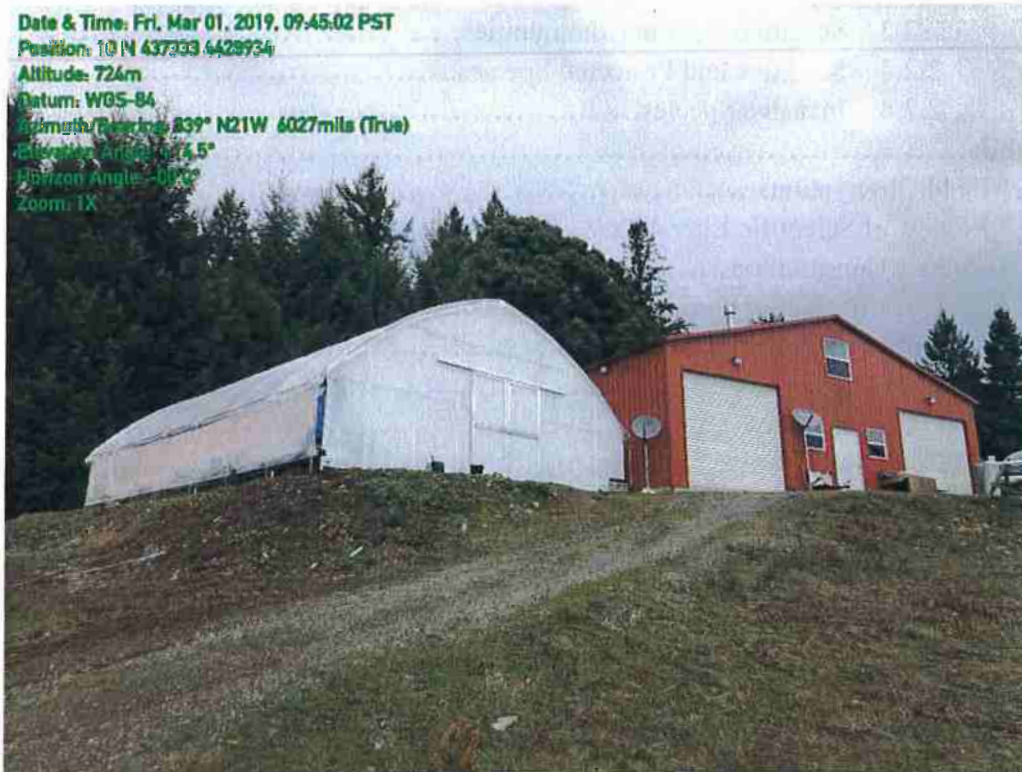


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A Biological Assessment for Commercial Cannabis Cultivation

For

Chad Mussey
PO Box 1932
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APN 223-032-004



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1.0 Introduction

1.1 Purpose and Need

This biological assessment has been prepared for the Chad Mussey property along Reed Mountain road, as a supplement to a commercial cannabis cultivation permit.

Through obligations of environmental review under the California Environmental Quality Act (CEQA), permits are required by both the State of California and Humboldt County for all cultivation and irrigation activities.

Humboldt County regulates commercial cannabis through the Commercial Medical Marijuana Land Use Ordinance (CMMLUO), which requires permit applicants to assess all potentially significant impacts to biological resources from existing or proposed cannabis cultivation operations.

1.2 Project Sites and Biological Assessment Area

The project sites are defined as the four cultivation areas within the 166-acre property under ownership of Chad Mussey (APN 223-032-004, figure 1). The biological assessment area (BAA) is defined as the entire 166-acre parcel.

2.0 Regulatory Background

2.1 Cannabis Cultivation

With the passage of Proposition 64 in November 2016 (Medical Cannabis Regulation and Safety Act) cannabis was determined to be a commercial agricultural crop and was legalized for recreational use as well. Cannabis production is regulated by the California Department of Food and Agriculture (CDFA) which administers the Cal Cannabis program regulating cannabis licensing from the state. This permitting process is subject to environmental review under The California Environmental Quality Act (CEQA).

Under CEQA, Humboldt County, as the lead regulatory agency, requires that CMMLUO permit applicants have a qualified biologist professional assess the project area for the presence of sensitive biological communities and protected species of plants and animals.

2.2 Sensitive Biological Communities

Habitats that fulfill distinctive functions or values such as wetlands, streams or riparian habitat are termed sensitive biological communities. These communities are protected federally with the Clean Water Act (CWA) regulations. In addition, these habitats are regulated by the state via the Porter-Cologne Act, The California Department of Fish and Wildlife (CDFW) Fish and Game Code and the California Environmental Quality Act (CEQA). They are further governed by local ordinances such as city or county tree ordinances, Special Habitat Management Areas or General Plan Elements.

2.2.1 Aquatic Habitats

Federal, State and local regulatory agencies have recognized aquatic habitats such as water bodies, waterways and wetlands as ecologically significant biological communities.

The Clean Water Act (CWA) authorizes the U.S. Army Corp of Engineers (ACOE) to regulate the "Waters of the United States" under section 404. These are defined as "waters susceptible to use in commerce, including interstate waters and wetlands, all other waters, and their tributaries (33 CFR 328.3). Non-wetland waters of a sufficient depth and inundated for a sufficient duration, which also exclude hydrophytic vegetation, are considered "other waters" and are usually defined by the high-water mark. These non-wetland waters include lakes, streams and rivers.

The state of California defines "Waters of the state", through the Porter-Cologne Act, as "any surface or groundwater, including saline waters, within the boundaries of the state." Within the state, the Regional Water Quality Control Board (RWQCB) is responsible for protecting all waters within its regulatory boundaries, with a special emphasis on wetlands, riparian areas, and headwaters. These sensitive areas that are not fully protected by the ACOE's section 404 are regulated by the RWQCB. State waters are also protected from cannabis cultivation impacts through Order 2015-0023 Waiver of Waste Discharge and General Water Quality Certification for Discharges of Waste from Cannabis and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region. CDFW also exerts jurisdiction over lakes, streams and riparian areas through section 1600-1616 of the CDFG Code, and Humboldt County has additional jurisdiction through the Humboldt County General Plan (§BR-P5).

2.2.2 Sensitive Biological Communities

CDFW and the California Native Plant Society (CNPS) defines Sensitive Natural Communities as vegetation types with a state ranking of S1 to S3 by protocols established by the Nature Serve Heritage methodologies. This system uses the best science available to determine each community's range and distribution, and potential threats, to establish rarity. There are no specific protocols for mitigating impacts to sensitive communities, but they are considered for environmental review under CEQA checklist IVb.

The state ranking (S) is as follows:

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

2 -Imperiled-At risk because of rarity due to very restricted range, very few populations, (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

3 -Vulnerable-At moderate risk of extinction due to a restricted range, relatively few populations, (often 80 or fewer), recent widespread declines, or other factors.

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

5 – Secure– Common; widespread and abundant.

A global ranking (G) is also often used; for this assessment the state ranking will be sufficient for analysis.

2.2.3 Sensitive and Protected Species

The Federal Endangered Species Act (FESA) of 1973 is intended to protect and recover imperiled animal and plant species and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service (Service) and the Commerce Department's National Marine Fisheries Service (NMFS). Under the ESA, species may be listed as either endangered, threatened, or as a candidate for listing. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. Candidate species are currently under review for a proposed listing.

The California Endangered Species Act (CESA) states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as endangered, threatened, or as a proposed candidate species.

CDFW has also developed a list of "Species of Special Concern" (SSC) that includes species whose populations, reproductive capacity, or habitat may be declining, as well as a number of "fully protected" species, listed by the state before CESA was enacted into law.

The Migratory Bird Treaty Act of 1918 (U.S., Canada, Mexico, Japan, Russia) also extends federal protections to all nesting birds, regardless of sensitive status. Nesting adults, eggs, and young are protected by this treaty.

2.2.4 Invasive Species

Invasive plant and animal species can impact wildlife by competing with or replacing native species. This may degrade habitats important for forage or shelter. The current Humboldt County cannabis permitting process includes language addressing the presence and removal of invasive plant species from cultivation sites. Site visits include an assessment of invasive species present and recommendations for removal as necessary.

3.0 Methods

3.1 Field Observations

All field data was recorded by Wildlife Biologist Brit O'Brien on March 1st, 2019, using a 100' measuring tape for all distance measurements and a Theodolite application for measuring slope, elevation, and GPS locations. Leica binoculars (10 x 42) were used to identify any wildlife sightings. Portions of all aquatic and terrestrial habitats within the project area were assessed,

including photos of typical habitats, vegetation, and site features.

3.2 Review of Scientific Literature

Most of the scientific literature and reference material was sourced online through journals, databases or published public sources. Some general data was sourced from USFWS, USDA, and CDFW factsheets, CEQA reference material and naturalist field guides.

3.3 Agency Consultation

Much of the scientific literature referenced in this report was produced by various State and Federal agencies. As most of the necessary data and sources are available online and in other formats, no agencies were consulted on behalf of this assessment.

3.4 Sensitive Biological Communities

The Natural Resources Conservation Service Web Soil Survey (WSS) was analyzed for specific soil types that could support sensitive plant communities and/or any aquatic features within the BAA. Satellite imagery from USGS topographic maps, the National Agriculture Imagery Project, the Humboldt County Biological Resources Map, and the National Wetlands Inventory was used to scope for possible sensitive natural communities within the BAA.

Survey data from the site visit was analyzed with existing published literature and data to classify any potential sensitive biological communities per federal, state, and local jurisdictions. Classification of plant communities was conducted using *A Manual of California Vegetation, Online Editions* (CNPS).

3.5 Sensitive and Protected Species

The preliminary scoping procedure used to determine the listed plants and animals noted in this report included a March query of the California Natural Diversity Database (CNDDB) for any sensitive species detections within 9 quadrangles, of which the Harris quad is at the center (CDFW 2019). These quadrangles include Garberville, Bell Springs, Miranda, Jewett Rock, Fort Seward, Alderpoint, Harris, Piercy, and Noble Butte. A general habitat assessment was performed as well. Given the habitat types listed within the BAA, a species list was developed for animals and plants utilizing the following: CDFW Endangered and Threatened (November 2018), Special Animals List (November 2018), Special Vascular Plants Bryophytes and Lichens List (August 2018), and the California Native Plant Society (CNPS) Endangered and Rare Plants. The above lists were obtained from <https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals>. The Interactive Distribution Map v2.02 available through Calflora was used to check for potential occurrences within the BAA.

Plant species have an additional ranking system designed by the CNPS. The Following alphanumeric codes are from the CNPS List, California Rare Plants Ranks (CRPR):

IA -Presumed extirpated in California and either rare or extinct elsewhere

1B –Rare or endangered in California and elsewhere

2A– Presumed extirpated in California, but more common elsewhere

2B– Rare or endangered in California, but more common elsewhere.

3– Plants for which more information is needed–Review List

4 – Plants of limited distribution–Watch List

The CRPR use a decimal style threat rank. The threat rank is an extension added on to the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. Most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats. Rank 1A and 2A plants have no code extensions as there are no known extant populations in California.

