Preliminary Biological Resource Report

CannaDreams LLC: 870 Kings Peak Rd., Whitethorn, CA 95589
APN 108-026-006

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OEI
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EMERALD HILLS
ENVIRONMENTAL

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List of Abbreviated Terms

CDFW California Department of Fish and Wildlife
CESA California Endangered Species Act
CEQA California Environmental Quality Act
CNDDB California Natural Diversity Data Base
CNPS California Native Plant Society
CWHR California Wildlife Habitat Relationship System
DPS Distinct Population Segment
EFH Essential Fish Habitat
ESA Endangered Species Act
ESU Evolutionary Significant Unit
FMP Fishery Management Plans
LSA Lake and Streambed Alteration
MBTA Migratory Bird Treaty Act
MSA Magnuson-Stevens Fishery Conservation and Management Act
NMFS National Marine Fisheries Service
NOAA National Oceanic and Atmospheric Administration
USFWS United States Fish and Wildlife Service

Contents

1. Introduction

1.1 Project Location

The project is located at CannaDreams LLC, 870 Kings Peak Rd., Whitethorn, CA 95589 in southern Humboldt County (Figure 1). The project site spans 74.29 acres across one parcel, APN 108-026-006. Within the United States Public Land Survey System, it is in section 9 of township 4S, Range 1E, of the Humboldt meridian.

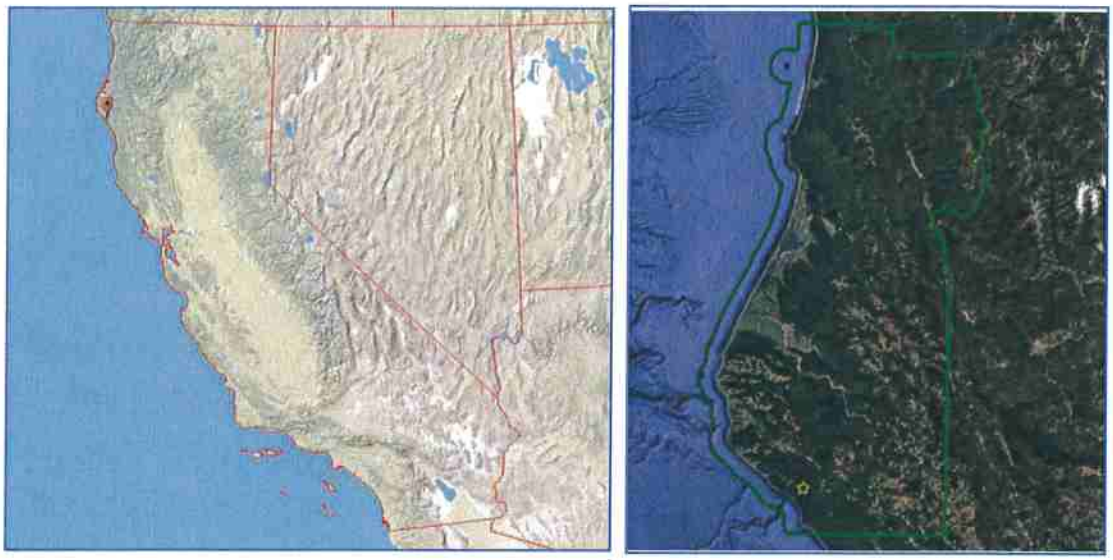


Figure 1: Location of project within California (left) and within Humboldt County (right)

1.2 Project Description

The project includes 9,500 Ft.^{2} permitted outdoor cannabis cultivation taking place within two clearings and a 500 ft.^{2} nursery greenhouse as shown on the following Pacific Water Shed Associates site maps.

The project also includes a surface water diversion water diversion from an unnamed class II stream, a tributary to North Fork Bear River. Water is diverted to 31 storage facilities (HDPE tanks) totaling 96,300 gal. for cannabis irrigation and fire protection. Water is diverted during the winter season (November 1st-March 31st) and stored for cannabis irrigation and fire protection.

Seven stream crossings exist on the property (SC1-7), all crossings are unculverted fill crossings lacking formal drainage structures. Stream Crossing 1 and Stream Crossing 7, as shown on the following Site Maps, will require restoration and/ or upgrading. These crossings are further detailed in Water Resource Protection Plan, Site Management Plan and LSA Notification prepared by Pacific Watershed Associates. All mitigation measures imposed by CDFW of the SWRCB will be observed.

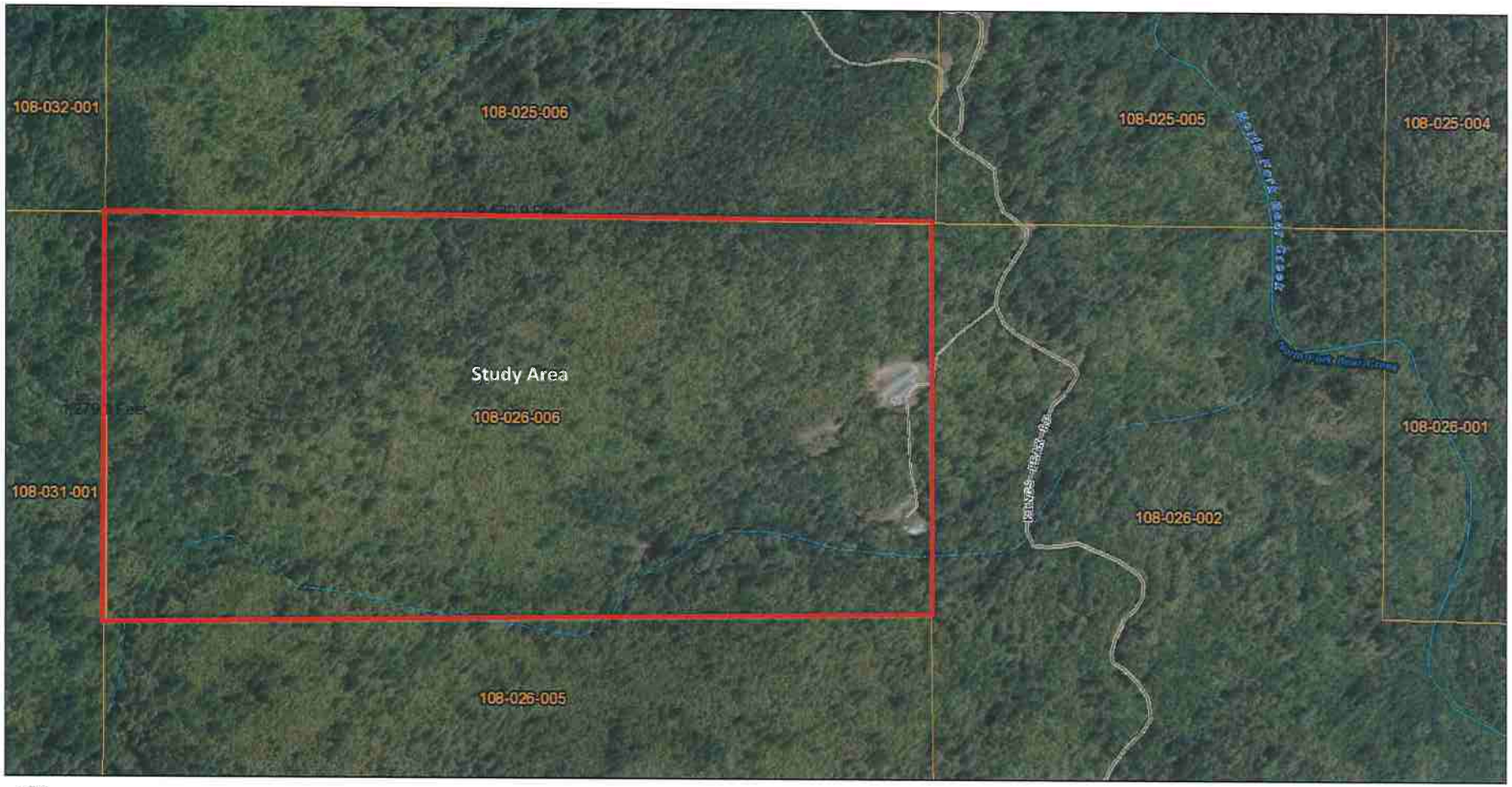
1.3 Scope of Report

This report assesses the potential for special status species and habitats to occur within the Study Area[1] and whether they may be adversely affected by the project construction or operation. Using the California Wildlife Habitat Relationship (CWHR) System, the report includes lists of habitat types with ranges encompassing the Study Area, and habitat-associated special status species and habitats that have been reported in the literature within the geographic area encompassed by the nine surrounding USGS 7.5-minute quadrangle maps. Limited site-specific information, including topographic maps, satellite imagery, and site photos and videos, are used to refine the list of potential habitats and special status species and habitats to those with higher potential presence. Information about the proposed operation obtained from the operator is used to assess the likelihood of adverse effects occurring to noted species and habitats, and methods to avoid or reduce adverse effects and protect biological resources are provided wherever possible.

This report is not a protocol-level survey or inventory for any species or habitat and is based on information available at the time of the study. Further field investigations would be necessary to determine habitat quality or confirm the presence of species in the Study Area.

[1] In this situation the Study Area includes the area within the parcel shown in Figure 2.

Map of CannaDreams Study Area



ArcGIS Web Map

Humboldt County Planning and Building Department

Printed: February 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.

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
- Counties
- Parcels
- Parcels (no APN labels)

0 240 480 960 Feet
0 0.0425 0.085 0.17 Miles
RF= 1:4,514 1 in = 376 ft

N W E S

Sources: 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

Site Map- Excerpted from Water Resource Proptection Plan writtin by Pacific Water Shed Associates

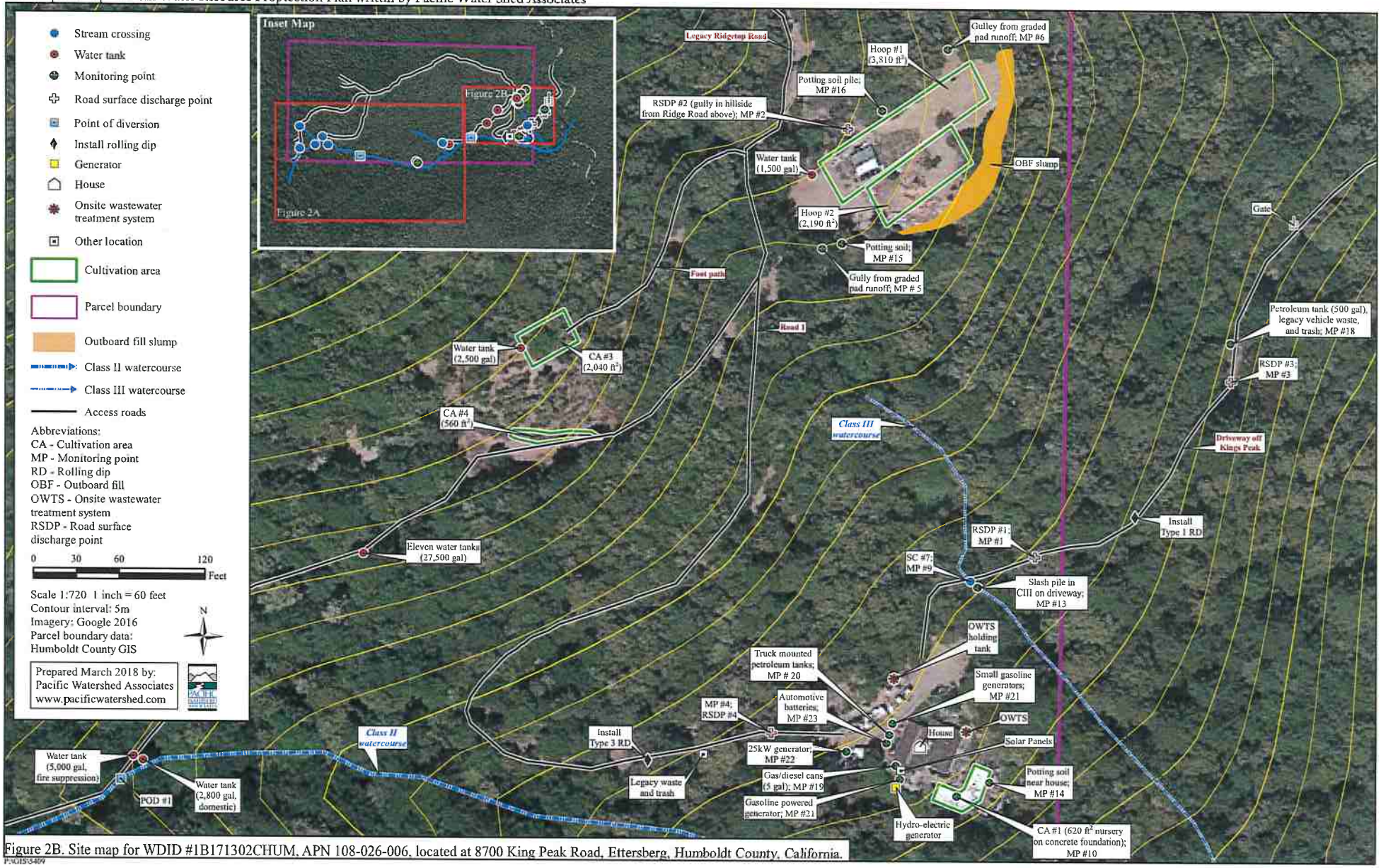


Figure 2B. Site map for WDID #1B171302CHUM, APN 108-026-006, located at 8700 King Peak Road, Ettersberg, Humboldt County, California.

