. For instance a CRPR 1B.3 plant has the same environmental protections as a CRPR 1B.1 plant, and it is mandatory that both be fully considered during preparation of environmental documents relating to CEQA.

APPENDIX 6: CNDDDB SPOTTED OWL OBSERVATIONS

(source: CNDDDB Spotted Owl Viewer, Accessed June 2018)



BOTANICAL REPORT OF SPECIAL STATUS NATIVE PLANT POPULATIONS AND NATURAL COMMUNITIES



APN: 314-131-073

Kneeland, Humboldt County, CA

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Summary Information

Legal description:	Portions of section 16 of T4N, R2E, H.B. &M.
APN:	314-131-073
USGS 7.5' Quad:	Iaqua Buttes (4012368)
Parcel size:	60 Acres
Dates of survey:	April 25 th and June 11 th , 2022
Surveyed by:	Sarah Mason
Field survey effort:	5 hours
Results:	<u>No CRPR 1 or 2 plants were observed</u>

Introduction, Background, and Project Understanding

Purpose and Need

This botanical survey report was prepared to assess potential impacts to botanical resources and summarizes the results of a survey conducted in Kneeland, California (APN: 314-131-073). The survey was performed to identify special status plants and sensitive plant communities that could be impacted by operations associated with cannabis cultivation operations in accordance with the California Environmental Quality Act (CEQA) using the California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018).

Project Description and Setting

The proposed project of constructing a 977,560-gallon rainwater catchment pond, intended for fire control and cannabis activities, will be installed in the south west corner of the 60-acre parcel. The land was historically utilized for logging and the project area is dominated by several invasive grass species.

The parcel address is located at 1001 Barry Road, Kneeland, California 95549, within the Iaqua Buttes USGS 7.5-minute quadrangle (Quad code: 4012368:), section 16, T4N, R2E, H.B.&M. The center location of the project area is 40°43'23.12" N 123°57'47.15"W at an elevation of 2758 feet (840 meters) above sea level (Google Earth Pro, 2022).

Soil, Topography, and Hydrology

Data from *Web Soil Survey* for the project area do not indicate any unique soil types that would provide habitat for rare plants such as serpentinite or peat.

The project area is situated along a ridgetop, adjacent to Barry Road, approximately 2.3 miles northwest of the Kneeland airport and 17.5 miles east of Eureka, California. The project area lies within the Freshwater Creek watershed which drains into the Pacific Ocean via Freshwater Slough and Arcata Bay. Refer to Figure 1 (Appendix C) for locator map.

The project area is on a mostly flat hilltop with a slight northeast facing aspect ranging from ~2690 to ~2755 feet in elevation.

Definitions

Special Status Plants and Plant Communities

Special status plants include taxa that are listed under the Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA) in addition to plants which meet the definition of rare or endangered under the California Environmental Quality Act (CEQA). CDFW recommends that plants on California Rare Plant Ranks (CRPR) Lists 1A (presumed extinct or extirpated), 1B (rare, threatened, or endangered in California and elsewhere), 2A (presumed extirpated) and 2B (rare, threatened, or endangered in California but more common elsewhere), or other species that warrant consideration based on local or biological significance, be addressed during California Environmental Quality Act (CEQA) review of proposed projects. Plants of rank 3 and 4, which are under review and watch lists respectively, are addressed by Naiad Biological Consulting, and may warrant consideration under CEQA if potential or cumulative impacts to the plant exist.

CDFW's natural community rarity rankings follow NatureServe's 2012 *NatureServe Conservation Status Assessment: Methodology for Assigning Ranks*, in which all alliances are listed with a global (G) and (S) rank. NCSC are those natural communities that are ranked S1 to S3 (CDFW, 2020), where 1 is critically imperiled, 2 is imperiled, and 3 is vulnerable. However, they may not warrant protection under CEQA unless they are considered high quality. Human disturbance, invasive species, logging, and grazing are common factors considered when judging whether the stand is high quality and warrants protection.