Threat code extensions and their meanings are as follows:

- 1) Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- 2) Moderately threatened in California (20-80% of occurrences threatened/moderate degree of threat)
- 3) Not very threatened in California (<20 % of occurrences threatened/Low degree and immediacy of threat or no current threats known)

4.0 Results and Discussion

4.1 BAA Description

The BAA consists of the approximately 166 acres under Chad Mussey's ownership. Terrestrial habitat on the property is dominated by early to mid-seral forest of the Douglas-Fir series (DFR), including some Coastal Oak Woodland habitat (COW) and some Annual/Perennial Grasslands (Mayer and Laudenslayer 1988). Photos of habitats typical of the BAA are included (Figure 7). Annual mean rainfall in Northern California coastal regions is ~ 40" (<https://wrcc.dri.edu/summary/climsmnca.html>), although some areas may receive more than twice that amount. Elevation ranges from 1750 to 2,450 feet above sea level. Measured slopes in the BAA vary from 5% to 30%. The BAA contains aquatic habitats in the form of intermittent stream habitat in three unnamed tributaries (Class I I and I I I) of Milk Ranch creek, Low-Gap creek, and the East Branch of the South Fork of the Eel River.

The BAA may contain 8 different soil types: Holohan-Hollowtree complex, 50-75% slopes; Tannin-Wohly-Rockyglen complex, 30-50% slopes, Holohan-Hollowtree-Casabonne complex, 9-30% slopes and 30-50% slopes (MLRA 5), Burgsblock-Coolyork-Tannin complex, 30-50% slopes, Yorknorth-Witherell complex, 15-30% and 30-50% slopes, and Coolyork-Yorknorth complex, 5-30% slopes (Figures 3, 3A, 3B).

Land use on the BAA is primarily restricted to cannabis cultivation. The biological assessment site visit on March 1, 2019 included an inventory of wildlife species observed. No amphibians or fish were detected; 3 species of birds were observed or heard, American Robin, Dark-Eyed Junco and Northern Flicker. 1 mammal species was detected, Gray Squirrel. None of these species are considered sensitive under CESA or by CDFW.

The BAA was also assessed for the presence of any potential snags or large residual trees that may provide habitat for Raptor nests. Although some larger trees were observed, no raptor nests were detected on the BAA.

4.2 Site Description

The property is an approximately 166-acre parcel located approximately 2.5 east of Richardson Grove State Park, CA (Figure 1). The parcel consists of the northwest $\frac{1}{4}$ of Section 21, Township 5 south, Range 4 east, HB&M, as made known on the Harris 7.5' USGS Quadrangle Map. Existing development consists of a road network, 6 greenhouses, 3 processing buildings, 3 residence/storage buildings, 2 ponds for irrigation, and ~19 water storage tanks (Figures 1,8). Several diesel tanks for generator use observed on the property had required secondary containment and were in a covered facility.

4.3 Commercial Cannabis Cultivation

The cannabis cultivation will take place in existing greenhouses and outdoor facilities located on four sites throughout the parcel (Photos 1-4). Site 4 (photo 4) along the southern boundary of the property will be removed and the site will undergo remediation to restore the natural slope and vegetation and to prevent any further erosion. The existing cultivation site 1 in the northeast corner of the property will be relocated to prevent encroachment on the 100 foot the buffer distance to a Class II creek (Photo 1). The existing cultivation areas currently in use contain a total cultivation area of approximately 36,640 square feet.

Water for irrigation is currently supplied from an existing well and 2 small ponds. Water is applied by hand at only agronomic rates to prevent runoff from the cultivation sites.

4.4 Sensitive Biological Communities

4.4.1 Aquatic Habitats

The BAA includes three Class I I and I I I intermittent streams, tributaries of the East Branch of the South Fork Eel river, Low Gap creek, and Milk Ranch creek, and ultimately the main-stem Eel river. The intermittent streams may provide flowing water and pools as habitat for aquatic wildlife for at least a portion of the year. The streams have rocky coarse sediment bed with moderate slope gradients and moderate canopy cover over much of their run. These stream systems may provide habitat for wildlife such as Coastal Giant Salamander (*Dicamptodon tenebrosus*) and Foothills Yellow-Legged Frog (*Rana boylei*). The Eel river provides habitat for Summer-run Steelhead (*Onchorhynchus mykiss irideus*, Klamath Mountains Province DPS), Chinook Salmon (*Onchorhynchus tshawytscha*, California Coastal ESU Pop. 17), and Western Pond Turtle (*Emys marmoratus*). Plant species associated with these riparian systems include Red alder (*Alnus rubra*), Sword fern (*Polystichum munitum*), Willow spp. (*Salix*), Big Leaf Maple (*Acer macrophyllum*),

Leopard lily (*Lilium pardalinum*) and other vegetation associated with the Douglas-Fir vegetation series (Raphael, 1988).

4.4.2 Wetlands

The project area is located within the USACE Land Resources Region A, in the Western Mountains, Valleys and Coast Region. This region often experiences frequent and sustained rainfall events that can encourage growth of diverse wetland vegetation, but hydric indicators of wetland presence may often be absent at sites with present wetland vegetation species.

A review of the USFWS National Wetlands Inventory indicates there is likely little possibility of a seasonal wetland on the property. No wetland areas were observed in the project area during the March 1, 2019 visit, though a small temporary pond not used for irrigation is located near the southern property boundary.

4.4.3 Sensitive Natural Communities

No known Sensitive Natural Communities of state-ranking S1 or S2 were reported by CNDDDB within the BAA. The dominant vegetation series is Douglas-Fir forest, which is state-ranked S3 series. No associations in this vegetation series are ranked lower than S3.

4.5 Sensitive and Protected Species

4.5.1 Bird Species of Special Concern

Cooper's Hawk (*Accipiter cooperii*)

Status: CDFW - Watch list (WL); Federally protected under the Bald and Golden Eagle Act, State Rank – S4:

Habitat: Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.

Status within BAA: No occurrences within the BAA. Three listed historical listed occurrences within the 9-quadrant CNDDDB report, Miranda, Garberville and Piercy quads. The most recent in 2005 in the Miranda quad approximately 1.5 mi ENE of Miranda. Suitable nesting habitat may potentially exist within the BAA.

Golden Eagle (*Aquila chrysaetos*)

Status: CDFW - Fully Protected (FP), Watch list (WL); Federally protected under the Bald and Golden Eagle Act, State Rank - S3:

Habitat: Mature and old-growth forests with more than 60% closed canopy (Harris 2005). Uses old nests, and maintains alternate sites. North coast coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. Usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.

Status within BAA: No occurrences within the BAA. Two listed historical occurrences within the 9-quad CNDDDB report, Miranda and Alderpoint. The most recent in 1999 in the Miranda quad. ~4.5 miles SSW of Miranda. No suitable nesting habitat exists within the BAA.

Bald Eagle (*Haliaeetus leucocephalus*)

Status: CDFW - Fully Protected (FP), Watch list (WL); Federally protected under the Bald and Golden Eagle Act, State Rank - S3:

Habitat: Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.

Status within BAA: No occurrences within the BAA. One listed historical occurrence within the 9-quad CNDDDB report in the Garberville quad. No suitable nesting habitat exists within the BAA.

American Peregrine Falcon (*Falco peregrinus anatum*)

Status: CDFW - FP; Federal status – Delisted; State status – Delisted; State rank-S3, S4

Habitat: Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest commonly consists of a scrape or a depression or ledge in an open site.

Status within BAA: No occurrences within the BAA. There was one occurrence within the 9-quad CNDDDB report, in the Miranda quad in 1996. No suitable nesting habitat exists within the BAA.

Osprey (*Pandion haliaetus*)

Status: CDFW - WL; Federal status – None; State status – None; State rank- S4

Habitat: Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.

Status within BAA: No occurrences within the BAA. There were three occurrences within the 9-quad CNDDDB report, in the Miranda, Garberville and Piercy quads. No suitable nesting habitat exists within the BAA.

Northern Spotted Owl (*Strix occidentalis caurina*)

Status: CDFW – SSC; Federal and State status – Threatened; State rank - S2, S3

Habitat: Unlogged, expansive, mature coniferous forest stands with lars and a complex array of vegetation types. Primarily inhabits old growth forests in the northern part of its range and landscapes with a mix of old and younger forest types in the southern part of its range (Klamath region and California). The subspecies' range is the Pacific coast from extreme southern British Columbia to Marin County in northern California. It nests in cavities or on platforms in large trees and will use

abandoned nests of other species (USFWS 2011). Spotted owls form long-term pair bonds and remain in the same geographical areas year after year.

Status within BAA: See Figures 6, 7 and 4.6.1

Little Willow Flycatcher (*Empidonax traillii brewsteri*)

Status: CDFW - WL; Federal status – None; State status – None; State rank- S4

Habitat: Mountain meadows and riparian habitats in the Sierra Nevada and Cascades. Nests near the edges of vegetation clumps and near streams.

Status within BAA: No occurrences within the BAA. There was one occurrence within the 9-quadrant CNDDDB report, in the Miranda, quad. Possible suitable nesting habitat may exist within the BAA.

4.5.2 Animal Species of Special Concern

Pacific Tailed Frog (*Ascaphus truei*)

Status: CDFW – SSC; Federal and State status - none; State rank - S3, S4

Habitat: Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats. Restricted to perennial montane streams. Tadpoles require water below 15 degrees C (Thomson et al 2016).

Status within BAA: No listed occurrences within the BAA. There was one occurrence within the 9-quadrant CNDDDB report, Bear harbor. Potential suitable habitat may exist within the BAA.

Foothill Yellow-Legged Frog (*Rana boylei*)

Status: CDFW – SSC; Federal status – none; State status -Threatened (candidate); State rank - S3

Habitat: Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis (Thomson et al 2016).

Status within BAA: No listed occurrences within the BAA. There were eight occurrences within the 9 quadrant CNDDDB report, Garberville, Etnersburg, Miranda, Fort Seward, Briceland, Harris, Piercy, and Noble Butte. Potential suitable habitat may exist within the BAA.

Southern Torrent Salamander (*Rhyacotriton variegatus*)

Status: CDFW - SSC; Federal and State status - none; State rank - S2, S3

Habitat: Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest. Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rocks within trickling water (Welsh and Lind, 1996).

Status within BAA: No listed occurrences within the BAA. There were seven occurrences within the 9-quad CNDDDB report, Weott, Briceland, Ettersburg and Bear Harbor. Potential suitable habitat may exist within the BAA.

Red Bellied Newt (*Taricha rivularis*)

Status: CDFW – SSC; Federal and State status – none; State rank - S2

Habitat: Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County (Thomson et al 2016). Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.

Status within BAA: No listed occurrences within the BAA. There was five occurrences within the 9-quad CNDDDB report, Ettersburg and Briceland. Potential suitable habitat may exist within the BAA.

Sonoma Tree Vole (*Arborimus pomo*)

Status: CDFW – SSC; Federal and State status – none; State rank - S3

Habitat: North coast fog belt from Oregon border to Sonoma County. In Douglas-fir, redwood & montane hardwood-conifer forests. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce (Polite and Pratt, 1990).

Status within BAA: No listed occurrences within the BAA. There were five occurrences within the 9-quad CNDDDB report, Briceland, Bear Harbor, Piercy and Noble Butte. Potential suitable habitat may exist within the BAA.

West Coast Fisher (*Pekania pennanti*)

Status: CDFW – SSC; Federal status – none; State status–Threatened; State rank -S2, S3

Habitat: Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning (USFWS 2016). Needs large areas of mature, dense forest.

Status within BAA: No listed occurrences within the BAA. There were three occurrences within the 9 quad CNDDDB report Miranda, Piercy and Noble Butte. Potential suitable habitat does not likely exist within the BAA.

Pallid Bat (*Antrozous pallidus*)

Status: CDFW – SSC; Federal and State status – none; State rank - S2

Habitat: Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, occasionally on buildings. Roosting sites are limiting factor in disturbance. Extremely sensitive to human disturbance (CDFW 2018).