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Site Map- Excerpted from Water Resource Proptection Plan writtin by Pacific Water Shed Associates

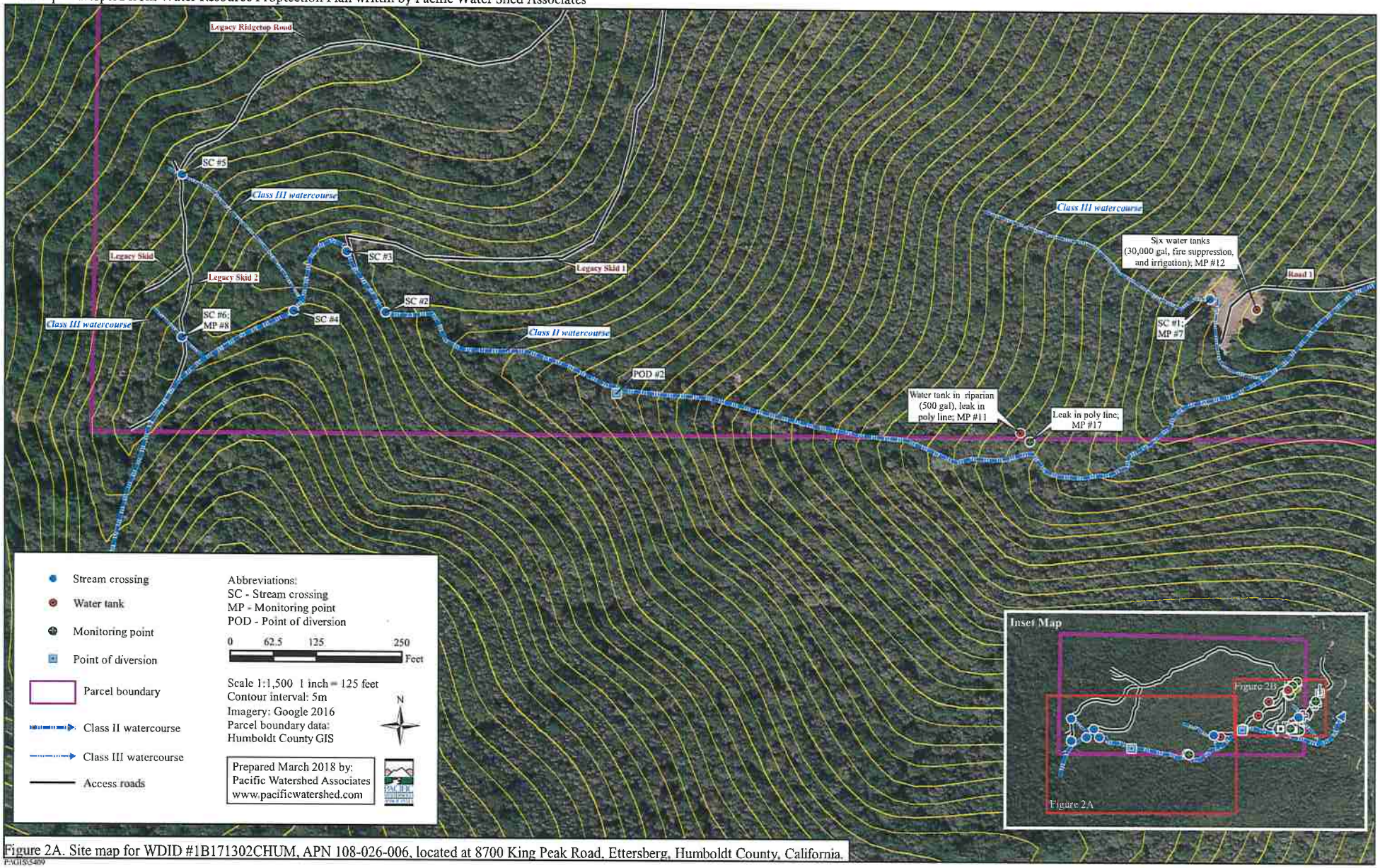

Figure 2A. Site map for WDID #1B171302CHUM, APN 108-026-006, located at 8700 King Peak Road, Ettersberg, Humboldt County, California.

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2. Methods

Background literature and database searches were conducted to determine the potential occurrence of special-status species and biological communities within the Study Area based on presence of unique habitat features, proximity to reported occurrences, and geographic range of subject species. The search focused on reported occurrences for the Honeydew 7.5' USGS quadrangle (quad) where the project is located and the surrounding quads ("the nine-quad"):Buckeye Mountain, Bull Creek, Weott, Shubrick Peak, Shubrick Peak OE S, Ettersberg, Shelter Cove, and Briceland. (Figure 3).

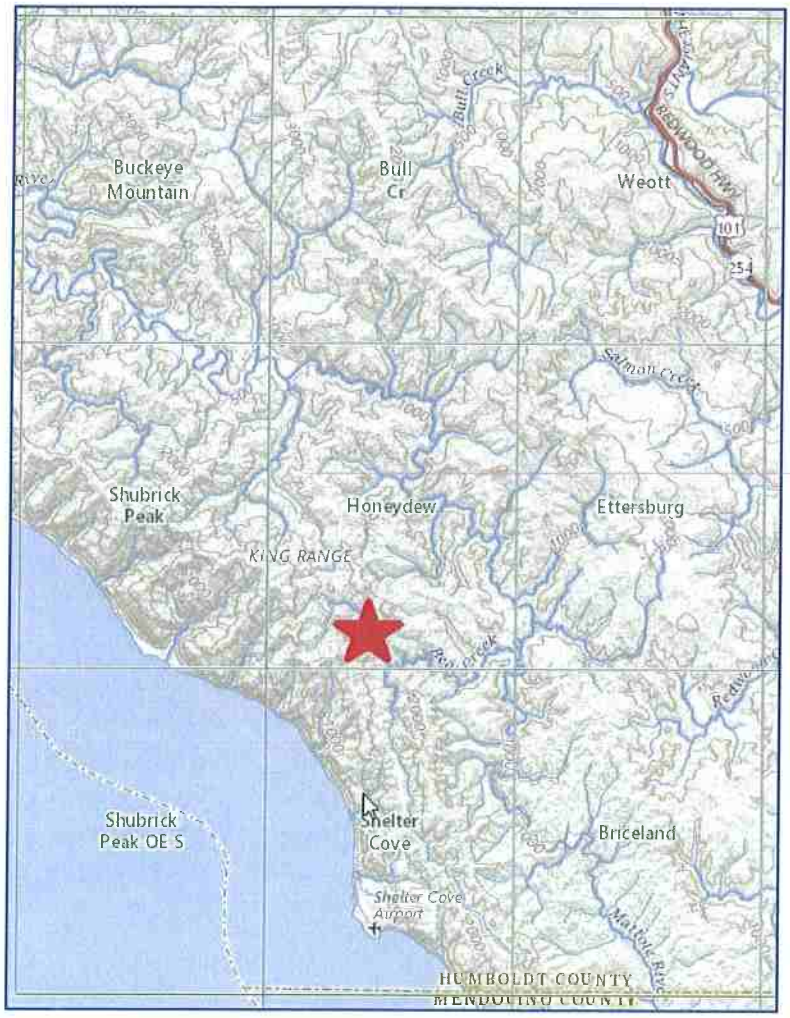

Figure 3. Area included in Data Search for Biological Resources - the nine USGS 1:20,000 (7½- minute) Topographic Map areas including and surrounding the Honeydew quad. Project location is shown by the red star.

General references were also consulted to evaluate the potential for unique biological communities and special-status animal species. The review included, but was not limited to, the following sources:

- A Guide to Wildlife Habitats in California (CDFW 1988)
- A Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009)
- California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDB) (CDFW 2018a)
- California Department of Fish and Wildlife (CDFW) California Wildlife Habitat Relationships System (CWHR)
- CNDDB/Spotted Owl Viewer on-line database for the reported sightings of northern spotted owl (CDFW 2018b)
- CDFW Environmental Conservation Online System (ECOS)
- CNPS Inventory of Rare and Endangered Vascular Plants of California on-line inventory (CNPS 2018)
- Calscape web application of CNPS
- CalFlora on-line database
- Jepson eFlora on-line database
- NRCS Web Soil Survey
- USFWS Information Planning and Consultation (IPaC) website (USFWS 2018)
- The National Marine Fisheries Service (NOAA 2018)
- The IUCN Red List of Threatened Species website

From these sources, initial lists of potential habitats, special-status species, and biological communities were developed and considered for potential co-occurrence of suitable habitat and species/communities within the Study Area. The potential for each possible species/community to occur within the Study Area was further assessed using the following criteria:

- **Unlikely:** Species or biological community is not expected to occur at the study area. Habitat is unsuitable, or species is presumed extirpated.
- **Potentially Present:** Species or biological community may possibly occur at the Study Area. Further field investigations or more detailed site information are required to assess habitat quality and species presence.

The lists of potential habitats and special-status species/biological communities are provided in Appendix A, respectively.

3. Environmental Setting

The Study Area is located in the King Range approximately four miles to the west of the Mattole River and five and a half miles east of the Pacific Ocean within the Bear Creek HUC 12 watershed. Elevations range from approximately 2500 ft. to 1600 ft. on an east facing slope. The habitat at the Study Area is predominantly a mix Douglas-fir and other coniferous woodlands. Cultivation is taking place in three pre-existing clearings.

Four small class III streams run through the study area, all acting as tributaries to an unnamed class II water course also running through the study area. The Unnamed Class II stream is a tributary to North Fork Bear Creek, which is a tributary to Bear Creek, which is a tributary to the Mattole River.

The region has a warm-summer Mediterranean climate (Köppen climate classification system), with average summer high temperatures in the high 60s (°F) and winter low temperatures around 45°F. Average annual precipitation is 89 inches (StreamStats).

Soils on the property are not mapped by National Resource Conservation Service (NRCS/UC ANR), however, similar slopes in the region are mapped with three major soil types, canoecreek, sproulish, and redwholhly. These three soil classifications broadly support the same major vegetation types, Douglas-fir, Pacific madrone, California huckleberry, and Tanoak. This is consistent with vegetation found at the Study Area.

A review of the California Wildlife Habitat Relationship (CWHR) maps (CDFW-CIWTG 1988) showed the Study Area to be within the geographic range of 14 habitat types (Appendix A)[2]. Based on site habitat photographs, aerial imagery, and other available information noted above, of the 14 CWHR potential habitats, Douglas Fir (DFR), Montane Hardwood-Conifer (MHC), and Montane Riparian (MRI) are the most likely to be present and dominant.

[2] The CWHR habitat maps show limits of distribution only; any given habitat type does not occur evenly or at all throughout its mapped range.

Photo1: MHC/ DFR Habitat in Study Area

Photo 2: MHC/ DFR Habitat in Study Area

Photo 3: MHC/ DFR Habitat in Study Area

Photo 4: Creek running through Study Area

Photo 5: Riparian zone in Study Area

4. Biological Resources

Biological resources include special status species, habitats, and biological communities. The following biological resources were determined to potentially occur in the Study Area. Mitigation measures for those resources found to be potentially disturbed or likely to be disturbed by cultivation/ development activities can be found in Appendix C "Mitigation Monitoring and Reporting Program – Proposed Amendments to Humboldt County Code Regulating Commercial Cannabis Activities"

4.1 Special-Status Species

In California, special-status species include those plants and animals that are afforded legal protection under the federal and California Endangered Species Acts (ESA and CESA, respectively) and other regulations. Consideration of these species must be included during project evaluation to comply with CEQA and in consultation with state and federal resource agencies.

Special-status species of California include, but may not be limited to:

- Species listed or proposed for listing as threatened or endangered under the federal ESA.
- Species listed or proposed for listing as threatened or endangered under CESA.
- Species that are recognized as candidates for future listing by agencies with resource management responsibilities such as USFWS, NMFS, and CDFW.
- Species defined by CDFW as California Species of Special Concern.
- Species classified as Fully Protected by CDFW (California Fish and Game Code 3511).
- Plant species, subspecies, and varieties defined as rare or threatened by the California Native Plant Protection Act (California Fish and Game Code 1900).
- Plant species listed by the CNPS CA Rare Plant Ranking (CRPR) system as List 1X.X, 2X.X, and 4.X.
- Species that otherwise meet the definition of rare, threatened, or endangered pursuant to 15380 of the CEQA Guidelines.

Special-status species that may potentially occur in the Study Area are identified below and in Appendix 1. Further surveys are needed to positively identify the presence or absence of these special status-species in the Study Area.

4.1.1 Animals Species

Twenty-five special-status animal species have been documented within the project nine-quad area. Based on site conditions, twelve of these species may potentially occur in the Study Area; of these twelve species two have the potential to be affected by cannabis cultivation activities, the marbled murrelet and the northern spotted owl. However, if appropriate mitigation measures are implemented, the potential for negative impact on these species is low. Species, potential for negative impact, and any proposed mitigation measures are listed below. Additional information can be found in Appendix B.

Mammals

- **Sonoma tree vole *(Arborimus pomo):*** The Sonoma tree vole is a red-furred rodent, 158-186 mm long, with a long, well-furred tail, curved claws, and ears partly concealed in the fur. Predators include spotted owls and probably other owls, raccoons, and fishers. It is listed on the IUCN Red List as Near Threatened and is S3, vulnerable, in California. It is potentially present in the north coast fog belt from Oregon border to Sonoma County, in Douglas-fir, redwood & montane hardwood-conifer forests, where it feeds almost exclusively on Douglas-fir needles but will

occasionally take needles of grand fir, hemlock or spruce.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the Sonoma tree vole exists within the study area, however, no new development within potential habitat is proposed. No mapped ranges for this species are present in the vicinity of the Study Area. Should development of wooded areas become necessary, Mitigation Measure 3.4-l of the Humboldt County Code Regulating Commercial Cannabis Activities- Mitigation Monitoring and Reporting Program shall be implemented.

- **Townsend's big-eared bat *(Corynorhinus townsendii):*** Townsend's big-eared bats are medium-sized bats with long ears that are listed as a Species of Special Concern in California. They live in a variety of habitats, including coniferous forests, riparian communities, active agricultural areas, and coastal habitats. Their distribution is strongly correlated with the presence of caves. During nesting season, these bats roost in large maternity colonies.
  Potential for negative impact from cannabis cultivation activities: Low, potential roosting habitat for the Townsend's big-eared bat exists within the study area, however, no new development within potential habitat is proposed. A mapped range for the species exists within 1/2-mile of the study area. Existing cannabis cultivation activities should comply with black sky standards to prevent stress. Should development of wooded areas become necessary, "Mitigation Measure 3.4-1k: Preconstruction Bat Survey and Exclusion" should be implemented.

Birds

- **Cooper's hawk *(Accipiter cooperii):*** Cooper's hawk is a species on CDFW Watch List. It is a medium sized hawk with broad, rounded wings and a very long tail. Males are 14.6 - 15.3 inches in length on average while females are 14.6 - 17.7 inches in length on average. Adults are blue-gray above with warm reddish bars on the underparts and thick dark bands on the tail, while juveniles are brown above and crisply streaked with brown on the upper breast. They can be found in wooded habitats from deep forests to yards.
  Potential for negative impact from cannabis cultivation activities: Low, potential nesting habitat for the Cooper's hawk exists within the study area, however, no new development within potential habitat is proposed. No mapped range for the species exists in the vicinity of the Study Area. Should development of wooded areas or the take of trees become necessary, "Mitigation Measure 3.4-1d: Nesting Raptor Preconstruction Survey and Establishment of Protective Buffers" should be implemented.

- **Golden eagle *(Aquila chrysaetos):*** The golden eagle is a fully protected species in California. They inhabit a variety of habitats including forest, shrub lands, and grasslands.
  Potential for negative impact from cannabis cultivation activities: Low, potential nesting habitat for the golden eagle exists within the study area, however, no new development within potential habitat is proposed. No mapped range for the species exists in the vicinity of the Study Area. Should development of wooded areas or the take of trees become necessary, "Mitigation Measure 3.4-1d: Nesting Raptor Preconstruction Survey and Establishment of Protective Buffers" should be implemented.