Methods

Pre-Site Visit Data Compilation and Preparation

Prior to conducting the field surveys, the following database information was reviewed to determine the location and types of botanical resources that possibly exist in the survey area. This pre-field investigation included searches of the California Natural Diversity Database (CNDDDB, 2021) and the California Native Plant Society's *Inventory of Rare and Endangered Plants* (CNPS, 2021). This list includes CRPR (California Rare Plant Rank) 1 and 2 plants that have been observed within a 9-quad search centered on the Iaqua Buttes quadrangle. USGS quadrangles within the search area include: Arcata South (4012471), Hydesville (4012451), Iaqua Buttes (4012368), Korbel (4012378), Mad River Buttes (4012367), Maple Creek (4012377), McWhinney Creek (4012461), and Owl Creek (4012358). The results of the project scoping are presented below in Table 1 (Appendix 1).

Botanical Field Survey and Habitat Investigation

The botanical field survey for this project was completed by Sarah Mason. Sarah holds a BS in Botany from Humboldt State University and is currently employed as an Environmental Services Intern with California State Parks for the North Coast Redwoods District. Sarah has worked as an assistant biologist and botanist with Caltrans, a Botanical Technician for the Bitterroot and Klamath National Forests, and studied bumble bee communities in the Marble Mountains. Sarah has experience in rare plant identification, protection and monitoring of rare plants, and teaching plant taxonomy at the university level.

Surveys were floristic in nature and conducted in a manner consistent with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). Plants were identified to the lowest taxonomic level necessary to ensure that they were not a species of concern. Plants not identifiable in the field were identified off site with the use of *The Jepson Manual, Vascular Plants of California*. Other resources used to identify plants can be found in the reference section towards the end of this report.

Botanical surveys were conducted throughout the areas proposed for cultivation operations and the associated road system. Surveys were conducted in an intuitive meander focused on areas likely to provide habitat for rare plant species and/or potentially affected (directly or indirectly) by construction operations. These areas include but are not limited to existing permanent and seasonal roads, new road construction, road points and crossings, forest openings (i.e., meadows, landings, and cut banks), springs and watercourses. Refer to Figure 2 (Appendix C) for the survey routes.

Results

Habitats Observed

No special-status vegetation communities or habitats were observed during the botanical survey of the project area. The project area habitat is typical of a valley and foothill grassland within the Northern California Coast ecoregion. Native grasses are present, including *Elymus glaucus* and *Festuca idahoensis*, but no sensitive natural communities could be established due to the high amount of percent cover by invasive grasses, consistent with historic logging and grazing. Much of the habitat within the parcel, outside of the project area, is a mixed evergreen forest, dominated by California black oak (*Quercus kelloggii*) and Douglas-fir (*Pseudotsuga menziesii*). See figures 3 and 4 (Appendix D) for example photos of project area and habitats present.

Species Observed

No CRPR 1 or 2 plants were encountered in the project area. Refer to Table 2 (Appendix B) for a list of species observed in the project area. A total of 89 plant taxa were observed in the project area, of which approximately 27% are invasive species.

Conclusion and Discussion

Conclusion

Results of the botanical field survey indicate that negative impacts to sensitive species or sensitive habitats will not occur as a result of the development of a rain catchment pond at the specific site surveyed.

Although no listed species were observed during the field survey, it is possible that previous ground disturbances, existing drought conditions, which may alter the bloom times and durations, as well as herbivory by deer could have affected the survey results.

Recommendations

Due to the low quality of habitat, from prior land use practices and high numbers of invasive species present, no sensitive plant species, communities or habitats were encountered during the botanical field survey. Native grasses exist within the project area, but native grass alliances could not be established due to the large amount of invasive grasses present. No further botanical surveys are recommended.

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Appendix A. Results from database search

Table 1. Special-Status Plant Species –Iaqua Buttes and 8 surrounding 7.5 min quadrangles