Status within BAA: No listed occurrences within the BAA. There were two occurrences within the 9-quad CNDDDB report, Garberville and Piercy. Potential suitable habitat may exist within the BAA.

Western Pond Turtle (*Emys marmorata*)

Status: CDFW – SSC; Federal and State status – none; State rank - S3

Habitat: Resides in ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying (Thomson et al 2016).

Status within BAA: No listed occurrences within the BAA. There were four occurrences within the 9-quad CNDDDB report, Garberville, Miranda, Harris and Ettersburg. Potential suitable habitat does not likely exist within the BAA. .

4.5.3 Fish Species of Special Concern

Shasta Crayfish (*Pacifastacus fortis*)

Status: CDFW – None; Federal and State status – Endangered; State rank – S1

Habitat: Found only in the Fall and Hat creek sub-drainages of the Pit River system. Inhabits cool, clear water with low gradient and temperature variability; substrate is volcanic rubble on sand/gravel; little vegetation.

Status within BAA: No listed occurrences within the BAA. There were one occurrence within the 9-quad CNDDDB report, Bear Harbor. Potential suitable habitat does not likely exist within the BAA.

Pacific Lamprey (*Entosphenus tridentatus*)

Status: CDFW – SSC; Federal and State status – none; State rank - S3

Habitat: Found in Pacific Coast streams north of San Luis Obispo County, however regular runs in Santa Clara River. Size of runs are declining. Swift-current gravel-bottomed areas for spawning with water temps between 12-18 C. Ammocoetes need soft sand or mud.

Status within BAA: No listed occurrences within the BAA. There was one occurrence within the 9-quad CNDDDB report, Garberville. Potential suitable habitat does not likely exist within the BAA.

Coho Salmon (*Oncorhynchus kisutch*) Pop 2

Status: Federal and State status –Threatened; State rank - S2

Habitat: Aquatic, Anadromous fish requiring cool rocky streambeds for breeding. Klamath/North coast flowing waters, Sacramento/San Joaquin flowing water. Federal listing refers to populations between Cape Blanco, Oregon and Punta Gorda, Humboldt County, California. State listing refers to populations between the Oregon border and Punta Gorda, California (CDFW 2018).

Status within BAA: No listed occurrences within the BAA. There were occurrences in eight quads within the 9-quad CNDDDB report, Garberville, Ettersburg, Miranda, Briceland, Harris, Bear Harbor, Piercy, and Noble Butte. No potential suitable habitat exists within the BAA.

Steelhead – Northern California DPS (*Oncorhynchus mykiss irideus*) Pop 1

Status: CDFW – SSC; Federal and State status - none; State rank - S2

Habitat: Northern California coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS. Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer (CDFW 2018).

Status within BAA: No listed occurrences within the BAA. There was one occurrence within the 9-quad CNDDDB report, Jewett Rock. No potential suitable habitat exists within the BAA.

Steelhead – Northern California DPS (*Oncorhynchus mykiss irideus*) Pop 16

Status: CDFW – none; Federal – Threatened; State - none; State rank - S2

Habitat: Northern California coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS. Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer (CDFW 2018).

Status within BAA: No listed occurrences within the BAA. There were occurrences in eight quads within the 9-quad CNDDDB report, Garberville, Jewett Rock, Miranda, Fort Seward, Bell Springs, Alderpoint, Piercy, and Noble Butte. No potential suitable habitat exists within the BAA.

Steelhead – Summer Run Steelhead (*Oncorhynchus mykiss irideus*) Pop 36

Status: CDFW – SSC; Federal and State status - none; State rank - S2

Habitat: Northern California coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS. Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer (CDFW 2018).

Status within BAA: There were occurrences in four quads within the 9-quad CNDDDB report, Fort Seward, Briceland, Bear Harbor and Ettersburg. No potential suitable habitat exists within the BAA.

Chinook salmon - California coastal ESU (*Oncorhynchus tshawytscha*) Pop 17

Status: CDFW – SSC; Federal status - Threatened: State status – none; State rank - S1

Habitat: Aquatic, Klamath/North coast flowing waters. Spring-run chinook in the Trinity River and the Klamath River upstream of the mouth of the Trinity River. Major limiting factor for juvenile chinook salmon is temperature, which strongly effects growth and survival (CDFW 2018).

Status within BAA: No listed occurrences within the BAA. There were occurrences in three quads within the 9-quad CNDDDB report, Garberville, Miranda, and Piercy. No potential suitable habitat exists within the BAA.

4.5.4 Plant Species of Special Concern

<i>Tracyina rostrata</i>	Beaked tracyina	
Fed status – none	State status – none	CA rare plant rank – 1B.2
USGS 7.5' Quad – Fort Seward, Alderpoint, Fort Seward		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat – Cismontane woodland, valley and foothill grassland, chaparral.		
Open grassy meadows usually within oak woodland and grassland habitats. 150-795 m.		

<i>Arabis mcdonaldiana</i>	McDonald's rockcress	
Fed status – endangered	State status – endangered	CA rare plant rank – 1B.1
USGS 7.5' Quad – Noble Butte		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat – Lower montane coniferous forest, upper montane coniferous forest.		
Rocky outcrops, ridges, slopes, and flats on serpentine. 150-1830 m.		

<i>Howellia aquatilis</i>	Water howellia	
Fed status – threatened	State status – none	CA rare plant rank – 2B.2
USGS 7.5' Quad – Fort Seward, Alderpoint		

Documented in BAA - no	Potential Habitat in BAA - no
Habitat – Freshwater marshes and swamps.	

<i>Viburnum ellipticum</i>	Oval-leaved viburnum
Fed status – none	State status – none
CA rare plant rank – 2B.3	
USGS 7.5' Quad – Bell Springs, Harris	
Documented in BAA - no	Potential Habitat in BAA - yes
Habitat – Chaparral, cismontane woodland, lower montane coniferous forest.	

<i>Sedum laxum ssp. eastwoodiae</i>	Red Mountain stonecrop
Fed status – none	State status – none
CA rare plant rank – 1B.2	
USGS 7.5' Quad – Noble Butte	
Documented in BAA - no	Potential Habitat in BAA - no
Habitat – Lower montane coniferous forest. Serpentine soils among rocks. 910-1130 m.	

<i>Carex arcta</i>	Northern clustered sedge
Fed status – none	State status – none
CA rare plant rank – 2B.2	
USGS 7.5' Quad – Garberville	
Documented in BAA - no	Potential Habitat in BAA - no
Habitat – Bogs and fens, north coast coniferous forest.	

<i>Arctostaphylos stanfordiana</i> <i>ssp. raichei</i>	Raiche's manzanita
Fed status – none	State status – none
CA rare plant rank – 1B.1	
USGS 7.5' Quad – Noble Butte	
Documented in BAA - no	Potential Habitat in BAA - no

Habitat – Chaparral, lower montane coniferous forest. Rocky, serpentine sites. Slopes and ridges. 485-1070 m.

Astragalus agnicidus

Humboldt County milk-vetch

Fed status – none

State status – endangered

CA rare plant rank – 1B.1

USGS 7.5' Quad – Miranda

Documented in BAA - no

Potential Habitat in BAA - yes

Habitat – Broad-leaved upland forest, north coast coniferous forest. Disturbed openings in partially timbered forest lands; also, along ridgelines, south aspects. 115-670 m.

Gentiana setigera

Mendocino gentian

Fed status – none

State status – none

CA rare plant rank – 1B.2

USGS 7.5' Quad – Noble Butte

Documented in BAA - no

Potential Habitat in BAA - yes

Habitat – Lower montane coniferous forest, meadows and seeps. Meadows, seeps and bogs. Serpentine substrates. 120-1070 m.

Erythronium revolutum

Coast fawn lily

Fed status – none

State status – none

CA rare plant rank – 2B.2

USGS 7.5' Quad – Miranda, Piercy, Garberville

Documented in BAA - no

Potential Habitat in BAA - yes

Habitat – Streambanks, bogs, and wet redwood and mixed evergreen forest understory.

Sidalcea malviflora ssp. patula

Siskiyou checkerbloom

Fed status – none

State status – none

CA rare plant rank – 1B.2

USGS 7.5' Quad – Garberville

Documented in BAA - no

Potential Habitat in BAA - yes

Habitat – Coastal bluff scrub, coastal prairie, north coast coniferous forest. Open coastal forest; roadcuts. 5-1255 m.

<i>Montia howellii</i>		Howell's montia
Fed status – none	State status – none	CA rare plant rank – 2B.2
USGS 7.5' Quad –Miranda, Fort Seward		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat – Moist to wet habitat, including vernal pools and meadows.		
It sometimes grows in shallow standing water such as puddles.		

<i>Piperia candida</i>		White-flowered rein orchid
Fed status – none	State status – none	CA rare plant rank – 1B.2
USGS 7.5' Quad –Noble Butte, Miranda, Piercy		
Documented in BAA - no		Potential Habitat in BAA - yes
Habitat – Northern California Coniferous forest.		

<i>Silene campanulate</i> spp <i>campanulata</i>		Red Mountain Catchfly
Fed status – none	State status – endangered	CA rare plant rank – 1B.2
USGS 7.5' Quad – Noble Butte		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat – Chaparral, Yellow pine forest, prefers serpentine soils		

<i>Frangula purshiana spp</i> <i>ultramafica</i>	Caribou Coffeeberry	
Fed status – none	State status – none	CA rare plant rank – 1B.2
USGS 7.5' Quad – Jewett Rock		
Documented in BAA - no	Potential Habitat in BAA - no	

Habitat – Serpentine soils. Chaparral, lower montane coniferous forest, meadows and seeps. 825-1930 m.
--

<i>Kopsiopsis hookeri</i>		Small groundcone
Fed status – none	State status – none	CA rare plant rank – 2B.3
USGS 7.5' Quad – Miranda		
Documented in BAA - no		Potential Habitat in BAA - yes
Habitat – North coast coniferous forest. Open woods, shrubby places, generally on Gaultheria shallon. 120-1435 m.		

<i>Eriogonum kelloggii</i>		Kellogg's buckwheat
Fed status – none	State status – endangered	CA rare plant rank – 1B.2
USGS 7.5' Quad – Noble Butte		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat -- Lower montane coniferous forest. Rocky, serpentine sites. 910-1190 m.		

<i>Ceanothus foliosus</i> var. <i>vineatus</i>		Vine Hill ceanothus
Fed status – none	State status – none	CA rare plant rank – 1B.1
USGS 7.5' Quad – Noble Butte		
Documented in BAA - no		Potential Habitat in BAA - no
Habitat – Sandy, acidic soil in chaparral. 45-305 m.		

4.6 Potential Impacts

4.6.1 Northern Spotted Owl

The cannabis cultivation process at the Mussey property will be restricted to the existing roads and the existing cultivation and processing sites. No habitat removal is proposed under the current interim permit. Potential impacts to NSO within the BAA are limited to disturbance from noise from traffic accessing the site and the likely intermittent use of small equipment such as generators, ATVs, chainsaws, etc.