- **Marbled murrelet *(Brachyramphus marmoratus):*** Marbled murrelet is a pelagic bird 9-10 inches long, wingspan 16 inches, that breeds up to 45 miles inland in coniferous forests. The species is listed as Endangered on the IUCN Red List and Threatened under the ESA by the U.S. FWS. Logging and development of forested nesting habitat are considered the greatest threats

to this species. It is potentially present during breeding season (April-September) in dense coniferous forest, especially north-facing slopes.
Potential for negative impact from cannabis cultivation activities: Possible, the study area is within mapped critical habitat for the marbled murrelet, no new development within this habitat is proposed. As specified in Humboldt County Ordinance No. 2599 Section 55.4.12.6.b "Performance Standards for Noise at Cultivation Sites", "Where located within one (1) mile of mapped habitat for marbled murrelet or spotted owls where timberland is present, maximum noise exposure from the combination of background cultivation related noise may not exceed 50 decibels measured at a distance of 100 feet from the noise source or the edge of habitat, whichever is closer. Where ambient noise levels, without including cultivation related noise, exceed 50 decibels within 100 feet from the cultivation related noise source or the edge of habitat, cultivation-related noise sources may exceed 50 decibels provided no increase over ambient noise levels would result". If cultivation activities of this project meet this noise standard, potential negative impacts to the species is low and no further action is required. Should further development or the take of trees become necessary, "Mitigation Measure 3.4-1g: Marbled Murrelet Preconstruction Survey and Establishment of Protective Buffers" should be implemented.

- **Northern spotted owl *(Strix occidentalis caurina):*** The northern spotted owl is listed as threatened under the Endangered Species Act. They are found in northern California and require forests with dense canopy cover of old growth trees. They are a brown, medium-sized owl, with dark eyes. They hunt small forest mammals by perching and pouncing on their prey. They are potentially present where this suitable habitat is nearby, or in close proximity to established Critical Habitat for the species.
Potential for negative impact from cannabis cultivation activities: Possible, the Study Area is immediately adjacent to spotted owl habitat and within one mile of three observed pairs, an activity center, and three confirmed sightings. As specified in Humboldt County Ordinance No. 2599 Section 55.4.12.6.b "Performance Standards for Noise at Cultivation Sites", "Where located within one (1) mile of mapped habitat for Marbled Murrelet or Spotted Owls where timberland is present, maximum noise exposure from the combination of background and cultivation related noise may not exceed 50 decibels measured at a distance of 100 feet from the noise source or the edge of habitat, whichever is closer. Where ambient noise levels, without including cultivation-related noise, exceed 50 decibels within 100 feet from the cultivation-related noise source or the edge of habitat, cultivation-related noise sources may exceed 50 decibels provided no increase over ambient noise levels would result". If cultivation activities of this project meet the noise standard and dark sky standards, and do not involve the application of rodenticide, the potential for negative impacts on the species is low and no further action should be required. The study area is within 0.7 miles of a known northern spotted owl activity center, should any new development or the removal of trees become necessary, "Mitigation Measure 3.4-1e: Northern Spotted Owl Preconstruction Habitat Suitability Surveys and Determination of Presence or Absence" should be implemented.

Amphibians

- **Foothill yellow-legged frog *(Rana boylii):*** The foothill yellow legged frog is a medium sized frog (1.5-3.2 inches in length) and a California Species of Special Concern and State Candidate for Threatened Species. Their coloring is gray or brown and typically matches the surrounding background of its habitat. They are found in rocky streams, riparian habitats, or isolated pools,

all of which could be affected by activities on nearby developed lands.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the foothill yellow-legged frog exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. The restoration of Stream Crossing 1 and construction of a Culvert and Stream Crossing 7 will expand and improve this species potential habitat. All mitigation measures imposed by CDFW for these projects will be observed. The study area is within a mapped range of the foothill yellow-legged frog. Should further new development be required, "Mitigation Measure 3.4-1b: Special-Status Amphibian Preconstruction Surveys" should be implemented.

- **Pacific tailed frog *(Ascaphus truei):*** Pacific tailed frogs (1-2 inches in length) are endemic to the Pacific Northwest are a California Species of Special Concern. The male frogs have tails that are used for reproduction through internal fertilization. These frogs are colored to blend with rocks found near streams. Pacific tailed frogs are potentially present in ponds and riparian habitat.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the pacific tailed frog exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. The restoration of Stream Crossing 1 and construction of a Culvert and Stream Crossing 7 will expand and improve this species potential habitat. All mitigation measures imposed by CDFW for these projects will be observed. The study area is approximately 0.75 miles from a mapped range of the pacific tailed frog. Should further new development be required, "Mitigation Measure 3.4-1b: Special-Status Amphibian Preconstruction Surveys" should be implemented.

- **Southern torrent salamander *(Rhyacotriton variegatus):*** Southern torrent salamander is a California Species of Special Concern and Federally Sensitive Species. It is a medium sized salamander (1.5 - 2.4 inches in length) with slim body, short tail, and small head with large protuberant eyes. The coloring ranges from olive to brown dorsally with dark and light speckling. Their ventral surface is yellowish and sometimes speckled. They are occasionally found in riparian vegetation adjacent to water or in contact with water.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the southern torrent salamander exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. The restoration of Stream Crossing 1 and construction of a Culvert and Stream Crossing 7 will expand and improve this species potential habitat. All mitigation measures imposed by CDFW for these projects will be observed. The study area is approximately four miles from a mapped range of the southern torrent salamander. Should further new development be required, "Mitigation Measure 3.4-1b: Special-Status Amphibian Preconstruction Surveys" should be implemented.

Invertebrates

- **Obscure bumble bee *(Bombus caliginosus):*** Obscure bumble bee or Fog-belt bumble bee is very similar in appearance to the most common bumble bee in the region, the yellow-faced bumble bee, which makes identification and conservation status research difficult. Its range extends from British Columbia to Southern California. It is ranked Vulnerable on the IUCN Red List and is ranked S1S2, imperiled to critically imperiled, in California. Analyses suggest very high population decline range-wide, including range size reductions, persistence reductions, and relative abundance declines. It is potentially present in coastal counties wherever its food plants occur, including the genera Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.

Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the obscure bumble bee exists within the study area, however, the wooded nature of the Study Area makes the occurrence of likely food plants low and clearings being used for cultivation have little vegetation. No mapped range for the species exists in the vicinity of the Study Area.

- **Western bumble bee *(Bombus occidentalis):*** Western bumble bee was formerly common in the Pacific Northwest, but in the mid 1990s it became rare, possibly due to a fungal pathogen, Nosema bombi. Some populations may be starting to rebound. The bee's historic range extends along the Pacific coast and western interior of North America and into the northwestern Great Plains and southern Saskatchewan. It is ranked Vulnerable on the IUCN Red List and is S1, critically imperiled, in California. It is potentially present in coastal counties wherever its food plants occur, including the genera Melilotus, Cirsium, Trifolium, Centaurea, Chrysothamnus, and Eriogonum, as well as crop plants including pumpkins, raspberries, apples, cherries, and canola, among others.
  Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the obscure bumble bee exists within the Study Area, however, the wooded nature of the study area makes the occurrence of likely food plants low and clearing being used for cultivation have little vegetation. No mapped range for the species exists in the vicinity of the Study Area.

- **Mountain shoulderband *(Helminthoglypta arrosa monticola):*** Mountain shoulderband is a land snail in the family Helminthogyptidae (mollusks). The subspecies monticola is considered critically imperiled at the global and state level, and is known only from a small number of observations near King Peak in the Honeydew quadrangle map in Humboldt County. It has a light-colored about 25 mm in diameter. It is potentially present on talus slopes in chaparral habitat in the King Range in Humboldt County. (Roth, B. 1982. Wasmann J. of Biology 39: 1-5.)
  Potential for negative impact from cannabis cultivation activities: Low, potential habitat for the species does not exist within the study area. The study area is approximately 1.8 miles from a mapped range of the mountain shoulderband.

4.1.2 Other Protected Bird Species

All nesting native bird species are projected under both federal and state law. Federal regulations protect migratory birds, and their nests, eggs, and nestlings, under the Migratory Bird Treaty Act (MBTA). Birds and their nests are also protected under California Fish and Game Code 3503 and 3503.5.

Any project activities that may affect bird species during the bird breeding season (typically February 1 to August 31) would require measures to protect native nesting birds, including preconstruction surveys, avoidance measures, and monitoring.

4.1.3 Plants and Mosses

Fourteen special-status plant species have been documented within the 9-Quad Area of the proposed project. Based on site conditions, seven of these species may potentially occur in the Study Area. Species are listed below, and additional information is in Appendix B.

- **Howell's montia *(Montia howellii):*** Howell's montia is an annual herb in the purslane family (Montiaceae) that is native to California and western North America with a California Rare Plant ranking of 2B.2 (rare, threatened, or endangered in CA; common elsewhere). It grows in low mats; 2-6 minute white flowers per inflorescence bloom March-May. It is potentially present in wet areas, vernal pools, and wet meadows, in redwood forest, freshwater wetlands, and

wetland-riparian zones.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for Howlee's montia exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. All cultivation areas meet setback requirements for riparian zones. The restoration of Stream Crossing 1 and construction of a Culvert and Stream Crossing 7 will expand and improve this species potential habitat. All mitigation measures imposed by CDFW for these projects will be observed. Should development into riparian zones or wet areas become necessary a protocol level survey for the species should be conducted.

- **Pacific gilia *(Gilia capitata ssp. Pacifica):*** Pacific gilia is an annual herb that is native to California and otherwise confined to western North America, with a California Rare Plant ranking of 1B.2 (rare, threatened, or endangered in California and elsewhere). These bluish-purple flowers are potentially found on coastal bluff scrub, chaparral, coastal prairie, valley and foothill grasslands.
Potential for negative impact from cannabis cultivation activities: Low, no potential habitat for Howlee's montia exists within the study area. A mapped range of the species is approximately 1.9 miles from the study area.

- **Running-pine *(Lycopodium clavatum):*** Running-pine club moss is a fern that is native to California, North America, and beyond. It grows only a few cm tall but expands with underground stems into clones up 150 cm wide. It has a California Rare Plant ranking of 4.1 (limited distribution). It is potentially present in coniferous forest understory, edges, and openings, and along roadsides. It prefers mesic sites with partial shade and light between 45-1225 m elevation.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for running-pine exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. Should further development of wooded portions of the study area become necessary a protocol level survey for the species should be conducted.

- **Methuselah's beard lichen *(Usnea longissimi):*** Methuselah's beard lichen is a white or light grey, fibrous, lichen, native to California, that grows on and hangs off of tree branches. It has a California Rare Plant ranking of 4.2 (limited distribution). It is potentially present in the "redwood zone" on tree branches of a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay, between 45-1465 m elevation.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for Methuselah's beard lichen exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. Two mapped ranges of the species are within one mile of the study area. Should further development of wooded portions of the study area become necessary a protocol level survey for the species should be conducted.

- **Coast fawn lily *(Erythronium revolutum):*** The coast fawn lily is a perennial bulb that is native to California and western North America with a California Rare Plant ranking of 2B.2 (rare, threatened, or endangered in CA, but common elsewhere). Its habitat associations include redwood forest, mixed evergreen forest, and wetland-riparian zones. It is distinguishable from similar species due to its pink flowers, swollen anther filaments and mottled leaves.
Potential for negative impact from cannabis cultivation activities: Low, potential habitat for coast fawn lily exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. All cultivation areas meet setback requirements

for riparian zones. The restoration of Stream Crossing 1 and construction of a Culvert and Stream Crossing 7 will expand and improve this species potential habitat. All mitigation measures imposed by CDFW for these projects will be observed. Should development into riparian zones or wet areas become necessary a protocol level survey for the species should be conducted.

- **Leafy reed grass *(Calamagrostis foliosa):*** Leafy reed grass is a perennial bunchgrass endemic to northern California, from Mendocino County northward, where it grows in forests and scrub on the coastline below 3,500 ft. Due to its limited distribution it is included on CNPS list 4.2 (watch list, moderately threatened in California). Plants form a tuft of stems 30 to 60 centimeters tall with leaves mostly located around the base of the stems. The flower cluster is a dense, narrow sheaf of spikelets up to 12 centimeters long. The fruit of each spikelet is tipped with a bent awn. Its habitats include coastal bluff scrub and north coast coniferous forest.
  Potential for negative impact from cannabis cultivation activities: Low, potential habitat for leafy reed grass exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. Should further development of into wooded portion of the study area become necessary a protocol level survey for the species should be conducted.

- **White-flowered rein orchid *(Piperia candida):*** The white-flowered rein orchid is a perennial herb that is native to California and western North America with a California Rare Plant rank of 1B.2 (rare, threatened, or endangered in CA and elsewhere). It is associated with yellow pine forest and north coastal coniferous forest habitats. This orchid is distinguishable from others within the Piperia genus due to its whiter (and occasionally green-tinged) flowers.
  Potential for negative impact from cannabis cultivation activities: Low, potential habitat for white-flowered rein orchid exists within the study area, however, no new development for cannabis related activities within potential habitat is proposed. The study area is approximately 1.3 miles from a mapped range of the species. Should further development of into wooded portion of the study area become necessary a protocol level survey for the species should be conducted.

4.2 Special-Status Habitats and Biological Communities

Sensitive biological communities and protected habitats that are potentially present in the Study Area are discussed below.

4.2.1 Designated Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal ESA as the specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery. Critical habitat designation provides federal agencies with a clear indication when consultation is required.

The Study Area overlaps with, is near, or is within the watershed of designated critical habitat for five special-status species: chinook salmon, coho salmon, north coast steelhead, marbled murrelet, and northern spotted owl.

Chinook Salmon Critical Habitat

Within the nine-quad area there is designated critical habitat for Chinook salmon on the Mattole River. This habitat is important for rearing and spawning and is critical for the recovery of the species. Critical habitat for Chinook is determined by identifying known physical and biological features within the designated area that are essential to the conservation of the species. These essential features include spawning sites, food resources, water quality and quantity, and riparian vegetation.

Coho Salmon Critical Habitat

Within the nine-quad area there is designated critical habitat for coho salmon on the Mattole River. Critical habitat for coho salmon is determined by identifying known physical and biological features within the designated area that are essential to the conservation of the species. These essential features include spawning sites, food resources, water quality and quantity, and riparian vegetation.

North Coast Steelhead Critical Habitat

Within the nine-quad area there is designated critical habitat for north coast steelhead on the Mattole River. Critical habitat for north coast steelhead is determined by identifying known physical and biological features within the designated area that are essential to the conservation of the species. These essential features include spawning sites, food resources, water quality and quantity, and riparian vegetation.