Scientific Name	Common Name	Federal Status	State Status	CA Rare Plant Rank	Blooming Period	Lifeform	Habitat	Micro Habitat	Elevation
<i>Microseris borealis</i>	northern microseris	None	None	2B.1	Jun-Sep	perennial herb	Bogs and fens, Lower montane coniferous forest, Meadows and seeps	mesic.	1000 - 2000 meters
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	None	None	2B.2	May-Jul	perennial rhizomatous herb	Coastal scrub; North Coast coniferous forest	Sometimes roadsides.	30 - 650 meters
<i>Cardamine angulata</i>	seaside bittercress	None	None	2B.1	(Jan)Mar-Jul	perennial herb	Lower montane coniferous forest, North Coast coniferous forest	Wet areas, streambanks.	25 - 915 meters
<i>Noccaea fendleri</i> ssp. <i>californica</i>	Kneeland Prairie pennycress	Endangered	None	1B.1	May-Jun	perennial herb	Coastal prairie	serpentine	760 - 815 meters
<i>Downingia willamettensis</i>	Cascade downingia	None	None	2B.2	Jun-Jul(Sep)	perennial herb	Cismontane woodland, Valley and foothill grassland, Vernal pools	NA	15 - 1110 meters
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand-spurrey	None	None	2B.1	Jun-Aug	annual herb	Marshes and swamps	coastal salt	0 - 3 meters
<i>Cornus canadensis</i>	bunchberry	None	None	2B.2	May-Jul	perennial rhizomatous herb	North Coast coniferous forest	Bogs and fens, Meadows and seeps	60 - 1920 meters
<i>Carex arcta</i>	northern clustered sedge	None	None	2B.2	Jun-Sep	perennial herb	North Coast coniferous forest (mesic)	Bogs and fens	60 - 1400 meters
<i>Carex lyngbyei</i>	Lyngbye's sedge	None	None	2B.2	Apr-Aug	perennial rhizomatous herb	Marshes and swamps	brackish or freshwater	0 - 10 meters
<i>Carex praticola</i>	northern meadow sedge	None	None	2B.2	May-Jul	perennial herb	Meadows and seeps	mesic	0 - 3200 meters
<i>Astragalus umbraticus</i>	Bald Mountain milk-vetch	None	None	2B.3	Apr-Jul	perennial herb	Chaparral; Cismontane woodland; Lower montane coniferous forest	gravelly streambanks.	30 - 825 meters
<i>Lathyrus japonicus</i>	seaside pea	None	None	2B.1	May-Aug	perennial rhizomatous herb	Coastal dunes	NA	1 - 30 meters
<i>Thermopsis robusta</i>	robust false lupine	None	None	1B.2	May-Jul	perennial rhizomatous herb	Broadleafed upland forest, North Coast coniferous forest	NA	150 - 1500 meters
<i>Erythronium oregonum</i>	giant fawn lily	None	None	2B.2	Mar-Jun	perennial bulbiferous herb	Cismontane woodland	sometimes serpentine, rocky, openings; Meadows and seeps	100 - 1150 meters
<i>Erythronium revolutum</i>	coast fawn lily	None	None	2B.2	Mar-Jul	perennial bulbiferous herb	Broadleafed upland forest; North Coast coniferous forest	Mesic, streambanks; Bogs and fens	0 - 1600 meters
<i>Lilium occidentale</i>	western lily	Endangered	Endangered	1B.1	Jun-Jul	perennial bulbiferous herb	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, North Coast coniferous forest	Freshwater and openings	2 - 185 meters
<i>Iliamna latibracteata</i>	California globe mallow	None	None	1B.2	Jun-Aug	perennial herb	Chaparral (montane), Lower montane coniferous forest, North Coast coniferous forest	Often in burned areas.	60 - 2000 meters