The Arcata Fish and Wildlife Office (AFWO) has provided a 2006 guidance document regarding disturbance from noise-generated activities, "Estimating the effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California." The document provides likely disturbance distances to nesting spotted owls and murrelets, based on ambient sound levels at the site, the use of specific equipment, and visual line-of-sight distance to nests. A review of the document suggests that scenario 4 under appendix B, the Northern Spotted Owl Sound and Visual Harassment Decision Support Tool, best reflects the likely ambient sound conditions at the site and the equipment likely to be used during cultivation. Under this scenario, "the existing environment is characterized by low to very low levels of sound associated with human activities, and is typified by small power tools, light vehicular traffic moving at slow speeds, recreational activities, and many urban and rural residential activities." The typical action-generated sounds from cultivation under this scenario could include "larger gas-powered engines, large generators, amplified music, ATV's, and small trucks at moderate speed on improved trails, and large chainsaws." This scenario 4 closely approximates the likely ambient background noise at the Mussey site and includes the potential action-generated noise from the cultivation activities.

Under scenario 4, the predicted auditory disturbance distance that may impact nesting Spotted Owls is 30 meters, with either low or moderate ambient sounds at the site. The visual line-of sight disturbance distance for nests is a maximum 100 meters, or less if vegetation obscures a view of the nest.

The Mussey BAA does not have appropriate habitat to support Spotted Owl nesting/roosting. The nearest critical habitat for the spotted owl is approximately 1.7 miles to the east from the nearest cultivation site (Figure 5). The nearest known spotted owl activity center is approximately 1.3 miles to the southeast of the cultivation sites (Figure 6)

Based on the estimated auditory disturbance distance of 30 meters, and the visual disturbance distance of 100 meters, and the fact that the nearest activity center is .6 miles to the west, **there is a strong likelihood of no significant impact to Spotted Owl nesting or roosting habitat.** As there is abundant foraging habitat on nearby public and private properties, cultivation activities also will not likely impact foraging Spotted Owls.

4.6.2 Marbled Murrelet

Nesting marbled murrelets require older forests with trees that support potential nesting "platforms", such as large mossy branches or canopy deformities. The forested habitat on the Mussey property generally does not have trees of sufficient age or canopy complexity to support breeding marbled murrelets. The few larger residual trees with branch sizes appropriate for murrelet nesting are exposed to potentially severe environmental conditions which would essentially eliminate the possibility of breeding. The nearest potential breeding habitat for marbled murrelets is approximately 2.5 miles to the west, portions of Richardson Grove State Park. There is no potential murrelet nesting habitat located on the BAA.

4.6.3 Sensitive/Nesting Birds

Cultivation activities at the existing project sites are unlikely to disturb nesting or sensitive birds, as impacts would generally be limited to noise disturbance only. As the cultivation sites are located in greenhouses or on open ground, away from potential nesting habitat, minimal noise disturbance should be expected. If any significant vegetation removal or habitat conversion is

proposed, nesting bird surveys are recommended if the work is conducted during the bird nesting season, generally March 1st to August 31st.

4.6.4 Sensitive Fish/Amphibians

The Water Resources Protection Plan (WRPP) outlines the necessary BMPs (Best Management Practices) needed to protect water quality from cultivation practices. Three insufficient culverts will be replaced to minimize erosion from high water flows, and one culvert will be excavated to improve drainage (Mussey WRPP). These BMP's and the WRPP, implemented properly, should ultimately protect water quality on the BAA and to downstream waters. Although some short-term impacts to water quality for culvert replacement may occur, there will likely be no deleterious effects to fish or other sensitive aquatic species.

4.6.5 Sensitive Forest Carnivores

Forest carnivores (Fisher, Humboldt Marten) may use the BAA for foraging as part of a larger home territory. Mature forests with complex canopies and large downed woody debris are preferred denning areas for these species; the BAA does not provide appropriate habitat for natal dens. As no habitat removal or ground disturbance is planned for the BAA, there is also a low likelihood of impacts to potential carnivore foraging habitats.

4.6.6 Sensitive Plants

Use of the existing cultivation sites will likely not affect sensitive plant populations, as activities should be limited to previously impacted areas. Conversion of a proposed cultivation site would likely involve some ground disturbance. When Cultivation Site 1 is moved outside of the watercourse buffer area, a Spring season floristic (botanical) survey would be an effective method for identifying sensitive plants due for protection.

5.0 Recommendations

All trash and food waste should be stored in animal proof containers and secured away from human habitation areas and disposed of off-site regularly.

All cultivation activities should be conducted to minimize potential runoff from the project sites. Any fertilizers or pesticides should be used in strict accordance with the manufacturer's directions. All fertilizers, pesticides, and other cultivation-related products or amendments should be properly stored in locked facilities to prevent exposure to precipitation events and to prevent access to wildlife.

Generators should be housed inside insulated enclosures to muffle noise and adhere to noise thresholds of the CCLUO (≤ 50 decibels of maximum noise exposure at 100 feet from noise source or edge of habitat).

Invasive plants such as Scotch Broom (*Cytisus scoparius*), Pampas Grass (*Cortaderia selloana*) and Himalayan Blackberry (*Rubus armeniacus*) and others were not observed on the BAA during the field assessment. If invasive plants do become established on the

property, efforts should be undertaken to remove them, including removing established invasive plant colonies and grubbing out any young plants or shoots.

Conduct nesting bird surveys if any vegetation removal or habitat alteration is planned within the nesting bird season (generally March 1 - August 31). Use appropriate distance buffers for discovered active nests.

Conduct seasonally appropriate floristic (botanical) surveys for rare plants before significant ground or vegetation disturbance is initiated.

Any proposed construction or maintenance of roads should occur outside of the critical nesting period for Spotted owls, Feb 1st to July 9th. If any operations with the potential to disturb Spotted owls are proposed for the critical nesting period, Spotted owl surveys should be conducted per specifications outlined in the Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls. Surveys should be conducted per Section 9.0, Surveys for Disturbance Only Projects.

6.0 References

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7.0 Appendix

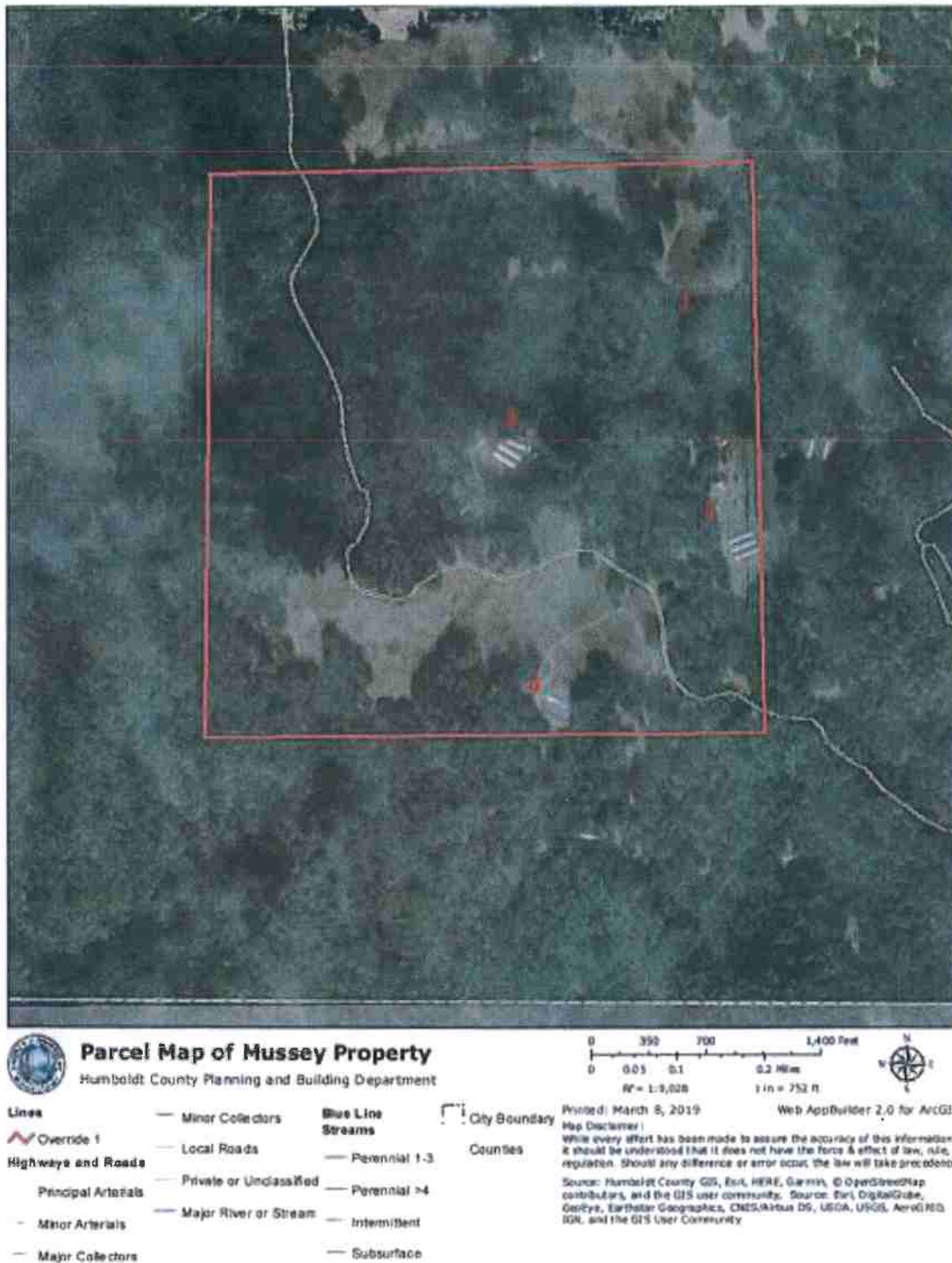
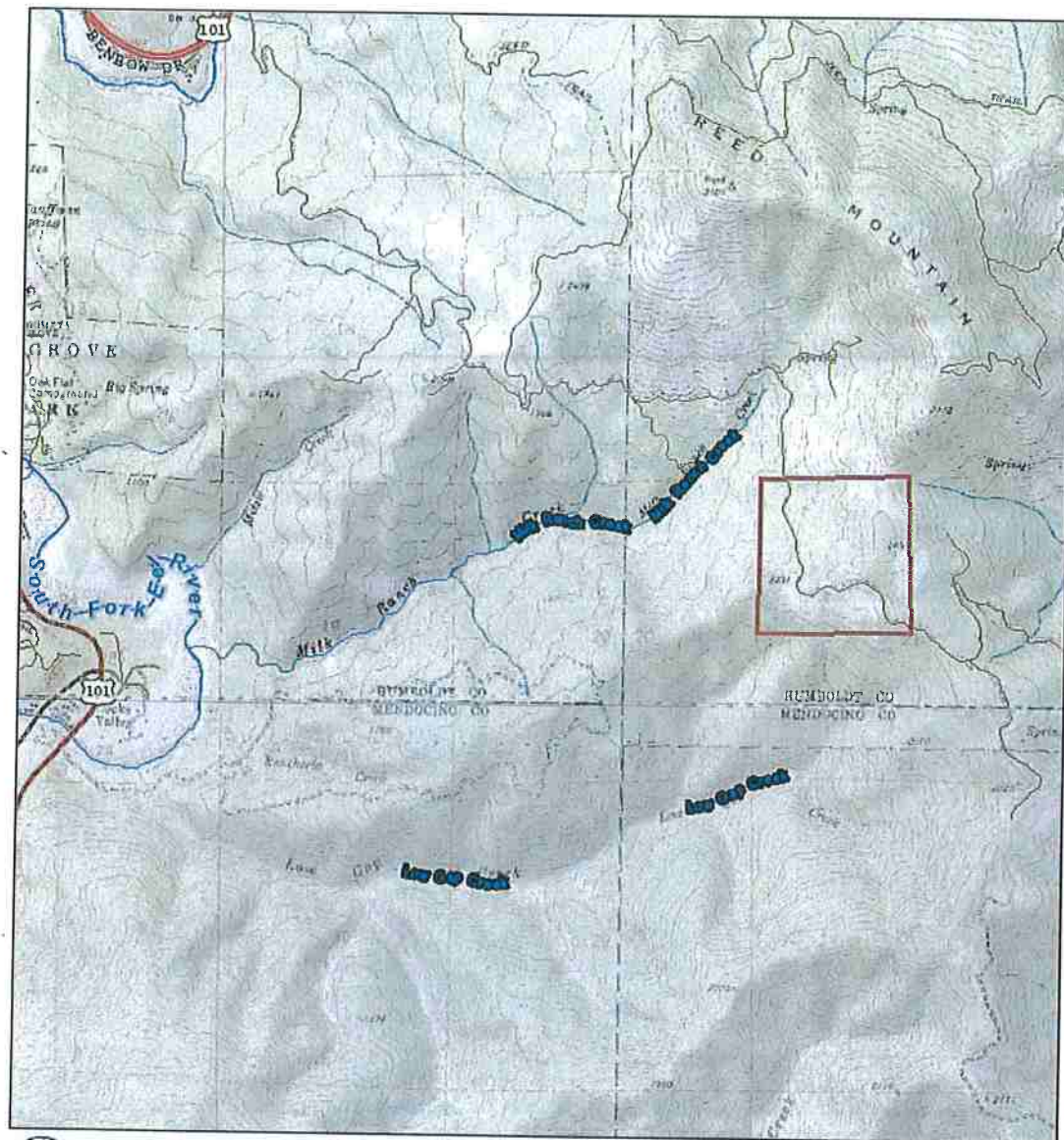