Marbled Murrelet

Within the nine quad area there is designated critical habitat for the marbled murrelet. Marbled murrelet critical habitat surrounds the properties under study on all sides. A pelagic bird, marbled murrelets come ashore to use dense coniferous forest, especially north-facing slopes, during their breeding season (April-September). Compliance with the ESA may require consultation with U.S. Fish and Wildlife Service to ensure project activities would not adversely affect critical habitat.

Northern Spotted Owl Critical Habitat

Within the nine quad area there is designated critical habitat for the northern spotted owl. Northern spotted owl critical habitat surrounds the properties under study on all sides. Northern spotted owls live in forests characterized by dense canopy of mature and old growth trees. Compliance with the ESA may require consultation with U.S. Fish and Wildlife Service to ensure project activities would not adversely affect critical habitat.

Compliance with the ESA would require further evaluation to ensure that project activities would not adversely affect critical habitat for these species.

4.2.2 Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), regional fishery management councils establish Essential Fish Habitat (EFH) for federally managed species covered under regional Fishery Management Plans (FMP). EFH is defined as "those waters or substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (MSA Section 3). Impacts on EFH can result from the reduction in the quality and quantity of habitat, direct effects (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), and site-specific or habitat-wide impacts.

No EFH has been defined for steelhead, however the Mattole River, which is located within the Honeydew quadrangle map and for which the properties under study encompass tributaries, is an EFH for coho and chinook salmon. Compliance with the MSA is accomplished through consultation with NMFS. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with NMFS regarding potentially adverse effects of their actions on EFH.

4.2.3 Sensitive Natural Communities

Sensitive Natural Communities are listed by CDFW in the CNDDB due to the rarity of the community in the state or throughout its entire range (globally). Additionally, habitats identified by CDFW as Areas of Significant Biological Importance are included as a sensitive natural community. The Study Area contains one sensitive natural community: Douglas Fir Forest Vegetation Alliance.

Douglas Fir Forest

The Douglas fir forest vegetation alliance (Saywer et al 2009) is categorized by CNPS as a North Coast Coniferous Forest, which occurs on well-drained, moist sites in the wetter regions of the North Coast Ranges. Most of the low-elevation stands on industrial and private lands have been logged in the last 50 years, so stands are young. Older stands occur in Mendocino and Six Rivers national forests, particularly in the Yolla Bolly-Middle Eel and North Fork wilderness areas. Mixed stands with canyon live oak (*Quercus chrysolepis*) occur in canyons of the Eel, Mad, and Russian rivers inland from the redwood belt (Jimerson et al. 1996).

4.2.4 Jurisdictional Waters

Jurisdictional tidal waters are regulated by the U.S. Army Corps of Engineers (Section 404 Clean Water Act and Section 10 Rivers and Harbors Act) and the Regional Water Quality Control Board (Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act). A delineation to determine the precise locations and boundaries of jurisdictional waters was not performed for the purposes of this report. The Mattole River and connected tributaries and wetlands are likely to be considered jurisdictional waters and any impacts to the waterway will be regulated by Army Corps of Engineers.

4.2.5 California Lakes and Streambeds

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. The Lake and Streambed Alteration (LSA) Program reviews projects that would alter any river, stream, or lake and conditions projects to conserve existing fish and wildlife resources.

Project activities within or adjacent to the Mattole River and its tributaries would require a 1602 Lake and Streambed Alteration Agreement. All proposed projects meeting this criterion within the study area have had a LSA Notification submitted. All mitigation measures and other requirements of the LSA Agreement must be observed.

4.2.6 Streamside Management Area (SMA) Ordinance of the County of Humboldt

Pursuant to Humboldt County's Streamside Management Area Ordinance, SMAs are sensitive habitat and need to be identified in relation to proposed developments. The ordinance provides standards pertaining to development within streamside management areas and other wet areas. SMAs are defined as "a natural resource area along both sides of streams containing the channel and adjacent land." The ordinance identifies allowed development and prohibited activities within SMAs, stream channels, and other wet areas. No development is allowed within the SMA unless the County determines, based on

specific factual findings, that such development would not result in significant adverse impacts to fish, wildlife, riparian habitat, or soil stability.

Project activities may require determination from the County, which will require factual findings in a biological report, identifying potential impacts and incorporating mitigation measures that reduce potential impacts to a less than significant level. Development within the SMA or buffer is permitted by obtaining concurrence from CDFG and the County that the biological report mitigates impacts to a level of less than significant; upon such a determination, the County issues a special permit for the proposed development.

5. Recommendations

The assessment and recommendations in this reconnaissance-level biological survey are based on desktop-level research. Site visits by qualified biologists have not been carried out at the time of preparation of this report. Biological surveys of the Study Area are required to determine the presence of special-status species and biological resources. The following recommendations are based on the best information available without a site visit.

5.1 General Wildlife Recommendations

The following recommendations are at the taxon-group level and apply to species that may potentially be found at the Study Area.

5.1.1 Mammals

Project activities that may negatively affect sensitive mammal species should be avoided. Greenhouse lights, other light sources, generators, and other sources of noise should be constructed and used so that they do not interfere with daytime or nighttime activities of mammals, including bats. If roosting bats are found on site, species-appropriate exclusion buffers should be determined and implemented. Mature forests or rocky outcrops, if any, in the project area may be used by bats and other mammals and should be protected.

5.1.2 Birds

Activities that may cause disturbance should be avoided during the breeding season, in most cases from February 1 to September 1. If construction must occur during the breeding season, nesting bird surveys should be conducted no more than one week prior to commencement of project activities to determine whether any birds are nesting on site. If nesting birds are found on site, species-appropriate exclusion buffers shall be determined, and project activates will not occur within the buffer until the nest is no longer active, as determined by a biologist.

5.1.3 Fish

Project activities that may negatively affect the quality of the water should be avoided. Measures to control erosion and stream sedimentation should be employed, e.g. placement of coir logs, proper culvert design. Any proposed work that may affect streambeds or water quality will require consultation with permitting agencies, e.g. Army Corps of Engineers, NOAA, CDFW, and local jurisdictions.

5.1.4 Amphibians and reptiles

Should development into riparian or wet areas within the study area be proposed, surveys should be conducted to determine the presence of sensitive amphibian species. Dip-net and egg mass surveys should be conducted in permanent and ephemeral bodies of water to determine the presence of sensitive frog and salamander species (Del Norte Salamander, foothill yellow-legged frog, Pacific tailed frog, southern torrent salamander, western pond turtle). Surveys for western pond turtle should be conducted. Roads and pathways should be constructed to not present barriers to travel for migrating amphibians. Culverts should be constructed to not entrap amphibians or reptiles.

5.1.5 Plants and sensitive vegetation communities

Should development into riparian or wooded portions of the study area be proposed, plant surveys to determine presence of special status species should be conducted. If sensitive species or habitats are identified at the Study Area, activities should avoid disturbance of the vegetation and soils in the area.

5.2 General Resource Recommendations

5.2.1 Protection of Watershed and Nearby Habitat

Operations should be located in stable areas and implement appropriate management actions to prevent irrigation runoff. Efforts should be made to prevent groundwater contamination through irrigation runoff. Pesticides should be applied only when winds are low to minimize drift that could affect sensitive habitats. Consultation with CDFW and regulatory agencies may be required to be compliant with specific mitigation efforts to protect stream habitats.

5.2.2 Site Drainage

Erosion control measures should be implemented to avoid runoff that could negatively impact habitat and sensitive species. This includes implementing measures at cultivation sites, roads, and water crossings. The Water Resource Protection Plan prepared for the cultivation site must be implemented to protect resources and comply with permit agency requirements.

5.2.3 Vegetation Survey

Protocol vegetation surveys would be necessary to determine the specific vegetation communities or if any rare plants are at the site. Vegetation surveys must be conducted during the growing season when plants are emerging and identifiable.

5.2.4 Pest Management Plan

To reduce the potential for pest organisms to adversely affect habitat or protected species, the Water Resource Protection Plan, Site Management Plan, and or Cultivation and Operations Plan should include pest management measures, including proper cleaning of cultivation equipment to prevent spread of weeds or pathogens, proper plant spacing and pruning, and other measures necessary to keep pest numbers low. When pests are found, a plan using approved cultural, manual, and/or biological control methods should be implemented.

5.2.5 Hazardous Materials Storage and Usage Plan

To reduce risk to important habitat or protected species, the Water Resource Protection Plan, Site Management Plan, and or Cultivation and Operations Plan must include a hazardous materials management plan, and should ensure avoidance of pesticide runoff, groundwater contamination, and drift that could negatively impact surrounding sensitive habitats.

5.2.6 Permitting Agencies

If the proposed project may impact sensitive biological communities, including wetland habitats and waterways, the project may require permit authorization from the regulatory agencies, and may include:

- Section 404 Nationwide Permit from the Corps of Engineers
- Section 1602 Streambed Alteration Agreement from the CDFW
- Section 7 consultation with USFWS for impacts to ESA listed species and their habitat
- Section 7 consultation with NMFS for impacts to fish species, critical habitat, and EFH
- Streamside Management Area Ordinance from Humboldt County

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LISTING STATUS CODES
Federal (USFWS):
FE = Listed as Endangered (in danger of extinction) by the federal government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government.
FC = Federal candidate species
S = Sensitive
FDL = Delisted by the federal government
State (CDFW):
CE = Listed as Endangered by the State of California.
CT = Listed as Threatened by the State of California.
CC = Candidate for listing by the State of California
SSC = California Species of Special Concern.
FP = Fully Protected
CR = Described as as Rare by the State of California
CDL = Delisted by the State of California
California Native Plant Society (CNPS):
List 1A=Plants presumed extinct in California and rare or extinct elsewhere.
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere.
List 2B= Plants rare, Threatened, or Endangered in California but more common elsewhere.
List 4=Watch list: Plants of limited distribution
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.
Other Listing Status:
**Special animal—listed on CDFW's Special Animals List

Appendix A: Habitat Type Descriptions

From California Wildlife Habitat Relationship (CWHR) Maps (CDFW-CIWTG 1988)
The map of geographic range of following habitats includes the Study Area.
NOTE: the CWHR habitat maps show limits of distribution only; any given habitat type does not occur evenly or at all throughout its mapped range.

Habitat Name	Code	Habitat Description
Annual Grassland	AGS	Annual grassland habitat occurs throughout the state in patches of various sizes. They are described as habitats of open grassland that are composed primarily of annual plant species including wild oats, ripgut brome, red brome, and foxtail fescue. Species composition is related to precipitation and are found in moist lightly grazed areas. Annual grasslands occupy what was once pristine native grassland consisting of perennial bunchgrasses. Many wildlife species use annual grasslands for foraging. Common species include burrowing owl, coyote, and common garter snake.
Barren	BAR	Barren habitat, defined by the permanent absence of vegetation, occurs throughout California at every elevation. Any habitat with <2% total vegetation cover by herbaceous, desert, or nonwildland species and <10% cover by tree or shrub species is defined this way. It includes rocky intertidal and subtidal zones, sandy beaches, mudflats, vertical river banks and canyon walls, exposed alpine rock, and even pavement and buildings. Because there is little or no vegetation, the structure of the substrate is the critical component for wildlife considerations. For example, rock ledges provide nesting habitat for cormorants and many hawks and falcons. Open gravel or sand is nesting habitat for some wading birds, gulls, terns, and nightjars. Vertical areas of friable soils are bank swallow nesting habitat, while rocky river canyon walls provide foraging habitat for some bats.
Coastal Scrub	CSC	Coastal Scrub occurs discontinuously in a narrow strip throughout the length of California with elevation ranges from sea level to about 900 m (3000 ft). Structure of the plant associations that comprise Coastal Scrub is typified by low to moderate-sized shrubs with mesophytic leaves, flexible branches, semi-woody stems growing from a woody base, and a shallow root system (Harrison et al. 1971, Bakker 1972). Though vegetation productivity is lower in Coastal Scrub than in adjacent chaparral habitats associated with it (Gray 1982), Coastal Scrub appears to support numbers of vertebrate species roughly equivalent to those in surrounding habitats (Stebbins 1978). Though not exclusively, the Federal and State listed endangered peregrine falcon, Morro Bay kangaroo rat and the Santa Cruz long-toed salamander all occur in Coastal Scrub. A subspecies of the black-tailed gnatcatcher, a California Department of Fish and Game Species of Special Concern (Remsen 1978), is found exclusively in southern sage scrub.
Douglas Fir	DFR	Douglas-fir habitat occurs in the north Coast Range from Sonoma County north to the Oregon border and in the Klamath Mountains of California and Oregon. This habitat usually occurs at elevations from 150 to 600 m (500 to 2000 ft) in the Coast Range and from 300 to 1200 m (1000 to 4000 ft) in the Klamath Mountains. It can occur at higher elevations if abundant precipitation is present (Sawyer 1980). This habitat forms a complex mosaic of forest expression due to the geologic, topographic, and successional variation typical within its range. Douglas Fir habitat supports abundant wildlife species including birds, amphibians, and small mammals. Bird species typical of this habitat include spotted owl, western flycatcher, chestnut-backed chickadee, golden-crowned kinglet, Hutton's vireo, solitary vireo, hermit warbler, and varied thrush. Among amphibians and reptiles, the distributions of northwestern salamander, Pacific giant salamander, Olympic salamander, Del Norte salamander, black salamander, clouded salamander, tailed frog, and northwestern garter snake are largely coincident with the distribution of Douglas Fir habitat. Typical mammals include fisher, deer mouse, dusky-footed woodrat western redbacked vole, creeping vole, Douglas' squirrel, Trowbridge's shrew, and shrew-mole.