							(mesic), Riparian scrub (streambanks)		
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	None	None	1B.2	May-Aug	perennial rhizomatous herb	Coastal bluff scrub; Coastal prairie; North Coast coniferous forest	Often roadcuts.	15 - 880 meters
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	None	None	1B.2	Jun-Aug	perennial herb	Lower montane coniferous forest, North Coast coniferous forest	Meadows and seeps	5 – 1340 meters
<i>Monotropa uniflora</i>	ghost-pipe	None	None	2B.2	Jun-Aug(Sep)	perennial herb (achlorophyllous)	Broadleaved upland forest, North Coast coniferous forest	NA	10 - 550 meters
<i>Montia howellii</i>	Howell's montia	None	None	2B.2	Mar-May	annual herb	North Coast coniferous forest	Vernally mesic, sometimes roadsides; Meadows and seeps; Vernal pools	0 - 835 meters
<i>Epilobium oreganum</i>	Oregon fireweed	None	None	1B.2	Jun-Sep	perennial herb	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	mesic.	500 - 2240 meters
<i>Piperia candida</i>	white-flowered rein orchid	None	None	1B.2	May-Sep	perennial herb	Broadleaved upland forest; Lower montane coniferous forest; North Coast coniferous forest	sometimes serpentinite	30 - 1310 meters
<i>Castilleja ambigua</i> var. <i>humboldtensis</i>	Humboldt Bay owl's-clover	None	None	1B.2	Apr-Aug	annual herb (hemiparasitic)	Marshes and swamps	coastal salt	0 - 3 meters
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes salty bird's-beak	None	None	1B.2	Jun-Oct	annual herb (hemiparasitic)	Marshes and swamps	coastal salt	0 - 10 meters
<i>Glyceria grandis</i>	American manna grass	None	None	2B.3	Jun-Aug	perennial herb	meadows, lake and stream margins	mesic	0 – 2100 meters
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	None	None	1B.2	Apr-Aug	annual herb	Coastal bluff scrub; Chaparral (openings); Coastal prairie; Valley and foothill grassland	NA	5 - 1665 meters
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	None	None	1B.1	Apr-Jul	annual herb	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	Mesic	5 - 1740 meters
<i>Rosa gymnocarpa</i> var. <i>serpentina</i>	Gasquet rose	None	None	1B.3	Apr-Jun	perennial herb	Full sun in chaparral, dwarf forest	ultramafic substrates	400 – 1500 meters
<i>Sanguisorba officinalis</i>	great burnet	None	None	2B.2	Jul-Oct	perennial rhizomatous herb	Bogs and fens, Broadleaved upland forest, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Riparian forest	often serpentinite.	60 - 1400 meters
<i>Bensoniella oregana</i>	bensoniella	None	Rare	1B.1	May-Jul	perennial herb	Bogs and fens, Lower montane coniferous forest, Meadows and seeps	Mesic openings	915 - 1400 meters
<i>Viola palustris</i>	alpine marsh violet	None	None	2B.2	Mar-Aug	perennial rhizomatous herb	Bogs and fens, Coastal scrub	Coastal, mesic	0 - 150 meters

Appendix B. Plant Species Observed

Table 2. List of plant species encountered during surveys

Botanical Name	Common Name	Origin
Trees		
<i>Pseudotsuga menziesii</i>	Douglas-fir	Native
Shrubs		
<i>Amelanchier alnifolia</i>	service berry	Native
<i>Baccharis pilularis</i>	coyote brush	Native
<i>Crataegus monogyna</i>	hawthorn	Cal-IPC: Limited
<i>Lonicera hispidula</i>	pink honeysuckle	Native
<i>Rosa</i> sp.	rose	-
<i>Rubus armeniacus</i>	Himalayan blackberry	Cal IPC: High
Grasses & Graminoids		
<i>Aira caryophyllea</i>	silver hair grass	Non-native
<i>Anthoxanthum odoratum</i>	sweet vernal grass	Cal-IPC: Limited
<i>Arrhenatherum elatius</i>	tall oatgrass	Non-native
<i>Avena barbata</i>	slender oat	Cal-IPC: Moderate
<i>Bromus diandrus</i>	ripgut brome	Cal-IPC: Moderate
<i>Bromus hordeaceus</i>	soft chess	Cal-IPC: Limited
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	Native
<i>Carex tumulicola</i>	foothill sedge	Native
<i>Cynosurus echinatus</i>	bristly dogtail grass	Cal-IPC: Moderate
<i>Dactylis glomerata</i>	orchard grass	Cal-IPC: Limited
<i>Danthonia californica</i>	California oat grass	Native
<i>Elymus caput-medusae</i>	medusa head	Cal-IPC: High
<i>Elymus glaucus</i>	blue wild-rye	Native
<i>Festuca idahoensis</i>	Idaho fescue	Native
<i>Festuca myuros</i>	rattail sixweeks grass	Cal-IPC: Moderate
<i>Festuca perennis</i>	rye grass	Cal-IPC: Moderate
<i>Holcus lanatus</i>	velvet grass	Cal-IPC: Moderate
<i>Juncus occidentalis</i>	Western rush	Native
<i>Juncus patens</i>	spreading rush	Native
<i>Luzula comosa</i>	hairy wood rush	Native
<i>Poa annua</i>	annual bluegrass	Non-native
<i>Poa pratensis</i>	Kentucky bluegrass	Cal-IPC: Limited
Forbs		
<i>Achillea millefolium</i>	yarrow	Native
<i>Acmispon parviflorus</i>	hill lotus	Native
<i>Allium amplexans</i>	narrow leaved onion	Native
<i>Apocynum androsaemifolium</i>	spreading dogbane	Native
<i>Bellis perennis</i>	English daisy	Non-native
<i>Brodiaea elegans</i>	harvest brodiaea	Native