Figure 1. Parcel Photo of Mussey Property with Cultivation Sites



Area Map for Mussey Property
Humboldt County Planning and Building Department

0 1,400 2,800 5,600 Feet
0 0.25 0.5 1 Miles
RF= 1:36,112 1 in = 3,009 ft



- Lines**
- Override 1
 - Highways and Roads
 - Principal Arterials
 - Minor Arterials
 - Major Collectors
 - Minor Collectors
 - Local Roads
 - Private or Unclassified
 - Major River or Stream
- Blue Line Streams**
- Perennial 1-3
 - Perennial >4
 - Intermittent
 - Subsurface
- City Boundary**
- City Boundary (750K)
- Counties**

Printed: March 13, 2019 Web AppBuilder 2.0 for ArcGIS
Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.
Source: Humboldt County GIS, Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 2. Topo Area Map of Mussey Property

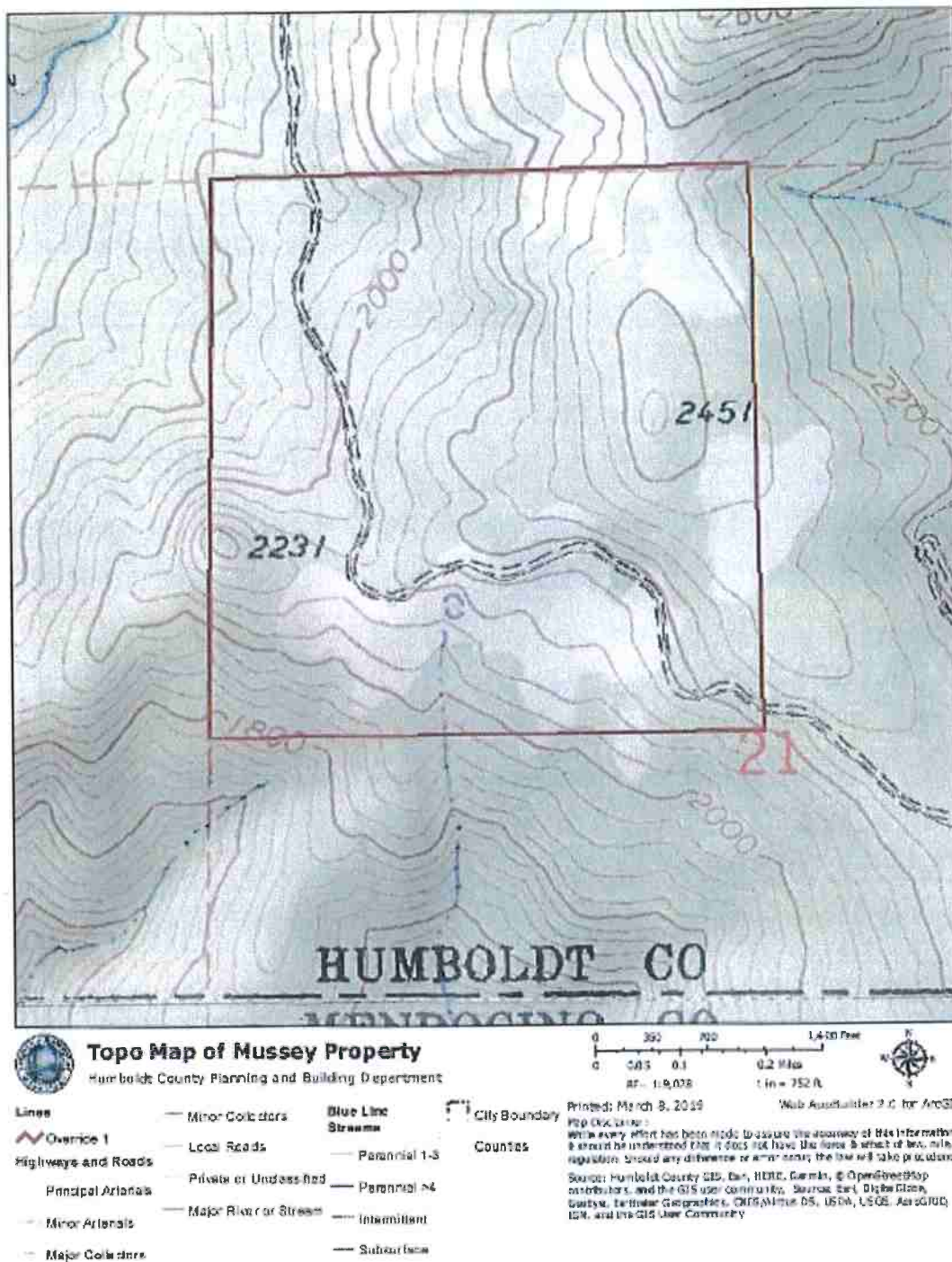


Figure 3. Topo Parcel Map of Mussey Property

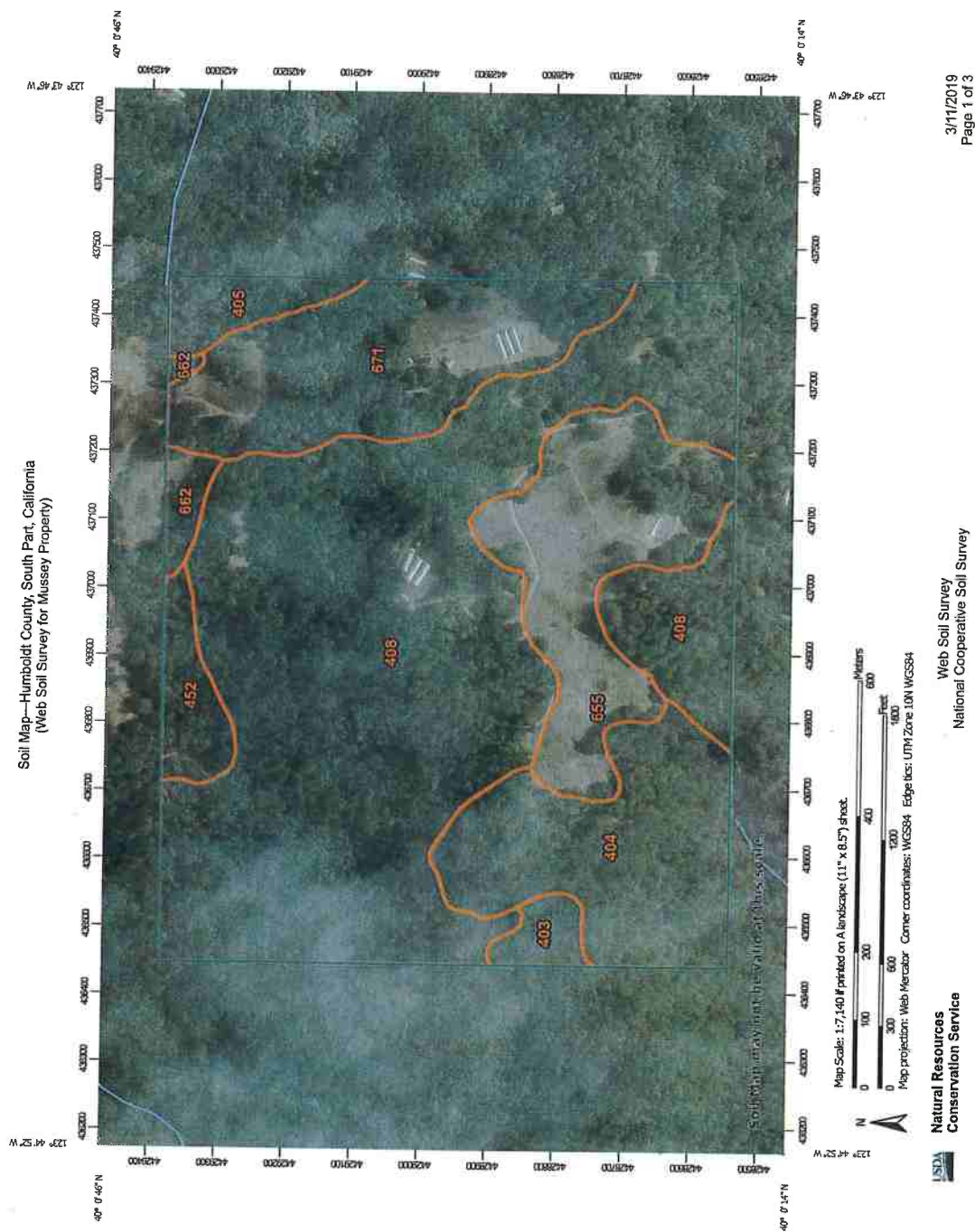


Figure 4. Web Soil Survey

Map Unit Legend

Map Unit Symbol	Map Unit Name	Area in ACI	Percent of ACI
403	Holchan-Hollowine-Casabonne complex, 9 to 30 percent slopes	2.8	1.3%
404	Holchan-Hollowine complex, 50 to 75 percent slopes	27.0	12.6%
405	Tannin-Mohly-Rockyglent complex, 30 to 50 percent slopes	4.8	2.3%
406	Holchan-Hollowine-Casabonne complex, 30 to 50 percent slopes, MLPA 5	112.9	53.5%
452	Burjablock-Coolyork-Tannin complex, 30 to 50 percent slopes	5.5	2.6%
655	Yorknorth-Wilhelmi complex, 15 to 30 percent slopes	26.9	12.7%
662	Yorknorth-Wilhelmi complex, 30 to 50 percent slopes	2.8	1.3%
671	Coolyork-Yorknorth complex, 5 to 30 percent slopes	29.5	13.5%
Totals for Area of Interest		211.1	100.0%