Habitat Name	Code	Habitat Description
Fresh Emergent Wetland	FEW	Fresh emergent wetland habitats are non-tidal waters characterized by emergent herbaceous hydrophytes that prosper in an anaerobic environment (Kramer 1988). They occur on virtually all exposures and slopes where a basin or depression that is saturated or at least periodically flooded is present. Fresh emergent wetlands can be found at all elevations in California but are typically below 2270 m (7500 ft). They are some of the most highly productive habitats in California, housing mammals, reptiles, amphibians, and more than 160 species of birds. The acreage of fresh emergent wetlands has decreased dramatically across California due to drainage and conversion to agriculture (Humboldt Regional Transportation Plan 2014).
Lacustrine	LAC	Lacustrine habitats are found throughout California at all elevations. Lacustrine habitats are inland depressions or dammed riverine channels containing standing water (Cowardin 1979). This habitat can vary from large lakes to small ponds less than one hectare. This includes permanent lacustrine systems that support fish to intermittent types. Phytoplankton is found in open water in lacustrine habitats and is responsible for primary productivity in this habitat. Lacustrine systems provide habitats for many fish as well as 18 mammals, 101 birds, 9 reptiles and 22 amphibians.
Montane Hardwood-Conifer	MHC	Montane Hardwood-Conifer occurs throughout California and is somewhat continuous from Santa Cruz County northward through outer coast range into Oregon, usually some distance inland m the coast (Cheatham and Haller 1975). It can also be found on north facing slopes of the inner north coast ranges, the Santa Lucia Mountains, as well as small patches extending to Santa Barbara County (Cheatham and Haller 1975). Montane Hardwood-Conifer also occurs somewhat continuously down the Sierra Nevada to the transverse ranges. Elevations range from 300 to 10 m (1000 to 4000 ft) in the north to 605 to 1760 m (2000 to 00 ft) in the south. Isolated patches of MHC can be found throughout the transverse and peninsular ranges of southern California. Geographically and biologically, Montane Hardwood-Conifer is transitional between dense coniferous forests and montane hardwood, mixed chaparral, or open woodlands and savannahs. Montane Hardwood-Conifer provides habitat for a variety of wildlife species. Moreover, mast crops are an important food source for many birds as well as mammals. Canopy cover and understory vegetation are variable which makes the habitat suitable for numerous species. In mesic areas, many amphibians are found in the detrital layer.
Montane Hardwood	MHW	The Montane Hardwood habitat ranges throughout California mostly west of the Cascade-Sierra Nevada crest, ranging from 100 m (300 fl) near the Pacific Ocean to 2745 m (9000 ft) in southern California. Typically, MHW is composed of a pronounced hardwood tree layer with an infrequent and poorly developed shrub stratum and a sparse herbaceous layer. In the Coast Range and Klamath Mountains, canyon live oak often forms pure stands on steep canyon slopes and rocky ridge tops, replaced at higher elevations by huckleberry oak (Parker and Matyas 1981). Acorns are a major resource that MHW habitats provide to wildlife that includes scrub and Steller's jays, acorn woodpecker, western gray squirrel, wild turkey, mountain quail, band-tailed pigeon, California ground squirrel, dusky-footed woodrat, black bear, and mule deer. The forest floor provides habitat for many amphibians and reptiles, including Mount Lyell salamander, ensatina, relictual slender salamander, western fence lizard, and sagebrush lizard. Snakes include rubber boa, western rattlesnake, California mountain kingsnake, and sharp tailed snake.

Habitat Name	Code	Habitat Description
Montane Riparian	MRI	Montane riparian habitats are found in the Klamath, Coast and Cascade ranges and in the Sierra Nevada south to about Kern County, usually below 2440 m (8000 ft). Water may be permanent or ephemeral (Marcot 1979). MRI generally occurs as a dense grove of broad-leaved deciduous trees up to 30 m tall, with a sparse understory. West of the Klamath Mountains, black cottonwood is a dominant hardwood, or it may be codominant with bigleaf maple. Along the immediate coast north of San Luis Obispo county, MRI consists mostly of red alder. Like other riparian habitats, MRI has exceptionally high value for many wildlife species (Thomas 1979, Marcot 1979, Sands 1977), providing water, thermal cover, migration corridors and diverse nesting and feeding opportunities for amphibians, reptiles, birds and mammals. The southern rubber boa and Sierra Nevada red fox are among the rare, threatened or endangered wildlife that use MRI habitats during their life cycles.
Perennial Grassland	PGS	Perennial grassland habitat occurs along the California coast from Monterey County northward. Perennial grassland habitats are dominated by annual grasses and forbs and can be variable depending upon the mix of plant species at a site. Species composition is determined by factors such as grazing which will change the vertical habitat structure found at a site. In Humboldt County, common species include California oatgrass, American dunegrass, and Kentucky bluegrass. Perennial grassland provides habitat for many species including small mammals including western harvest mouse and California vole. Perennial grasslands also provide feeding habitat for turkey, red-tailed hawk and western bluebird.
Riverine	RIV	Riverine habitats occur throughout California - usually from sea level to 2438 m (8000 ft) - and include all wetlands and deepwater habitats within a channel that periodically or continuously contains moving water (Cowardin et al 1979). They often provide connectivity between two bodies of standing water (Humboldt Regional Transportation Plan 2014). Healthy riverine systems support a variety of invertebrate species, including the nymphs of mayflies, caddisflies, and stoneflies (Grenfell 1988). Additionally, riverine systems provide important hunting, resting, and foraging habitat for waterfowl, insectivorous birds, bald eagles, and mammals including river otters.
Urban	URB	The urban habitat occurs throughout California and is the result of modifying presettlement vegetation and introducing new species. The structure of urban vegetation varies, including tree groves with continuous canopy, street strips with variable tree spacing, lawns with and without shade trees, and shrub cover. Urban wildlife habitat is often a mixture of native and exotic species, both of which may provide valuable food or other resources. Monoculture is commonly observed within individual design units; however, the overall mosaic may be more valuable as wildlife habitat than the individual units. Moving outward from the urban downtown area, through urban residential, to suburbia, there is a progression outward of decreasing development and increasing vegetative cover. Wildlife diversity also increases while species density decreases (Thomas and DeGraaf 1975) and proportionately greater numbers of native species occur.
Valley Foothill Riparian	VRI	Valley-foothill riparian habitats occur in the Central Valley as well as the foothills of the Sierra Nevada and Coast Ranges. Valley-foothill riparian habitats are found in valleys bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. Valley foothill riparian are characterized by hot, dry summers and mild, wet winters. Dominant species in the canopy are cottonwood and valley oak. In the sub-canopy, white alder and Oregon ash dominate. California blackberry, poison oak, and poison-hemlock are a few species that dominate the understory. Valley foothill riparian habitats provide food, water, and migration corridors for wildlife. 147 species of birds have been recorded as nesters or winter visitors in valley foothill riparian habitats (Laymon 1985).

Habitat Name	Code	Habitat Description
Wet Meadow	WTM	Wet Meadows occur throughout virtually every forest type of the Sierra and Pacific Northwest floristic provinces and as inclusions in the northern coastal prairie and sagebrush steppe (Barbour and Major 1977). Where conditions are favorable, Wet Meadows occur in the Transverse and Peninsular ranges of Southern California. In the Sierra Nevada and Cascade ranges, Wet Meadows usually occur above 1200 m (3940 ft) in the north and above 1800 m (5900 ft) in the south. In the Klamath Mountains, Wet Meadows occur in the California red fir zone at 1400 m (4600 ft) to 1950 m (6400 ft) elevation. In late summer, small mammals may visit Wet Meadows that have dried. However, the meadows are generally too wet to provide suitable habitat for small mammals. Mule deer and elk may feed in Wet Meadows, seeking especially forbs and palatable grasses. Waterfowl, especially mallard ducks, frequent streams flowing through Wet Meadows. Yellow-headed and red-winged blackbirds occasionally nest in Wet Meadows with tail vegetation and with adequate water to discourage predators (Storer and Usinger 1963). The striped racer is the common snake of Wet Meadows in the Sierra Nevada and Cascade Range. Various frog species are abundant in Wet Meadows throughout California. Six species of trout (Brown, cutthroat, golden, rainbow, eastern brook, and Mackinaw) inhabit streams of the Sierra Nevada (Storer and Usinger 1963), and presumably may occur in perennial streams of wet meadows. In the southern Sierra Nevada, the golden trout is the important fish of meadow habitats at high elevations.

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Montane Hardwood-Conifer Vegetation

Richard Anderson

Structure-- Montane Hardwood-Conifer (MHC) habitat includes both conifers and hardwoods (Anderson et al. 1976), often as a closed forest. To be considered MHC, at least one-third of the trees must be conifer and at least one-third must be broad-leaved (Anderson et al. 1976). The habitat often occurs in a mosaic-like pattern with small pure stands of conifers interspersed with small stands of broad-leaved trees (Sawyer 1980). This diverse habitat consists of a broad spectrum of mixed, vigorously growing conifer and hardwood species. Typically, conifers to 65 m (200 ft) in height form the upper canopy and broad-leaved trees 10 to 30 m (30 to 100 ft) in height comprise the lower canopy (Proctor et al. 1980, Sawyer 1980). Most of the broad-leaved trees are sclerophyllous evergreen, but winter-deciduous species also occur (Cheatham and Haller 1975).

Relatively little understory occurs under the dense, bilayered canopy of MHC. However, considerable ground and shrub cover can occur in ecotones or following disturbance such as fire or logging. Steeper slopes are normally devoid of litter; however, gentle slopes often contain considerable accumulations of leaf and branch litter (Cheatham and Haller 1975).

Composition-- Common associates in MHC are ponderosa pine, Douglas-fir, incense-cedar, California black oak, tanoak, Pacific madrone, Oregon white oak, and other localized species. Species composition varies substantially among different geographic areas.

In the north coast, California black oak, Oregon white oak, golden chinquapin, and canyon live oak are commonly found with white fir, Douglas-fir, and ponderosa pine (Parker and Matyas 1981). In the Klamath Mountains and north coast from the Oregon border to Marin County, Oregon white oak, tanoak, Pacific madrone, red alder, Douglas-fir, western red cedar, western hemlock, ponderosa pine, sugar pine, and knobcone pine are common (Küchler 1977, McDonald 1980(Is it a or b Lit Cite), Parker and Matyas 1981). In the northern interior, California black oak, bigleaf maple, Pacific madrone, and tanoak are common with ponderosa pine, white fir, incense-cedar, Douglas-fir, and sugar pine forming the overstory. In the northern Sierra Nevada, common associates include California black oak, bigleaf maple, white alder, dogwood, Douglas-fir, incense-cedar and ponderosa pine. In the southern Sierra Nevada, common associates include California black oak, black cottonwood, canyon live oak, Jeffrey pine, Douglas-fir, ponderosa pine,

sugar pine, incense-cedar, and localized areas of giant sequoia (Küchler 1977, Parker and Matyas 1981). In the central coast, common associates include coast live oak, big leaf maple, Pacific madrone, tanoak, canyon live oak, Coulter pine, coastal redwood and, to a lesser extent, California black oak and ponderosa pine. In the northern central coast, Douglas-fir is found; while in the southern areas, bigcone Douglas-fir occurs. In the Tehachapi, transverse and peninsular ranges of Southern California, common associates include canyon live oak, Pacific madrone, coast live oak and, to a lesser extent, California black oak, ponderosa pine, sugar pine, and incense-cedar (Thorne 1976, Küchler 1977, Parker and Matyas 1981).

Other Classifications-- Montane Hardwood-Conifer is very diverse and has been given a variety of names in the literature including: Mixed Evergreen Forest (Munz and Keck 1973); Mixed Evergreen Zone - Second Growth Forest (Broadleaf 1.1.1H) (Mixed 1.2.31) (Proctor et al. 1980); Mixed Evergreen Forest with Chinquapin, Mixed Hardwood Forest, Mixed Hardwood and Redwood Forest, Oregon Oak Forest, Coulter Pine Forest (Küchler 1977); Mixed Evergreen Forest, Coast Range Mixed Conifer Forest, Santa Lucia Fir Forest, Coast Range Ponderosa Pine Forest, Coulter Pine Forest (Cheatham and Haller 1975); Santa Lucia Fir Series, Bigcone Douglas-fir Series, Madrone Series and Black Oak Series (Paysen 1980)(No Paysen 1980 Lit Cite. There is a Paysen et al. Cite.); Oregon White Oak (Stein 1980); California Black Oak (McDonald 1980); Douglas-fir-Tanoak-Pacific Madrone (Sawyer, 1980); Black Oak Series, Maple-Alder-Dogwood Series, Mixed Conifer-Pine Series, Madrone-Tanoak Series (Parker and Matyas 1981).

Habitat Stages

Vegetation Changes-- 1;2-5:S-D;6. This habitat is climax in most cases; however, it can occur as a seral stage of mixed conifer forests. Vegetation response following disturbance, such as fire or logging, begins with a dense shrubby stage dominated by taller broad-leaved species. The stand gradually increases in height, simultaneously developing into two canopy strata with faster growing conifers above and broad-leaved species below. On mesic sites the conifer component overtakes the hardwood component more rapidly than on xeric sites, where the hardwood component is dominant longer (McDonald 1980).

Duration of Stages-- Secondary succession following disturbance is vigorous, with shrubs and trees regenerating together. The conifer component develops into relatively large, mature trees within 30 to 50 years. The broad-leaved component normally requires 60-90 years. Eventually the conifer component overtakes the broad-leaved component. Successional sequence and timing varies geographically and differs depending on species and environmental factors such as climate, water, and soil.

Biological Setting

Habitat-- Geographically and biologically, Montane Hardwood-Conifer is transitional between dense coniferous forests and montane hardwood, mixed chaparral, or open woodlands and savannahs. MHC merges with many other habitats at its upper and lower ecotones. These habitats include Valley-Foothill Hardwood (VFH), Valley-Foothill Hardwood-Conifer (VHC), Valley-Foothill Riparian (VRI), Closed-Cone Pine-Cypress (CPC), Montane Hardwood (MHW), Mixed Conifer (MCN), Douglas-fir (DFR), Redwood (RDW), Montane Riparian (MRI), Montane Chaparral (MCP), and Mixed Chaparral (MCH). The habitat is an area of vegetational and floristic diversity with large numbers of endemic species (Proctor et al. 1980).

Wildlife Considerations-- Montane Hardwood-Conifer provides habitat for a variety of wildlife species. Mature forests are valuable to cavity nesting birds. Moreover, mast crops are an important food source for many birds as well as mammals. Canopy cover and understory vegetation are variable which makes the habitat suitable for numerous species. In mesic areas, many amphibians are found in the detrital layer. Due to geographic variation in components of Montane Hardwood-Conifer, caution must be exercised when predicting wildlife species use.

Physical Setting

Montane Hardwood-Conifer generally occurs on coarse, well drained mesic soils, in mountainous terrain with narrow valleys. Slopes average approximately 57 percent with all aspects encountered. Winters are cool and wet; summers are hot and dry. Northern California Montane Hardwood-Conifer sites have less rainfall and fog than Redwood (RDW) or Mixed Conifer (MCN) habitats. In southern California, this habitat is found at higher elevations, and in moist canyons. Average rainfall is 60 to 170 mm (25 to 65 in), with some fog. The growing season is 7 to 11 months, with 200 to 300 frost-free days. Mean summer maximum temperatures are 25 to 36 C (75 to 95 F). Mean winter minima are 2 to 4 C (29 to 30 F) (Munz and Keck 1970)(No Munz and Keck 1970 Lit Cite).