<i>Calandrinia menziesii</i>	red maids	Native
<i>Cardamine oligosperma</i>	Idaho bitter cress	Native
<i>Cerastium glomeratum</i>	sticky mouse-ear chickweed	Non-native
<i>Chlorogalum pomeridianum</i>	common soap plant	Native
<i>Cirsium vulgare</i>	bull thistle	Cal-IPC: Moderate
<i>Clarkia purpurea</i>	four spot clarkia	Native
<i>Claytonia</i> sp.	spring beauty	Native
<i>Daucus carota</i>	Queen Anne's lace	Non-native
<i>Delphinium decorum</i>	coast larkspur	Native
<i>Erodium cicutarium</i>	redstem filaree	Cal-IPC: Moderate
<i>Fragaria vesca</i>	wood strawberry	Native
<i>Fritillaria affinis</i>	checker lily	Native
<i>Geranium dissectum</i>	cut leaf geranium	Cal-IPC: Limited
<i>Hypochaeris glabra</i>	smooth cat's-ear	Cal-IPC: Limited
<i>Hypochaeris radicata</i>	rough cat's-ear	Cal-IPC: Moderate
<i>Lactuca serriola</i>	prickly lettuce	Non-native
<i>Lepidium chalepense</i>	lens-podded hoary cress	Non-native
<i>Leucanthemum vulgare</i>	ox-eye daisy	Cal-IPC: Moderate
<i>Limnanthes douglasii</i> ssp. <i>nivea</i>	white Douglas' meadowfoam	Native
<i>Linum bienne</i>	pale flax	Non-native
<i>Lomatium utriculatum</i>	lomatium	Native
<i>Lupinus bicolor</i>	miniature lupine	Native
<i>Madia gracilis</i>	gumweed	Native
<i>Marah oregana</i>	coast man-root	Native
<i>Myosotis discolor</i>	changing forget me not	Non-native
<i>Parentucellia viscosa</i>	yellow parentucellia	Cal-IPC: Limited
<i>Plagiobothrys nothofulvus</i>	rusty popcornflower	Native
<i>Plantago lanceolata</i>	English plantain	Cal-IPC: Limited
<i>Potentilla gracilis</i>	slender cinquefoil	Native
<i>Primula hendersonii</i>	mosquito bill	Native
<i>Ranunculus occidentalis</i>	Western buttercup	Native
<i>Rumex acetosella</i>	sheep sorrel	Cal-IPC: Limited
<i>Rumex crispus</i>	curly dock	Cal-IPC: Moderate
<i>Sanguisorba minor</i>	garden burnet	Non-native
<i>Sanicula bipinnatifida</i>	purple sanicle	Native
<i>Sherardia arvensis</i>	field madder	Non-native
<i>Sisyrinchium bellum</i>	Western blue-eyed-grass	Native
<i>Sonchus oleraceus</i>	sow thistle	Non-native
<i>Spergularia rubra</i>	red sand-spurrey	Non-native
<i>Taraxacum officinale</i>	dandelion	Non-native
<i>Torilis arvensis</i>	Tall sock-destroyer	Cal-IPC: Limited
<i>Toxicoscordion fremontii</i>	Fremont's deathcamas	Native
<i>Tragopogon dubius</i>	yellow salsify	Non-native

<i>Trifolium dubium</i>	little hop clover	Non-native
<i>Trifolium incarnatum</i>	crimson clover	Non-native
<i>Trifolium subterraneum</i>	subterranean clover	Non-native
<i>Triphysaria pusilla</i>	little owl's clover	Native
<i>Triteleia laxa</i>	Ithureil's spear	Native
<i>Vicia sativa</i>	spring vetch	Non-native
<i>Viola praemorsa</i>	Astoria violet	Native
<i>Wyethia angustifolia</i>	mule's ear	Native
<i>Yabea microcarpa</i>	California hedge parsley	Native
Ferns		
<i>Polypodium calirhiza</i>	licorice fern	Native
<i>Pteridium aquilinum</i>	Western brackenfern	Native

Appendix C. Maps



Figure 1. Locator Map of Project Area (blue star) and the nearest town of Eureka, CA (red letter "E").