Figure 4A. Web Soil Survey Map Unit Legend

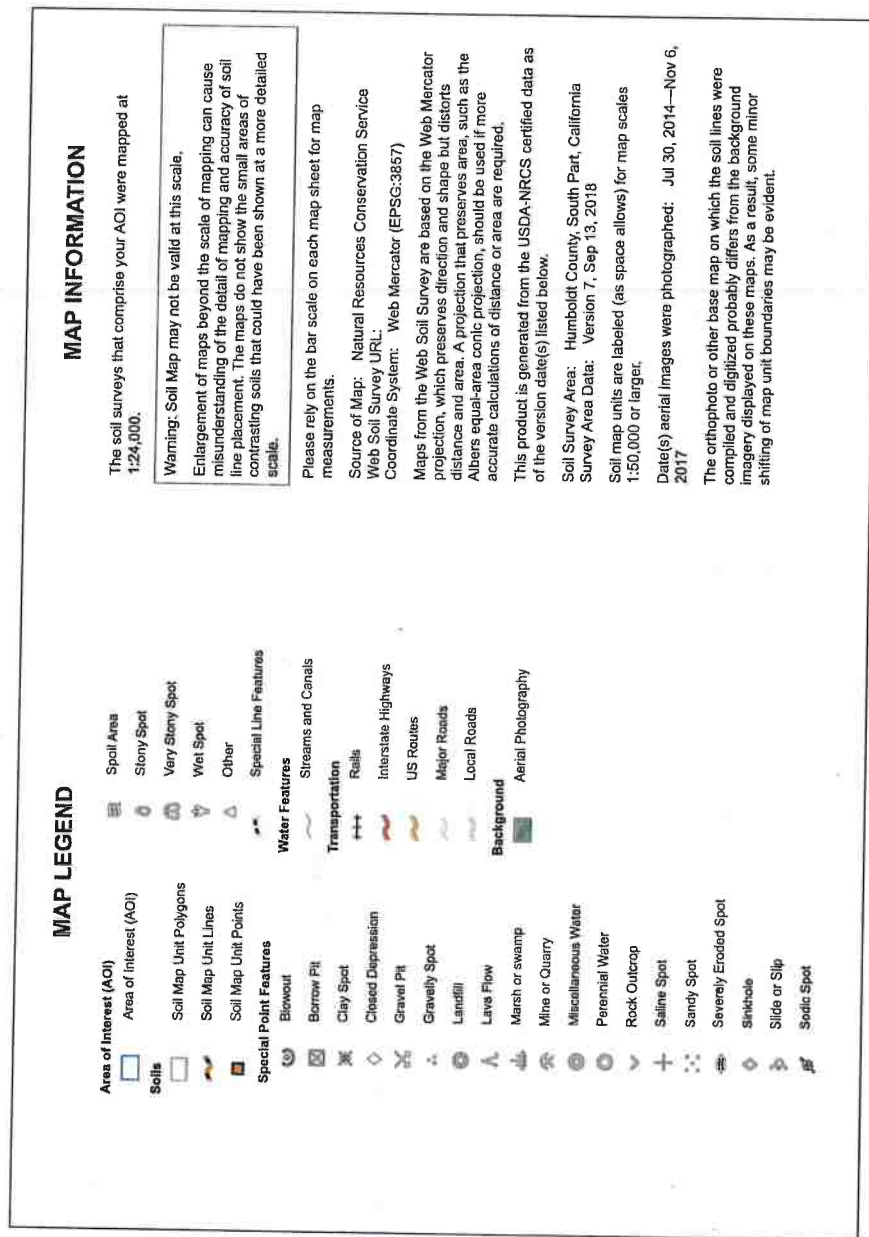
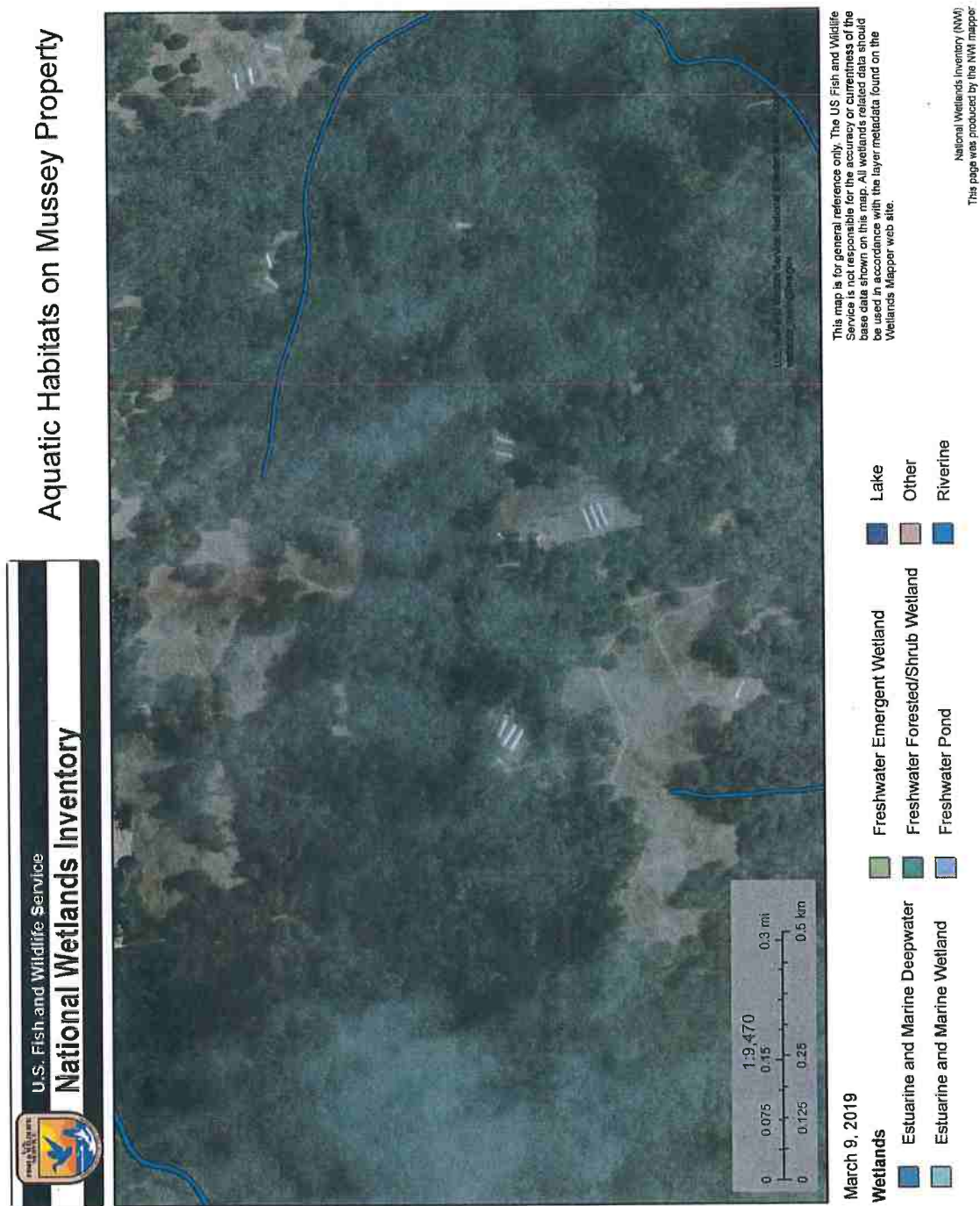


Figure 4B. Web Soil Survey Map Legend/Map Information

Figure 5. Aquatic Habitats



Nearest NSO Critical Habitat to Mussey Property

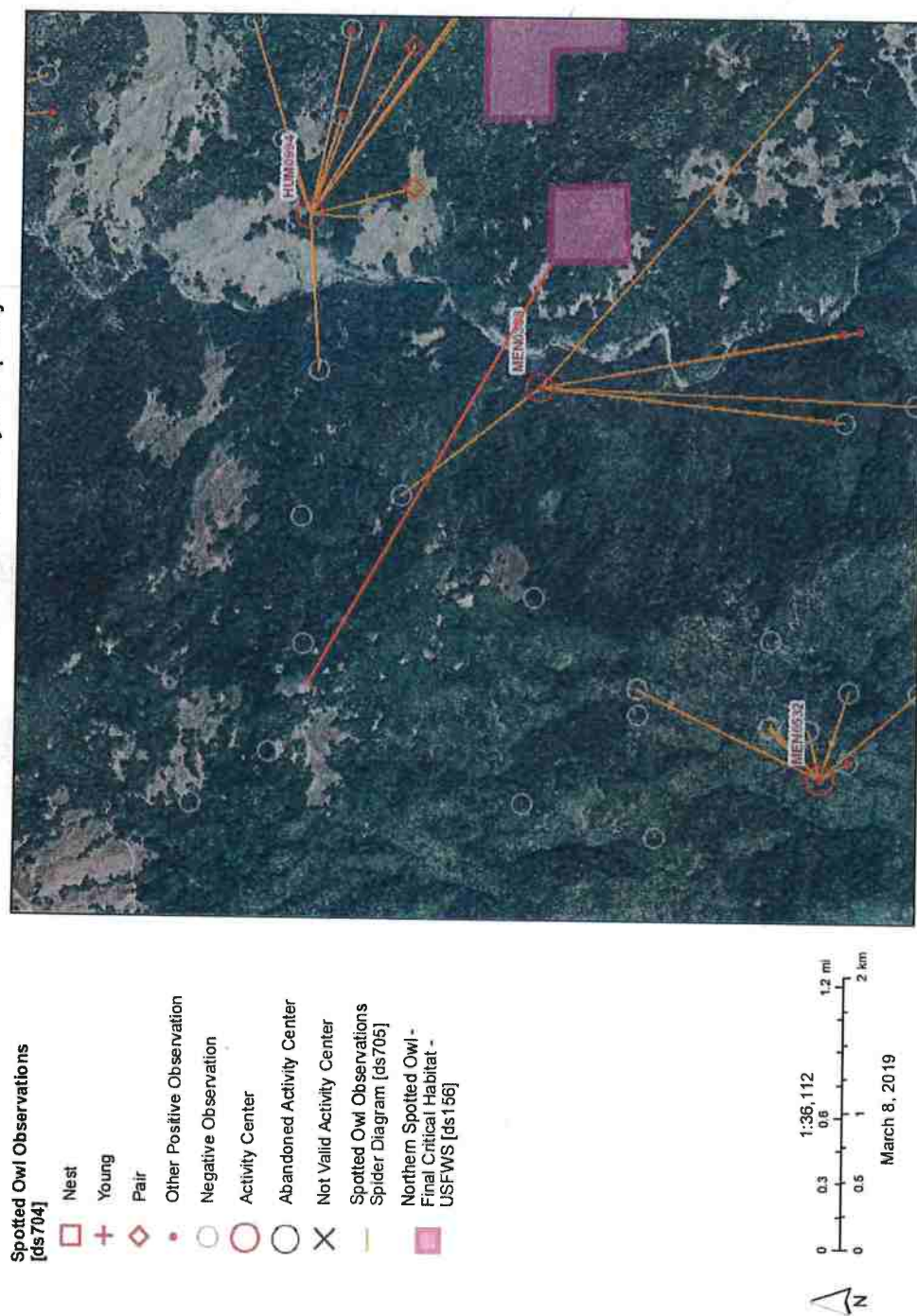


Figure 6. Nearest NSO Critical Habitat to Mussey Property

Nearest NSO Activity Center to Mussey Property (>1.3 miles)