Distribution

Montane Hardwood-Conifer occurs throughout California and is somewhat continuous from Santa Cruz County northward through outer coast range into Oregon, usually some distance inland m the coast (Cheatham and Haller 1975). The habitat typically lows the upper and/or inland margins of the coastal redwood RDW) or Douglas fir (DFR) habitats. It can also be found on north facing slopes of the inner north coast ranges, the Santa Lucia Mountains, as well as small patches extending to Santa Barbara County (Cheatham and Haller 1975). Montane Hardwood-Conifer also occurs somewhat continuously down the Sierra Nevada to the transverse ranges. Elevations range from 300 to 10 m (1000 to 4000 ft) in the north to 605 to 1760 m (2000 to 00 ft) in the south. Isolated patches of MHC can be found throughout the transverse and peninsular ranges of southern California.

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Douglas-Fir

Martin G. Raphael

Vegetation

Structure-- This habitat forms a complex mosaic of forest expression due to the geologic, topographic, and successional variation typical within its range (Sawyer 1980). Typical aggregations include a lower overstory of dense, sclerophyllous, broad-leaved evergreen trees (tanoak, Pacific madrone) up to 35 m (114 ft) tall, with an irregular, often open, higher overstory of tall needle-leaved evergreen trees (Douglas-fir) up to 90 m (295 ft) (Marcot 1979, Sawyer 1980, Franklin et al. 1981, Thornburgh 1982). A small number of pole and sapling trees occur throughout stands (Thornburg 1982). On wet sites, shrub layers are well developed, often with 100 percent cover. Cover of the herbaceous layer under the shrubs can be up to 10 percent. At higher elevations, the shrubs disappear and the herb layer is often 100 percent. Typical mesic habitats have a poorly developed or non-existent shrub and herb layer. Dry habitats have greater cover of shrubs and especially grasses (Franklin and Dyrness 1973, D. A.Thornburgh, pers. comm.). On steeper (> 75%), drier slopes with shallow soils, the shrub and herb layer is poorly developed, represented mainly by moss-covered rocks (Sawyer et al. 1977). Diameter of overstory Douglas-fir ranges up to 450 cm (1140 in) and averages 150 to 220 cm (360 to 560 in) on better sites (Franklin and Waring 1980). Density of Douglas-fir decreases with stand age from about 400 stems >2 m tall/ha (160/ac) in 100-year old stands to 290 stems/ha (116/ac) in 250-year-old stands; density of other species increases from 765 to 1212 stems/ha (306 to 490/ac) M. G. Raphael, unpublished data). In a study of similar forests in Oregon, overstory foliage biomass was similar in young (37-year-old) stands, but understory biomass was nine times greater in the older stand (Grier et al. 1974). Mature overstory Douglas-fir trees have a typically cylindrical crown beginning at 20 to 40 m (66 to 131 ft), composed of irregularly scattered branches (Franklin et al. 1981). Diversity of tree size typically increases with stand age, as does tree spacing (Franklin et al. 1981). Young stands have closely spaced and uniformly distributed trees, whereas older stands show a more patchy stem distribution. Snags and downed logs, an important structural component of this habitat, increase in density or volume with stand age (Franklin and Waring 1980, Raphael and Barrett 1984).

Composition-- Overstory composition varies with soil parent material, moisture, topography, and disturbance history. Dry steep slopes on metamorphic and granitic parent materials are dominated by canyon live oak. Less rocky, dry soils support Douglas-fir, tanoak, and Pacific madrone in association with sugar pine, ponderosa pine, black oak, and canyon live oak. Deep mesic soils support an overstory of Douglas-fir with a tanoak-dominated understory. Wettest sites include Pacific yew and, less

consistently, Port-Orford cedar. On ultrabasic derived soils, Douglas-fir attains less dominance and is replaced by Port-Orford cedar on mesic sites to the extreme northwest (Stein 1980a) and open stands of Jeffrey pine, incense cedar, sugar pine, knobcone pine, and western white pine on more xeric sites (Whittaker 1960, Whittaker 1961, Rockey et al. 1966, Mize 1973, Sawyer et al. 1977). In the southern and eastern extent if the type, ponderosa pine becomes a major codominant with Douglas-fir, and cover of black oak increases (Waring and Major 1964, Sawyer et al. 1977). In the absence of fire or other disturbance, western hemlock may occur as a codominant with Douglas-fir and tanoak at the western extent of the type in areas transitional to redwood forest (Sawyer et al. 1977). The shrub layer is typically composed of canyon live oak, Oregon-grape, California blackberry, dwarf rose, and poison-oak (Franklin and Dyrness 1973). Mesic sites support vine maple, California hazel, salal, and Pacific rhododendron (Sawyer et al. 1977). On sedimentary soils, the principal understory shrubs are California huckleberry, snowbrush ceanothus, salal, and Oregon-grape. Ultrabasic soils support a shrub layer of huckleberry oak, shrub tanoak, California-laurel, California buckthorn, and Brewer oak (Whittaker 1960). Forbs and grasses include Pacific trillium, western swordfern, insideout flower, broad-leaf starflower, deervetch vanillaleaf, American deervetch, princes pine, common whipplea, California honeysuckle, American trailplant, whitevein shinleaf, western rattlesnake plantain, Sierra fairy bells, bracken fern, western fescue, common beargrass, and hartford oniongrass (Franklin and Dyrness 1973, Sawyer et al. 1977). Mize (1973), Simpson (1980), and Laidlaw-Holmes (1981) discuss understory composition in relation to parent material and soil moisture.

Other Classifications-- Other names for Douglas-fir habitat include Douglas-fir-Tanoak-Madrone, Douglas-fir-Pine-Madrone, Douglas-fir Series (Parker and Matyas 1981), Port-Orford-Cedar-231 (Stein 1980a), Douglas-fir-Tanoak-Pacific Madrone -234(Sawyer 1980), Western Hemlock Forest -8.22, and Douglas-fir Forest -8.24 (Cheatham and Haller 1975), Douglas-fir Forest -13(Munz and Keck 1959), Evergreen Forest Land -42 (Anderson et al. 1976), Mixed-Evergreen Zone (Franklin and Dyrness 1973), Pseudotsuga-Hardwood Forest (Sawyer et al. 1977), Mixed Evergreen Forest with Chinquapin, and Mixed Evergreen Forest with Rhododendron (Küchler 1977), and Mixed Evergreen Forest(Marcot 1979).

Habitat Stages

Vegetation Changes-- 1; 2-5:S-D;6. After a major disturbance, Douglas-fir habitats can proceed through structural classes 1-5, although the sequence is often truncated on poorer sites. Stage 6 stands occur when periodic disturbance leads to a multi-aged stand or a shade tolerant understory develops. This habitat can exist as any of the canopy closure classes S-D, although class D is most frequent. After logging or intense fire, tanoak regenerates by sprouting and Douglas-fir by seeding. Good seed years are irregular, with peaks at about seven-year intervals (Thornburg 1982). Tanoak sprouts grow faster than Douglas-fir seedlings and initially dominate along with various shrubs and herbs. Tanoak can form a nearly solid canopy for 60 to 100 years until natural mortality allows Douglas-fir to become dominant. In mixed stands of tanoak and

Douglas-fir, the latter overtops tanoak in 15 to 30 years on mesic sites (Thornburgh 1982). On xeric sites, hardwoods dominate longer. Thus, abundance and growth of tanoak sprouts depends on the structure of the previous stand and on available soil moisture. Over the course of succession, grasses, herbs, and shrubs are most abundant in the seedling tree class, least abundant in pole and small tree classes, and moderately abundant in the medium/large tree class. Snag and log volume also increase with stand age.

Duration of Stages-- Because of frequent fires, typical climax Douglas-fir habitat is rare (Thornburgh 1982). In the absence of disturbance, such stands develop in 80 to over 250 years, depending on site quality (McArdle 1961, Lang 1980). Individual Douglas-fir trees can live to 1250 years; ages in excess of 750 years are common (Franklin and Waring 1980). Following disturbance, the seedling tree class persists for 5 to 20 years, depending on site quality. The sapling tree class can be 5 to 60 years old the pole-tree, small tree, and medium large tree classes can be 20 to 130, 35 to over 130, and 80 to over 250 years, respectively (McArdle 1961, Lang 1980, Franklin et al. 1981). Multilayered (class 6) stands probably develop over the same time period as medium/large tree stands.

Biological Setting

Habitat-- Douglas-fir occurs at low to moderate elevations in juxtaposition with a number of other habitats. Redwood (RDW) occurs at lower elevations to the west, and Mixed Conifer (MCN) occurs to the east and at higher elevations within the range of Douglas-fir. To the north, especially in more mesic sites, this habitat is bounded by hemlock and sitka spruce zones of Franklin Dyrness (1973)(No 1973 cite. Only a 1969 Cite. Not placed in Lit Cite at enc.). More xeric sites to the south are bounded by and interspersed with Valley-Foothill Hardwood (VFH) and Valley-Foothill Hardwood-Conifer (VHC). ther habitats, such as Montane Hardwood (MHW), Montane Hardwood Conifer (MHC), Montane Riparian (MRI) and Montane Chaparral (MCP) form a complex mosaic with Douglas-fir at similar elevations (Sawyer et al.1977).

Wildlife Considerations-- This habitat supports a high abundance of wildlife species. Weins (1975)(Not in Habitat Lit Cite.) reported that northwest coastal coniferous forests supported a higher average bird density than any other forest type in North America. Bird species typical of this habitat include spotted owl, western flycatcher, chestnut-backed chickadee, golden-crowned kinglet, Hutton's vireo, solitary vireo, hermit warbler, and varied thrush. Among amphibians and reptiles, the distributions of northwestern salamander, Pacific giant salamander, Olympic salamander, Del Norte salamander, black salamander, clouded salamander, tailed frog, and northwestern garter snake are largely coincident with the distribution of Douglas-fir habitat. Although not restricted to this habitat, the ensatina is its most abundant amphibian. Typical mammals include fisher, deer mouse, dusky-footed woodrat western redbacked vole, creeping vole, Douglas' squirrel, Trowbridge's shrew, and shrew-mole.

Physical Setting

Climatically, this habitat experiences hot, dry summers and cool, mild, wet winters. Mean July temperatures range from 14 to 22 C (57-72 F). Average January temperatures range from 0 to 8 C (32-46 F) (Proctor et al. 1980). Annual precipitation varies from 60 to 170 cm (24-27 in), generally less than 15 percent falling during summer. Precipitation increases inland and at higher elevations. Snowfall ranges from 3 to 80 cm (2 to 31 in) and rarely persists later than June (Proctor et al. 1980). Topography is characterized by rugged, deeply dissected terrain and steep slopes (Franklin and Dyrness 1973), especially toward the south. Major soil types are based on sedimentary granitic, and ultramafic parent materials of gabbro, peridotite, and serpentine (Whittaker 1960).

Distribution

Douglas-fir habitat occurs in the north Coast Range from Sonoma County north to the Oregon border and in the Klamath Mountains of California and Oregon. This habitat usually occurs at elevations from 150 to 600 m (500 to 2000 ft) in the Coast Range and from 300 to 1200 m (1000 to 4000 ft) in the Klamath Mountains. It can occur at higher elevations if plentiful precipitation is present (Sawyer 1980).

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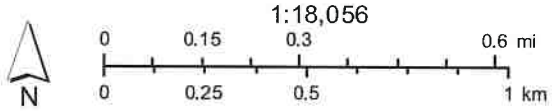
Appendix B: Special Status Species Descriptions

CannaDreams Special Status Species Range Map

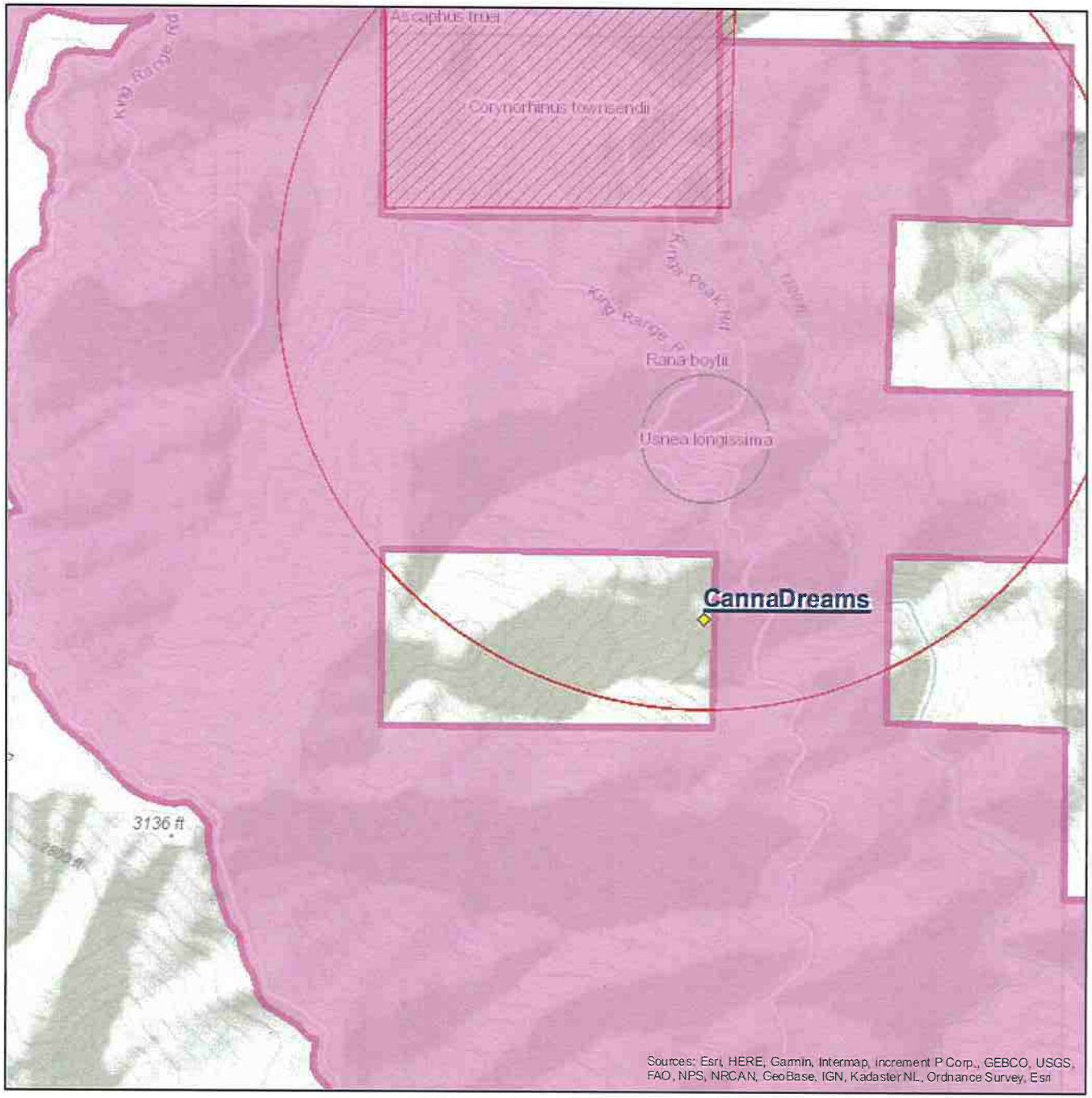
Northern Spotted Owl - Final Critical Habitat - USFWS [ds156]