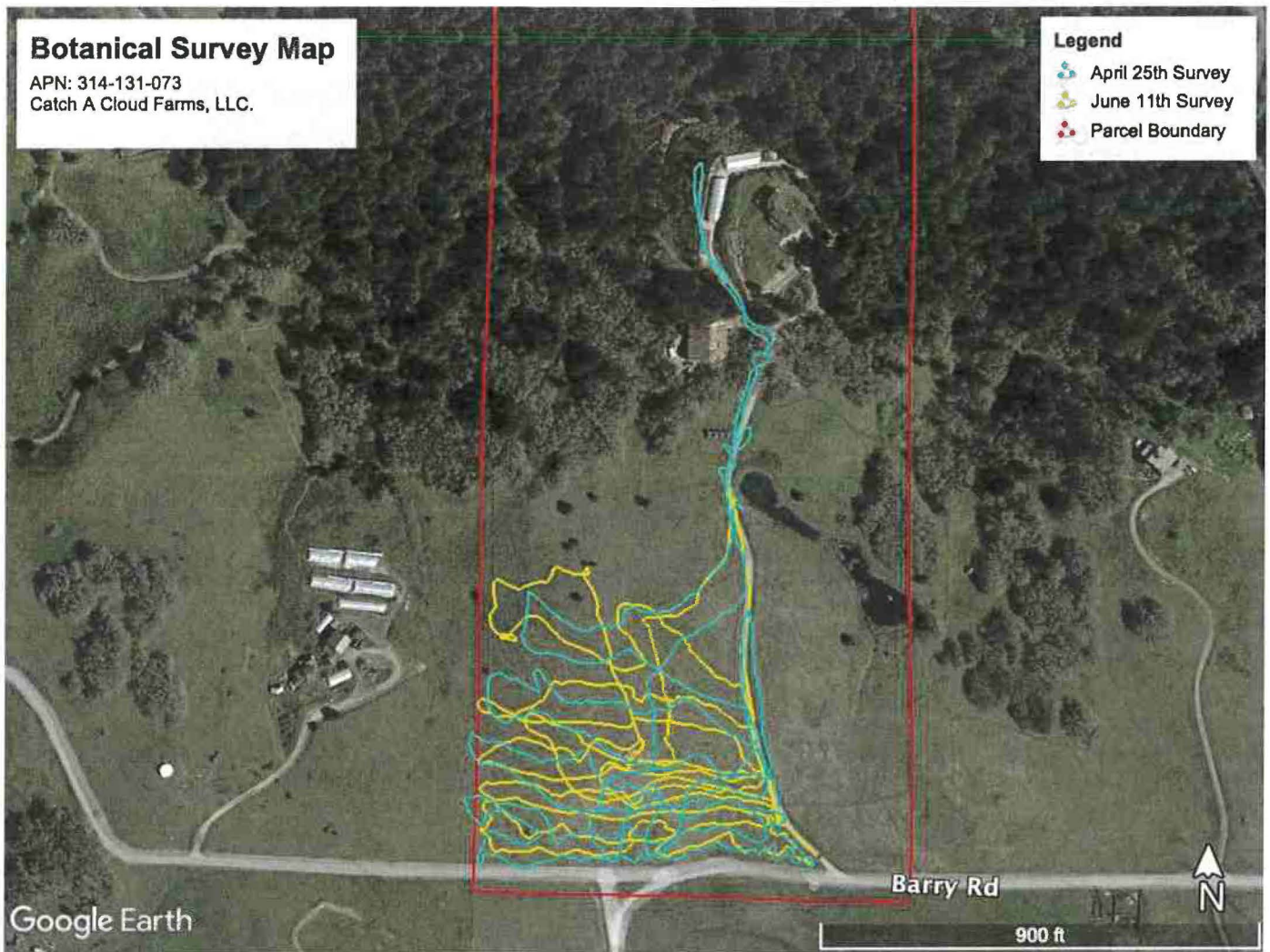


Figure 2. Map of project area and survey tracks.

Appendix D. Project Area and Habitat



Figure 3. Project area dominated by invasive grasses, including tall fescue (*Festuca arundinaceae*) and bristly dogtail grass (*Cynosurus echinatus*).



Figure 4. Project area habitat a foothill grassland neighbored by mixed-evergreen forest.