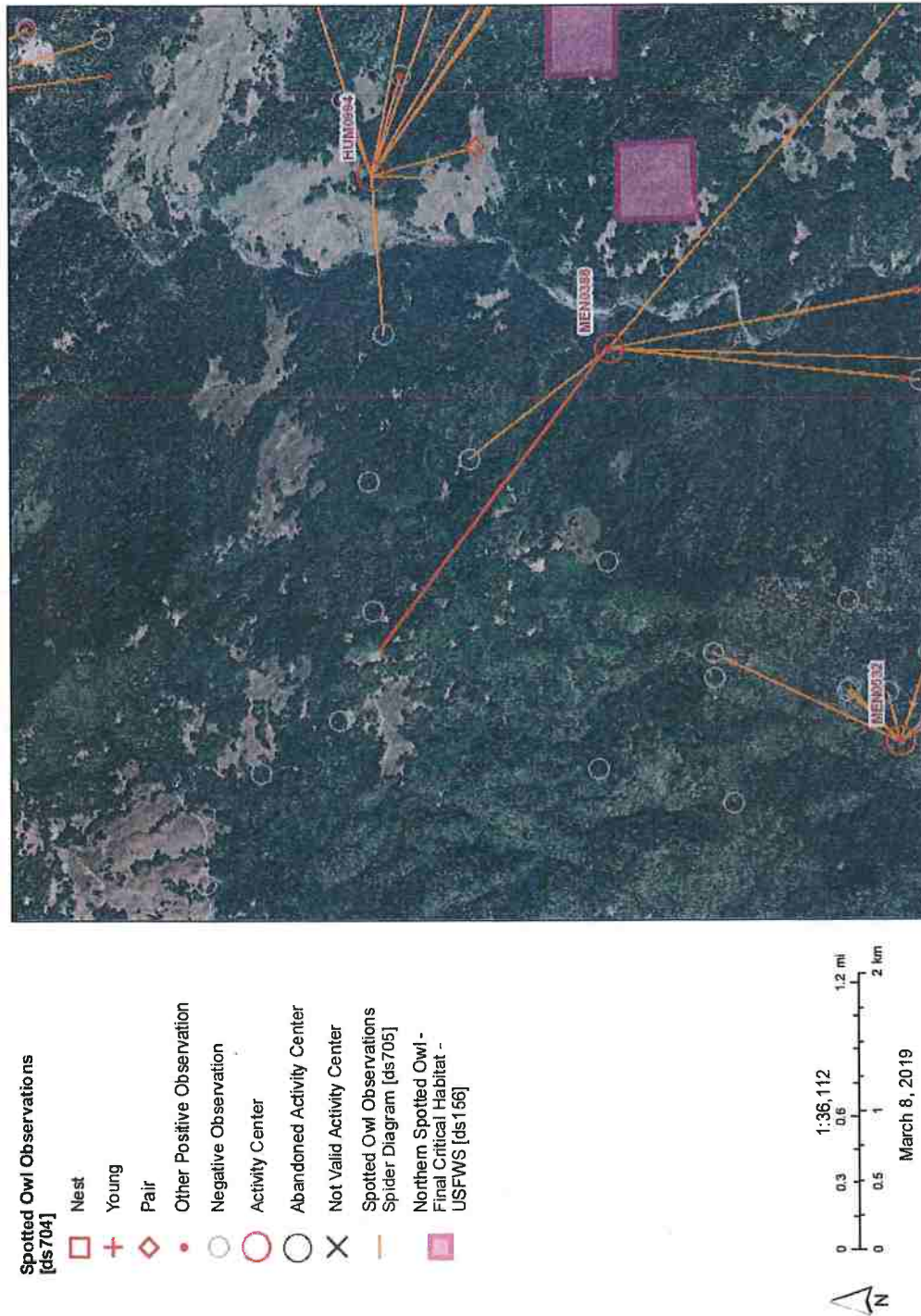


Figure 7. Nearest NSO Activity Center to Mussey Property

Figure 8. Photos of the BAA



1.0 Photo of Cultivation Site 1



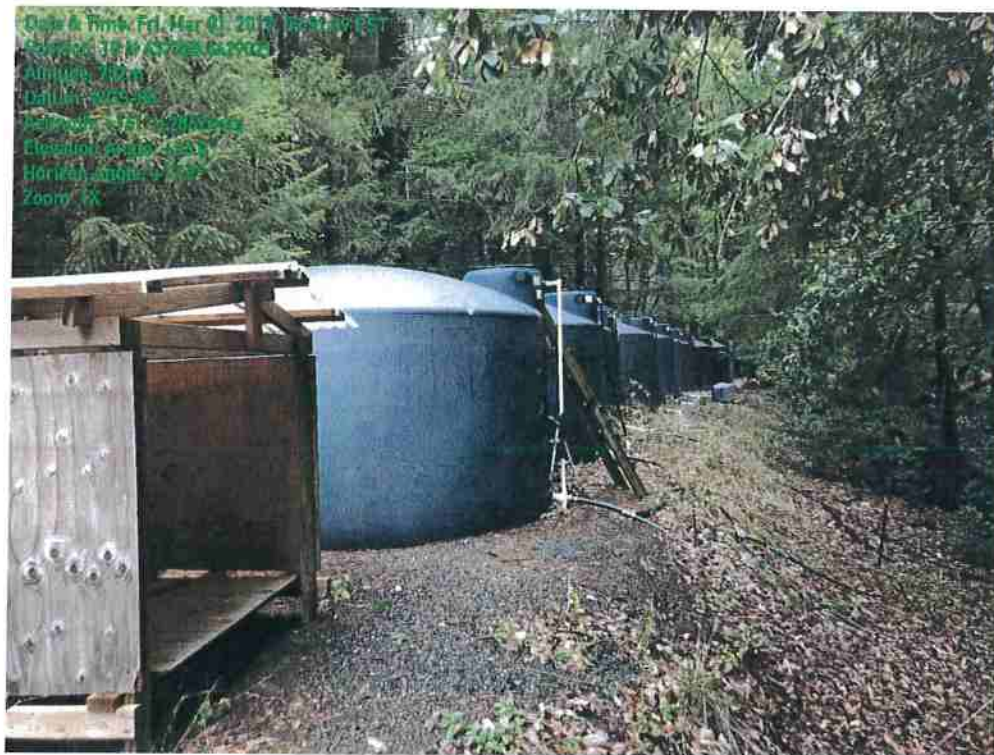
2.0 Photo of Cultivation Site 2



3.0 Photo of Cultivation Site 3



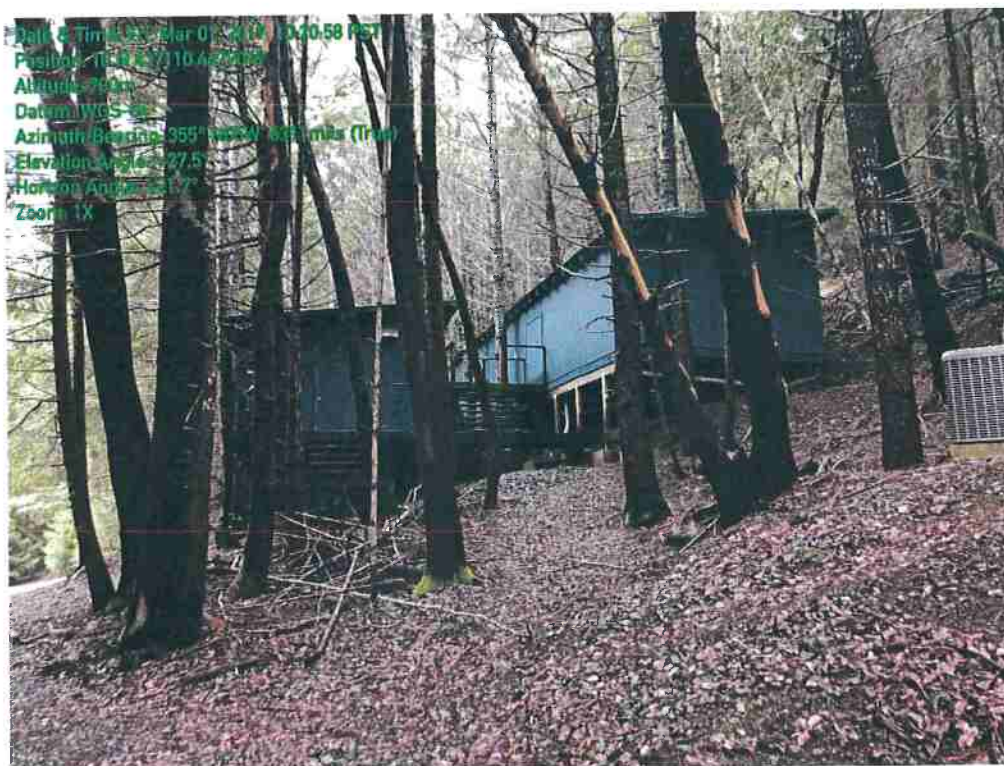
4.0 Photo of Cultivation Site 4 (Remediation Site)



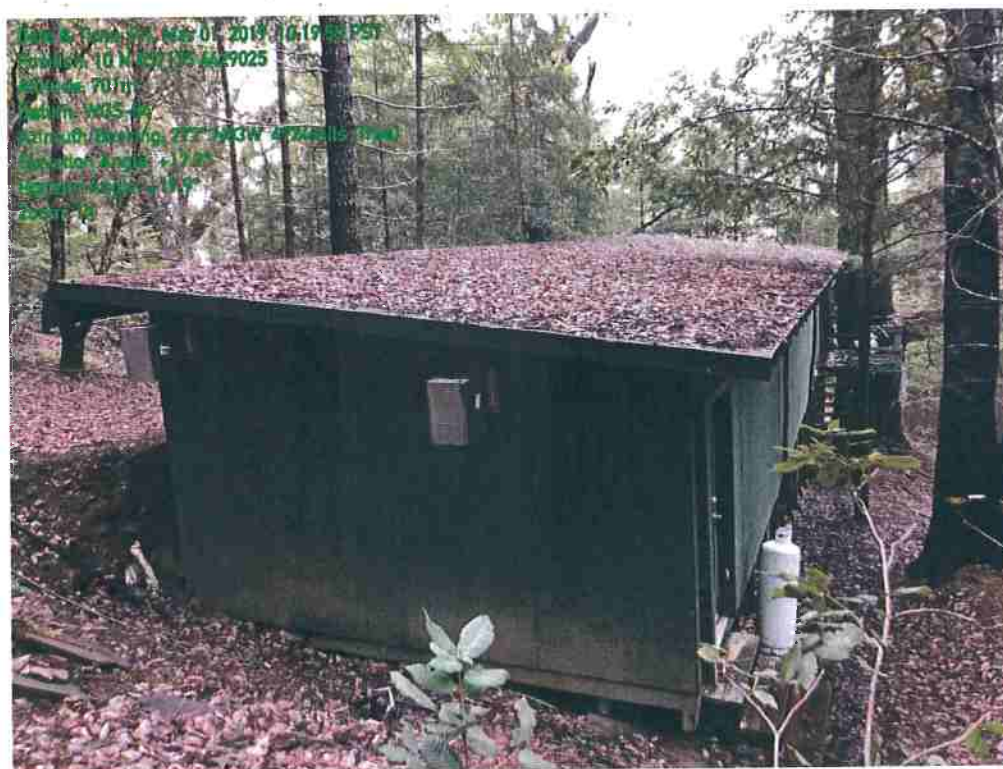
5.0 Photo of Tank Water Storage from Well.