California Natural Diversity Database (CNDDB) Commercial [ds85]

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (80m)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (non-specific)
- Terrestrial Comm. (circular)
- Aquatic Comm. (80m)
- Aquatic Comm. (specific)
- Aquatic Comm. (non-specific)
- Aquatic Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive EO's (Commercial only)



April 1, 2019



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Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
American badger	*Taxidea taxus*	--/SSC/	Alkali marsh; Alkali playa; Alpine; Alpine dwarf scrub; Bog & fen; Brackish marsh; Broadleaved upland forest; Chaparral; Chenopod scrub; Cismontane woodland; Closed-cone coniferous forest; Coastal bluff scrub; Coastal dunes; Coastal prairie; Coastal scrub	Unlikely.	The American badger is listed as a Species of Special Concern in California. American badgers are easily identifiable by their large foreclaws and distinctive white markings on their head. They are associated with many habitat types including lower montane coniferous forest, but tend to prefer open grasslands, fields, and pastures - probably due to their prey preference of ground squirrels and pocket gophers. Because their prey often inhabit developed and disturbed lands, badgers can potentially be found in developed areas, too.
fisher - West Coast DPS	*Pekania pennanti*	--/ CT/	North coast coniferous forest; Oldgrowth; Riparian forest	Unlikely.	The fisher is a small mustelid mammal that is listed as a California State Threatened species and a US Forest Service Sensitive species. Fishers typically prefer dense coniferous or mixed forests, including early successional forests with dense cover. They are primarily ground-dwelling mammals and are generalized predators, eating mainly small to medium-sized mammals, birds, and carrion.
Humboldt marten	*Martes caurina humboldtensis*	--/CC/	North coast coniferous forest; Oldgrowth; Redwood	Unlikely.	The Humboldt marten is a subspecies of Pacific marten, a carnivorous mammal in the weasel family. It is dark brown with golden tones to the underfur, a cream-colored throat patch, large triangular ears, and a bushy tail about 75% as long the body. It occurs only in the coastal redwood zone from the Oregon border south to Sonoma County. The subspecies is a candidate for listing as Endangered by the State of California, where it is critically imperiled. Threats include loss of habitat due to logging, agriculture, and other development, as well as poisoning caused by eating animals killed through the use of rodenticides. Humboldt marten are potentially present in late-successional (i.e., old growth) coniferous forests, especially redwood; they prefer forests with low, overhead cover.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
long-eared myotis	*Myotis evotis*	--/--/	Montane hardwood-conifer; Montane riparian; Subalpine conifer	Unlikely.	The long-eared myotis is an insectivorous bat that lives primarily in mixed coniferous forests and is a Federal Category 2 candidate for listing by the U.S. Fish and Wildlife Service as Threatened or Endangered. They roost in colonies of about 30 individuals in tree snags in the upper canopies of coniferous forests.
North American porcupine	*Erethizon dorsatum*	--/--/	Broadleaved upland forest; Cismontane woodland; Closed-cone coniferous forest; Lower montane coniferous forest; North coast coniferous forest; Upper montane coniferous forest	Unlikely.	The North American porcupine is a large rodent in the New World porcupine family, usually dark brown or black with white highlights. It is found throughout much of North America except in the southeastern states of the USA. It is considered secure in much of its range but S3, vulnerable, in California. It is potentially present in a wide variety of coniferous and mixed woodland habitats, and will tolerate human-occupied areas.
Sonoma tree vole	Arborimus pomo	--/SSC/	North coast coniferous forest; Oldgrowth; Redwood	Potentially present.	The Sonoma tree vole is a red-furred rodent, 158-186 mm long, with a long, well-furred tail, curved claws, and ears partly concealed in the fur. Predators include spotted owls and probably other owls, raccoons, and fishers. It is listed on the IUCN Red List as Near Threatened and is S3, vulnerable, in California. It is potentially present in the north coast fog belt from Oregon border to Somona County, in Douglas-fir, redwood & montane hardwood-conifer forests, where it feeds almost exclusively on Douglas-fir needles but will occasionally take needles of grand fir, hemlock or spruce.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
Townsend's big-eared bat	Corynorhinus townsendii	--/SSC/	Broadleaved upland forest; Chaparral; Chenopod scrub; Great Basin grassland; Great Basin scrub; Joshua tree woodland; Lower montane coniferous forest; Meadow & seep; Mojavean desert scrub; Riparian forest; Riparian woodland; Sonoran desert scrub; Sonoran	Potentially present.	Townsend's big-eared bats are medium-sized bats with long ears that are listed as a Species of Special Concern in California. They live in a variety of habitats, including coniferous forests, riparian communities, active agricultural areas, and coastal habitats. Their distribution is strongly correlated with the presence of caves. During nesting season, these bats roost in large maternity colonies.
western red bat	*Lasiurus blossevillii*	--/--/	Cismontane woodland; Lower montane coniferous forest; Riparian forest; Riparian woodland	Unlikely.	Western red bat, also known as the desert red bat or southern red bat, is a medium-sized, red-colored bat, average length 103 mm, varying from rusty red to brownish red. Its range extends over much of western North America, Central America, and well into South America. It is an IUCN species of least concern but is ranked S3, vulnerable, in California. It is potentially present in its roosting habitat: primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests, preferring habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.
Cooper's hawk	Accipiter cooperii	--/WL/	Cismontane woodland; Riparian forest; Riparian woodland; Upper montane coniferous forest	Potentially present.	Cooper's hawk is a species on CDFW Watch List. It is a medium sized hawk with broad, rounded wings and a very long tail. Males are 14.6 - 15.3 inches in length on average while females are 14.6 - 17.7 inches in length on average. Adults are blue-gray above with warm reddish bars on the underparts and thick dark bands on the tail, while juveniles are brown above and crisply streaked with brown on the upper breast. They can be found in wooded habitats from deep forests to yards.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
golden eagle	Aquila chrysaetos	BCC/SSC/	Broadleaved upland forest; Cismontane woodland; Coastal prairie; Great Basin grassland; Great Basin scrub; Lower montane coniferous forest; Pinon & juniper woodlands; Upper montane coniferous forest; Valley & foothill grassland	Potentially present.	The golden eagle is a fully protected species in California. They inhabit a variety of habitats including forest, shrub lands, and grasslands.
marbled murrelet	Brachyramphus marmoratus	FT/CE/	Breeds in coniferous forests near coasts, nesting on large horizontal branches high up in trees. Winters at sea.	Potentially present.	Marbled murrelet is a pelagic bird 9-10 inches long, wingspan 16 inches, that breeds up to 45 miles inland in coniferous forests. The species is listed as Endangered on the IUCN Red List and Threatened under the ESA by the U.S. FWS. Logging and development of forested nesting habitat are considered the greatest threats to this species. It is potentially present during breeding season (April-September) in dense coniferous forest, especially north-facing slopes.
northern spotted owl	Strix occidentalis caurina	FT/CT/	North coast coniferous forest; Subalpine coniferous forest; Lower montane coniferous forest; Oldgrowth	Potentially present.	The northern spotted owl is listed as threatened under the Endangered Species Act. They are found in northern California and require forests with dense canopy cover of old growth trees. They are a brown, medium-sized owl, with dark eyes. They hunt small forest mammals by perching and pouncing on their prey. They are potentially present where this suitable habitat is nearby, or in close proximity to established Critical Habitat for the species.
foothill yellow-legged frog	Rana boylii	--/CC/	Aquatic; Chaparral; Cismontane woodland; Coastal scrub; Klamath/North coast flowing waters; Lower montane coniferous forest; Meadow & seep; Riparian forest; Riparian woodland; Sacramento/San Joaquin flowing waters	Potentially present.	The foothill yellow legged frog is a medium sized frog (1.5-3.2 inches in length) and a California Species of Special Concern and State Candidate for Threatened Species. Their coloring is gray or brown and typically matches the surrounding background of its habitat. They are found in rocky streams, riparian habitats, or isolated pools, all of which could be affected by activities on nearby developed lands.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
northern red-legged frog	*Rana aurora*	--/SSC/	Klamath/North coast flowing waters; Riparian forest; Riparian woodland	Unlikely.	The northern red legged frog is a California Species of Special Concern. It is a medium-sized frog with a slender body, smooth skin, distinct dorsolateral folds, and a dark eye mask. The dorsal color is tan, brown or olive-brown with varying amounts of black spotting and speckling. They are potentially present in lowland moist forested habitats in the vicinity of standing or flowing waters.
Pacific tailed frog	Ascaphus truei	--/SSC/	Aquatic; Klamath/North coast flowing waters; Lower montane coniferous forest; North coast coniferous forest; Redwood; Riparian forest	Potentially present.	Pacific tailed frogs (1-2 inches in length) are endemic to the Pacific Northwest are a California Species of Special Concern. The male frogs have tails that are used for reproduction through internal fertilization. These frogs are colored to blend with rocks found near streams. Pacific tailed frogs are potentially present in ponds and riparian habitat.
red-bellied newt	*Taricha rivularis*	--/SSC/	Broadleaved upland forest; North coast coniferous forest; Redwood; Riparian forest; Riparian woodland	Unlikely.	Red-bellied newt is a California Species of Special Concern. It is a medium-sized salamander (2.7 - 3.5 inches in length) with grainy skin and dark eyes. They are brownish black above with tomato-red bellies. These salamanders are stream and river dwellers; they are potentially present in coastal woodlands, redwood forests, and riparian habitats along the coast of California.
southern torrent salamander	Rhyacotriton variegatus	S/SSC/	Lower montane coniferous forest; Oldgrowth; Redwood; Riparian forest	Potentially present.	Southern torrent salamander is a California Species of Special Concern and Federally Sensitive Species. It is a medium sized salamander (1.5 - 2.4 inches in length) with slim body, short tail, and small head with large protuberant eyes. The coloring ranges from olive to brown dorsally with dark and light speckling. Their ventral surface is yellowish and sometimes speckled. They are occasionally found in riparian vegetation adjacent to water or in contact with water.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
western pond turtle	*Emys marmorata*	--/SSC/	Aquatic; Artificial flowing waters; Klamath/North coast flowing waters; Klamath/North coast standing waters; Marsh & swamp; Sacramento/San Joaquin flowing waters; Sacramento/San Joaquin standing waters; South coast flowing waters; South coast standing wat	Unlikely.	Western pond turtle is the only native freshwater turtle along the West Coast and are listed as a California Species of Special Concern. In the Humboldt region, these turtles have been found in mixed oak-fir forests, open prairies, and riparian habitats. Western pond turtles are also potentially present in riparian corridors adjacent to open water.
coho salmon - southern Oregon / northern California ESU	*Oncorhynchus kisutch pop. 2*	FT/CT/	Aquatic; Klamath/North coast flowing waters; Sacramento/San Joaquin flowing waters	Unlikely.	Coho salmon are medium to large salmon with spawning males having hooked jaws and dark red on the sides. Coho populations have been in decline in California. They prefer small coastal streams that can provide suitable spawning habitat. Activities on land that affect adjacent waters are potentially detrimental to Coho populations.
Pacific lamprey	*Entosphenus tridentatus*	--/SSC/	Aquatic; Klamath/North coast flowing waters; Sacramento/San Joaquin flowing waters; South coast flowing waters	Unlikely.	Pacific lamprey are a native anadromous fish, a federal species of concern, and a California Special Species of Concern. Adult lampreys remain in the ocean as parasites to marine fish and mammals before returning to freshwater to spawn. They require stable flow conditions and prefer to spawn in medium to small sized streams. Activities on land that affect adjacent waters are potentially detrimental to lamprey populations.
steelhead - northern California DPS	*Oncorhynchus mykiss irideus pop. 16*	FT/--/	Aquatic; Sacramento/San Joaquin flowing waters	Unlikely.	Steelhead are a salmonid species and a California Species of Special Concern. The northern California Distinct Population Segment is federally listed as threatened. Adult steelhead can reach 25 inches in length and during spawning season are iridescent pink around their lateral line. Steelhead are the anadromous form of rainbow trout, with significant gene flow between resident trout and steelhead. Activities on land that affect adjacent waters are potentially detrimental to steelhead populations.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
summer-run steelhead trout	*Oncorhynchus mykiss irideus pop. 36*	--/SSC/	Aquatic; Klamath/North coast flowing waters; Sacramento/San Joaquin flowing waters	Unlikely.	Steelhead are a salmonid species and a California Species of Special Concern. The northern California Distinct Population Segment is federally listed as threatened. Adult steelhead can reach 25 inches in length and during spawning season are iridescent pink around their lateral line. Steelhead are the anadromous form of rainbow trout, with significant gene flow between resident trout and steelhead. Activities on land that affect adjacent waters are potentially detrimental to steelhead populations.
obscure bumble bee	Bombus caliginosus	--/--/	Montane hardwood-conifer; Douglas fir forest; Coastal oak woodland	Potentially present.	Obscure bumble bee or Fog-belt bumble bee is very similar in appearance to the most common bumble bee in the region, the yellow-faced bumble bee, which makes identification and conservation status research difficult. Its range extends from British Columbia to Southern California. It is ranked Vulnerable on the IUCN Red List and is ranked S1S2, imperiled to critically imperiled, in California. Analyses suggest very high population decline range-wide, including range size reductions, persistence reductions, and relative abundance declines. It is potentially present in coastal counties wherever its food plants occur, including the genera Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
western bumble bee	Bombus occidentalis	S/--/		Potentially present.	Western bumble bee was formerly common in the Pacific Northwest, but in the mid 1990s it became rare, possibly due to a fungal pathogen, Nosema bombi. Some populations may be starting to rebound. The bee's historic range extends along the Pacific coast and western interior of North America and into the northwestern Great Plains and southern Saskatchewan. It is ranked Vulnerable on the IUCN Red List and is S1, critically imperiled, in California. It is potentially present in coastal counties wherever its food plants occur, including the genera Melilotus, Cirsium, Trifolium, Centaurea, Chrysothamnus, and Eriogonum, as well as crop plants including pumpkins, raspberries, apples, cherries, and canola, among others.
mountain shoulderband	Helminthoglypta arrosa monticola	--/--/	Chaparral; Talus slope	Potentially present.	Mountain shoulderband is a land snail in the family Helminthogyptidae (mollusks). The subspecies monticola is considered critically imperiled at the global and state level, and is known only from a small number of observations near King Peak in the Honeydew quadrangle map in Humboldt County. It has a light-colored about 25 mm in diameter. It is potentially present on talus slopes in chaparral habitat in the King Range in Humboldt County. Ref: Roth, B. 1982. Wasmann J. of Biology 39: 1-5.
Howell's montia	Montia howellii	--/--/2B.2	Meadow & seep; North coast coniferous forest; Vernal pool; Wetland	Potentially present.	Howell's montia is an annual herb in the purslane family (Montiaceae) that is native to California and western North America with a California Rare Plant ranking of 2B.2 (rare, threatened, or endangered in CA; common elsewhere). It grows in low mats; 2-6 minute white flowers per inflorescence bloom March-May. It is potentially present in wet areas, vernal pools, and wet meadows, in redwood forest, freshwater wetlands, and wetland-riparian zones.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
maple-leaved checkerbloom	*Sidalcea malachroides*	--/--/4.2	Broadleaved upland forest; Coastal prairie; Coastal scrub; North coast coniferous forest; Riparian forest	Unlikely.	Maple-leaved checkerbloom is a perennial herb in the mallow family that is native to California and Oregon. It grows 40-150 cm tall with white to pink, 5-petaled, radially symmetric flowers about 6-9 mm in diameter. It has a California Rare Plant ranking of 4.2 (limited distribution). It is potentially present in broadleaved, coniferous, and riparian woodlands and in clearings near coast, often in disturbed areas such as developed lands, between 4-765 m elevation.
marsh pea	*Lathyrus palustris*	--/--/2B.2	Bog & fen; Coastal prairie | Coastal scrub | Lower montane coniferous forest | Marsh & swamp | North coast coniferous forest | Wetland	Unlikely.	Marsh pea is a perennial herb in the pea family (Fabaceae) that is native to California as well as elsewhere in North America and beyond. It has a California Rare Plant Ranking of 2B.2, rare, threatened, or endangered in CA; common elsewhere. Its pinkish-purple flowers bloom March-August. It is potentially present in damp meadows, on river banks, on the margins of ponds, by lakes and near the sea, coastal prairie, yellow pine forest, northern coastal scrub, north coastal coniferous forest, freshwater wetlands, and wetland-riparian habitat types, generally below 100 m elevation (328').
Oregon coast paintbrush	*Castilleja litoralis*	--/--/2B.2	Coastal bluff scrub; Coastal dunes; Coastal scrub	Unlikely.	The Oregon coast paintbrush is a perennial herb that is native to California and western North America with a California Rare Plant rank of 2B.2 (rare, threatened, or endangered in CA, but common elsewhere). In the Humboldt area, this paintbrush has been found on rocky banks, grassy slopes, and coastal scrub habitat.
Oregon goldthread	*Coptis laciniata*	--/--/4.2	Meadow & seep; North coast coniferous forest; Wetland	Unlikely.	Oregon goldthread is a perennial herb in the buttercup family, native to far northern California, Oregon, and Washington. It grows in wet parts of the understory of montane and coastal coniferous forests. It has a California Rare Plant ranking of 4.2 due to its limited distribution in California. It is potentially present in dense forest habitat.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
Pacific gilia	Gilia capitata ssp. pacifica	--/--/1B.2	Chaparral; Coastal bluff scrub; Coastal prairie; Valley & foothill grassland	Potentially present.	Pacific gilia is an annual herb that is native to California and otherwise confined to western North America, with a California Rare Plant ranking of 1B.2 (rare, threatened, or endangered in California and elsewhere). These bluish-purple flowers are potentially found on coastal bluff scrub, chaparral, coastal prairie, valley and foothill grasslands.
perennial goldfields	*Lasthenia californica ssp. macrantha*	--/--/1B.2	Coastal bluff scrub; Coastal dunes | Coastal scrub	Unlikely.	Perennial goldfields is an annual herb in the aster family (Asteraceae) that is native to coastal areas of central and northern California and far southern Oregon. It has a California Rare Plant Rank of 1B.2, rare, threatened, or endangered in CA and elsewhere. Stems are less than 40 cm with oblong leaves and yellow composite flowers blooming in December. It is potentially present in grasslands and dunes along the immediate coast in northern coastal scrub communities at elevations under 500 m (1640').
Whitney's farewell-to-spring	*Clarkia amoena ssp. whitneyi*	--/--/1B.1	Coastal bluff scrub; Coastal scrub	Unlikely.	Whitney's farewell-to-spring is an annual herb in the evening primrose family (Onagraceae) that is endemic to California. It has a California Rare Plant Rank of 1B.1, rare, threatened, or endangered in CA and elsewhere, with only one wild population reportedly extant. It grows low to the ground with pink-purple flowers blooming June-August. It is potentially present in moist, open areas of northern coastal scrub at elevations below 100 m (328').
running-pine	Lycopodium clavatum	--/--/4.1	Lower montane coniferous forest; Marsh & swamp; North coast coniferous forest; Wetland	Potentially present.	Running-pine club moss is a fern that is native to California, North America, and beyond. It grows only a few cm tall but expands with underground stems into clones up 150 cm wide. It has a California Rare Plant ranking of 4.1 (limited distribution). It is potentially present in coniferous forest understory, edges, and openings, and along roadsides. It prefers mesic sites with partial shade and light between 45-1225 m elevation.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
Methuselah's beard lichen	Usnea longissima	--/--/4.2	Broadleaved upland forest; North coast coniferous forest; Oldgrowth; Redwood	Potentially present.	Methuselah's beard lichen is a white or light grey, fibrous, lichen, native to California, that grows on and hangs off of tree branches. It has a California Rare Plant ranking of 4.2 (limited distribution). It is potentially present in the "redwood zone" on tree branches of a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay, between 45-1465 m elevation.
coast fawn lily	Erythronium revolutum	--/--/2B.2	Bog & fen; Broadleaved upland forest; North coast coniferous forest; Wetland	Potentially present.	The coast fawn lily is a perennial bulb that is native to California and western North America with a California Rare Plant ranking of 2B.2 (rare, threatened, or endangered in CA, but common elsewhere). Its habitat associations include redwood forest, mixed evergreen forest, and wetland-riparian zones. It is distinguishable from similar species due to its pink flowers, swollen anther filaments and mottled leaves.
giant fawn lily	*Erythronium oregonum*	--/--/2B.2	Cismontane woodland; Meadow & seep; Ultramafic	Unlikely.	The giant fawn lily is a perennial bulbiferous herb and has a California Rare Plant ranking of 2B.2 (fairly endangered in California but common elsewhere). It has two tongue-like leaves that can reach eight inches long. These leaves have irregular brown markings reminiscent of a fawn. It is found in cismontane woodland and meadows and seep habitats. This species is threatened by road maintenance, horticultural collecting, and logging.
leafy reed grass	Calamagrostis foliosa	--/CR/4.2	Coastal bluff scrub; North coast coniferous forest	Potentially present.	Leafy reed grass is a perennial bunchgrass endemic to northern California, from Mendocino County northward, where it grows in forests and scrub on the coastline below 3,500 ft. Due to its limited distribution it is included on CNPS list 4.2 (watch list, moderately threatened in California). Plants form a tuft of stems 30 to 60 centimeters tall with leaves mostly located around the base of the stems. The flower cluster is a dense, narrow sheaf of spikelets up to 12 centimeters long. The fruit of each spikelet is tipped with a bent awn.