6.0 Photo of Additional Tank Storage.



7.0 Photo of Processing Buildings



8.0 Photo of Third Processing Building



9.0 Photo of Trash Storage Area



10.0 Photo of Pond #1



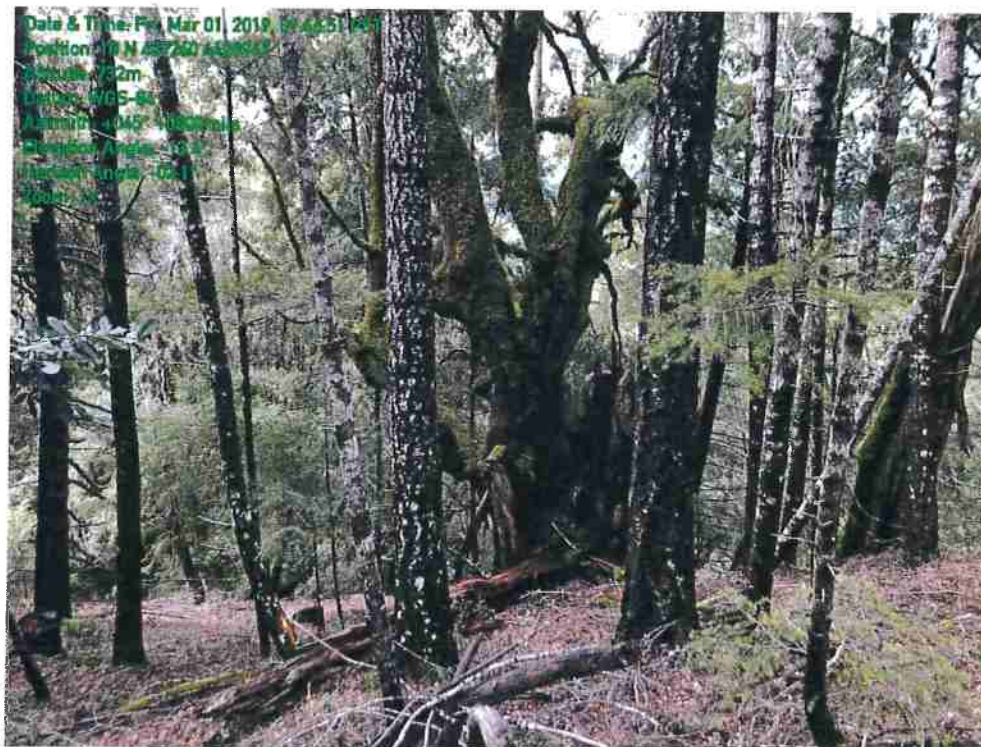
11.0 Photo of Pond #2



12.0 Photo of Typical Habitat on the BAA



13.0 Photo of Stream Habitat on the BAA



14.0 Photo of Forested Habitat on the BAA



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March 25, 2019

Cannabis Services Division
Humboldt County Planning and Building Department
3015 H Street
Eureka, CA 95501

Dear Planner,

Re: APN 223-032-04
Application #11802

This letter is in response to Department Policy Statement No. 16-002, which states, *"If a workable alternative cultivation site exists on a parcel and its relocation will bring the cultivation into compliance with performance standards of the CMMLUO, this approach could meet the objectives of the CMMLUO provided it is the environmentally superior option."*

As a Third-Party representative to the Water Board, Timberland Resource Consultants recommends relocating the 5,200 ft² of existing cultivation located along the southern, east-west property boundary into the footprint of the existing cultivation site presently comprised of three 24-ft by 120-ft greenhouses located along the eastern property boundary.

The cultivation site is located on a landslide. The landslide was originally mapped and identified by Chris Carroll in association with the preparation of THP 1-01-128 HUM for Eel River Sawmills. The landslide was evaluated and described by the Department of Conservation-Division of Mines and Geology (California Geological Survey) in a memorandum titled "Engineering Geologic Review of Timber Harvest Plan 1-01-128 HUM (June 26, 2001)" as follows:

Landslide I is approximately 1,900 feet long and up to about 1,100 feet wide. The landslide is characterized by a subdued, well-rounded head scarp, and broad, gently inclined unit surface. Drainage associated with this feature is well established. Based on the morphology described above, it appears that this landslide is a dormant translational/rotational landslide.

The cut and fill construction of the cultivation site (terrace) on this landslide complex has triggered cut-bank failures as seen on the attached photos. Inadequate drainage of emergent shallow groundwater from the Franciscan mélangé, in combination with storm-water runoff, have severely eroded the fill-slope resulting in a small debris torrent as seen on the attached photos.

The cultivation site is also within 100 feet of a Class II watercourse to the east. Per the Applicant's Water Resource Protection Plan, the WRPP states:

"Cultivation area X is approximately 70 feet from a Class II watercourse. This cultivation area is to be relocated to be no closer than 100 feet from the Class II watercourse."

Cannabis cultivation, and the associated erodible cut-slopes and fill-slopes, located within the Class II watercourse buffer zone, does not comply with Water Board Order No. 2015-0023, Standard Condition (I)(A)(3)(a), which states:

"While 200 foot buffers are preferred for Tier 2 sites, at minimum, cultivation areas and associated facilities shall not be located or occur within 100 feet of any Class I or II watercourse or within 50 feet of any Class III watercourse or wetlands."

The proposed relocation area is located on a flat to gently sloping ridge in a natural grassy opening and is 400+ feet from surface water (Class III watercourse per THP 1-01-128 HUM). The relocation area is more environmentally desirable because its less steep, farther from surface water, and not located on a landslide or erosion-prone Franciscan mélange.

Beginning July 2019, the Cultivator will no longer be covered under Water Board Order No. 2015-0023 and will be subject to State-wide Order WQ 2017-0023-DWQ. The Cannabis Policy provides criteria to evaluate the threat to water quality based on site conditions. The threat is risk-based based upon:

- a. Disturbed area
- b. Slope of disturbed area
- c. Proximity to a surface water body

The cultivation proposed to be relocated is within a riparian buffer and is therefore characterized as a "High Risk" to water quality. Relocation of this existing cultivation may allow the Cultivator to obtain "Tier 1 Status" (Dischargers cultivate cannabis commercially outdoors and have a disturbed area equal to or greater than 2,000 square feet and less than 1 acre\43,560 square feet) with a "Low Risk" designation with regards to State-wide Order WQ 2017-0023-DWQ. Sites that pose a higher threat to water quality (e.g., disturb a larger area, located on a steeper slope, or located close to a surface water body) require a greater level of regulatory oversight, which translates to higher costs to achieve water quality protection. Minimizing risk by moving the site not only results in environmental superiority, but also saves time, money and resources from preparing additional technical reports.

Restoration Plan

The Applicant's Water Resource Protection Plan requires the site in question to be treated as follows:

"Disturbed soil from cultivation related activities shall be seeded with weed free native grass seed and straw mulch applied."

This is inadequate given that the site is located on a landslide, actively failing, and potentially delivering sediment to surface waters of the state.

The landowner shall remove all cultivation related infrastructure and material from the graded terrace. Trash, refuse, and solid waste shall be disposed of at an appropriate waste disposal location.

The underlying soils are moderately deep with a relatively high CEC, which means they can adsorb or bind onto the nutrients contained in imported soil without the threat or potential for leaching into surface or ground water. The removal of imported soil and transportation to a landfill is unnecessary and likely much more impactful to the environment when it can be alternatively treated naturally by tilling into the native soils for subsequent adsorption. Imported soil within the cultivation site may be tilled into the native soil during restoration related grading activities, which are expected to be significant.

The cultivation site shall be fully decommissioned and returned to pre-existing contours per an approved Grading Permit from Humboldt County. The access road shall be waterbarred to a spacing consistent with a "high" Erosion Hazard Rating per 14CCR 914.6. The access road was previously used for logging in association with THP 1-01-128 HUM and may be needed again in the future. The access road in question contains no cuts and fills and therefore full decommissioning is not needed. Installation of large, maintenance-free drainage structures (waterbars) will suffice until the road grows over with vegetation. An approved Grading Permit shall include an Erosion Control Plan, which addresses the treatment of bare mineral. Native grasslands surround the cultivation site and grasses will naturally spread vegetatively through rhizomes below the soil, and via seed production. However, revegetation of the site with native grasses is recommended per the following Revegetation Plan.

Revegetation Plan

Reseeding Methods: Reseeding is key to site restoration, especially at sites where understory vegetation or topsoil has been removed. Grasses are fast-growing and quickly provide vegetative cover to protect exposed soils from erosion. Native grasses are typically better adapted to site-specific climate and environmental conditions. Though reseeding is a simple practice, timing is important. Seeds should be planted during the wet seasons so soils are viable for seed germination. Planting during hot summer or early fall months can deprive seeds of necessary moisture.

Recommendation: Reseed the decommissioned cultivation site and all additional areas of disturbed soil with a native grass seed mix. Manually distribute seed mix evenly across the site during late fall, winter, or early spring and follow any specific instructions accompanying seed mix. No equipment use or seed burial is required. Some areas will have begun to naturally revegetate; if a given area has more than 75% ground cover, no reseeding is necessary. Though the seed mix may vary, the RPF recommends the following:

Native Erosion Control Mix

Species Content:

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

"This grass mixture features California native grasses that are acclimated to varying conditions around our state. Typically, this mix will grow 2 to 3 ft tall given normal soil conditions and normal rainfall patterns. On shallow soils, there is potential for vegetative cover if there is adequate resources to sustain 24 to 36 inches of annual reseeding vegetation. This mix can be modified with the addition of other species including wildflowers."

This seed mix can be purchased from Pacific Coast Seed in Livermore, California, on the following website: <http://store.pcseed.com/product/Native-Erosion-Control-Mix.aspx>

Straw Mulching: Straw mulching can be used to protect newly sown seeds from wind and high precipitation events as well as stabilize exposed soils. Humboldt County proposes straw mulching all areas of disturbed soils to prevent potential erosion.

Recommendation: After reseeding, apply straw mulch to the decommissioned cultivation site and all additional areas of disturbed soil at one bale per 800 square feet. Some areas will have begun to naturally revegetate; if a given areas has more than 75% ground cover, no mulching is necessary. See NRCS Straw Mulching guidelines for more instructions.

Sincerely,



Chris Carroll, RPF #2628
Timberland Resource Consultants

Pictures



Picture 1: Cultivation site proposed for relocation. Note cut-slope failures above the site, and fill-slope erosion and debris torrent below the site. Photo date 3-1-2019.

Pictures



Picture 2: Cultivation site proposed for relocation. Note cut-slope failures above the site, and fill-slope erosion and debris torrent below the site. Photo date 3-1-2019.

Pictures



Picture 3: Cultivation site proposed for relocation. Note cut-slope failures above the site, and fill-slope erosion and debris torrent below the site. Photo date 3-1-2019.

Pictures



Picture 4: Seasonal road accessing the cultivation site proposed for relocation and restoration. The access road shall be abandoned via the installation of waterbars to a spacing consistent with a "high" Erosion Hazard Rating per 14CCR 914.6. Photo date 3-1-2019.

Pictures



Picture 5: The proposed relocation area presently comprised of three 24-ft by 120-ft greenhouses located along the eastern property boundary. The cultivation site located on the landslide is proposed to be relocated within the fenced area of this site. Photo date 3-1-2019.

Pictures



Picture 6: Proposed relocation area; the portion of which is located south of the southern-most existing greenhouse. Photo date 3-1-2019.

Pictures



Picture 7: Proposed relocation area; the portion of which is located north of the norther-most existing greenhouse. Photo date 3-1-2019.

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