Common Name	*Scientific Name*	Status: Fed/State/ CNPSrank	Habitat Type(s)	Potential for Species Occurrence in Study Area	Species Description
white-flowered rein orchid	Piperia candida	--/--/1B.2	Broadleaved upland forest; Lower montane coniferous forest; North coast coniferous forest; Ultramafic	Potentially present.	The white-flowered rein orchid is a perennial herb that is native to California and western North America with a California Rare Plant rank of 1B.2 (rare, threatened, or endangered in CA and elsewhere). It is associated with yellow pine forest and north coastal coniferous forest habitats. This orchid is distinguishable from others within the Piperia genus due to its whiter (and occasionally green-tinged) flowers.

Appendix C: Mitigation Monitoring and Reporting Program- Proposed Ammendments to Humboldt County Code Regulating Cannabis

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

Certified copy of portion of proceedings; meeting on May 8, 2018

Table 4-1 Mitigation Monitoring and Reporting Program – Proposed Amendments to Humboldt County Code Regulating Commercial Cannabis Activities

Impact	Mitigation Measure	Implementation Responsibility	Timing	Verification
3.3 Air Quality/Greenhouse Gas Emissions				
Impact 3.3-4: Exposure of people to objectionable odors.	**Mitigation Measure 3.3-4: Prohibit burning of cannabis and other vegetative material** The County shall amend the proposed ordinance to reflect the following requirements: ▲ The burning of excess plant material associated with the cultivation and processing of commercial cannabis is prohibited.	Humboldt County	This mitigation measure will be incorporated into the ordinance and will be applied to commercial cannabis operations that receive permits.	
3.3 Biological Resources				
Impact 3.4-1: Disturbance to or loss of special-status wildlife species and habitat.	**Mitigation Measure 3.4-1a: Pre-approval biological reconnaissance surveys.** The following shall be included as performance standards in the proposed ordinance for the protection of special-status wildlife species and habitat from new development related to cannabis activities. ▲ Prior to approval of any application for commercial cannabis operations, a biological reconnaissance survey shall be conducted within the proposed development area by a qualified biologist. The qualified biologist shall assess the habitat suitability of the proposed development area for all 35 special-status wildlife species identified as having potential to occur in the County consistent with General Requirement and Prohibition 10 of the Attachment A of the State Water Board Policy. ▲ The biologist shall provide a letter report to the project applicant and the County with evidence to support a conclusion as to whether special-status species and sensitive habitats are present or are likely to occur within the proposed development area. If special-status species or sensitive habitats are present, the appropriate mitigation measures from this EIR shall be identified. The County shall require implementation of the mitigation measures as part of the application approval. **Mitigation Measure 3.4-1b: Special-status amphibian preconstruction surveys.** The following shall be included as performance standards in the proposed ordinance for the protection of special-status amphibian species from new development related to	Humboldt County	These mitigation measures will be incorporated into the performance standards and application requirements of the proposed ordinance.	

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA
Certified copy of portion of proceedings; meeting on May 8, 2018

Table 4-1 Mitigation Monitoring and Reporting Program – Proposed Amendments to Humboldt County Code Regulating Commercial Cannabis Activities

Impact	Mitigation Measure	Implementation Responsibility	Timing	Verification
	cannabis activities. ▲ If special-status amphibians are detected during the initial biological reconnaissance survey (see Mitigation 3.4-1a), preconstruction surveys, or are determined to be likely to occur, consultation with CDFW shall be initiated to determine whether additional measures, such as project design modifications, relocation of the site, relocation of individual animals, or installation of exclusionary fencing, will be necessary and appropriate. ▲ Regardless of detection during the initial biological reconnaissance survey, if suitable habitat for special-status amphibians is present within the proposed development area, a qualified biologist familiar with the life cycle of foothill yellow-legged frog, northern red-legged frog, Pacific tailed-frog, red-bellied newt, and southern torrent salamander shall conduct preconstruction surveys of proposed new development activities 48 hours prior to such development activities. Preconstruction surveys for special-status amphibian species shall be conducted throughout the proposed construction area and a 400-foot buffer around the proposed development area. Surveys shall consist of "walk and turn" surveys of areas beneath surface objects (e.g., rocks, leaf litter, moss mats, coarse woody debris) for newts and salamanders, and visual searches for frogs. Preconstruction surveys shall be conducted within the appropriate season to maximize potential for observation for each species, and appropriate surveys will be conducted for the applicable life stages (i.e., eggs, larvae, adults). ▲ If special-status amphibians are not detected during the preconstruction survey, then further mitigation is not required. **Mitigation Measure 3.4-1c: Western pond turtle preconstruction surveys and relocation.** The following shall be included as a performance standard in the proposed ordinance for the protection of western pond turtle from new development related to cannabis activities. ▲ If pond turtles are detected during the initial biological reconnaissance survey (see Mitigation 3.4-1a), preconstruction surveys, or are determined to be likely to occur, consultation with CDFW shall be initiated to determine whether mitigation measures, such as project design modifications, relocation of the site, relocation of individual animals, or installation of exclusionary fencing, will be necessary			

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA
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Table 4-1 Mitigation Monitoring and Reporting Program – Proposed Amendments to Humboldt County Code Regulating Commercial Cannabis Activities

Impact	Mitigation Measure	Implementation Responsibility	Timing	Verification
	and appropriate. ▲ Regardless of detection during the initial biological reconnaissance survey, if suitable aquatic habitat for western pond turtle is present within the proposed development area, a qualified biologist familiar with the life history of western pond turtle shall conduct preconstruction surveys of proposed new development activities within 200 feet of any SMA or Other Wet Area 24 hours prior to new development activities. ▲ If pond turtles are not detected during the preconstruction survey, then further mitigation is not required. **Mitigation Measure 3.4-1d: Nesting raptor preconstruction survey and establishment of protective buffers.** The following shall be included as performance standards in the proposed ordinance for the protection of nesting raptors from new development related to cannabis activities. ▲ To minimize the potential for loss of nesting raptors, tree removal activities shall only occur during the nonbreeding season (September 1-January 31. ▲ Prior to removal of any trees, or ground-disturbing activities between February 1 and August 31, a qualified biologist shall conduct preconstruction surveys for nesting raptors, and shall identify active nests within 500 feet of the proposed development area. The surveys shall be conducted between February 1 and August 31. ▲ Impacts to nesting raptors, including direct impacts and indirect impacts (e.g., noise, presence of construction crews) shall be avoided by establishing appropriate buffers around active nest sites identified during preconstruction raptor surveys. The buffer areas shall be protected with construction fencing, and no activity shall occur within the buffer areas until a qualified biologist has determined, in coordination with CDFW, that the young have fledged, the nest is no longer active, or reducing the buffer would not likely result in nest abandonment. CDFW guidelines recommend implementation of a 500-foot buffer for raptors, but the size of the buffer may be adjusted if a qualified biologist and the applicant, in consultation with CDFW, determine that such an			

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	adjustment would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist during and after construction activities will be required if the activity has potential to adversely affect the nest. ▲ Removal of bald and golden eagle nests are prohibited regardless of the occupancy status under the federal Bald and Golden Eagle Protection Act. If bald or golden eagle nests are found during pre-construction surveys, then the nest tree shall not be removed. ▲ Trees shall not be removed during the breeding season for nesting raptors unless a survey by a qualified biologist verifies that there is not an active nest in the tree. **Mitigation Measure 3.4-1e: Northern spotted owl preconstruction habitat suitability surveys and determination of presence or absence.** The following shall be included as performance standards in the proposed ordinance for the protection of northern spotted owl from permitted cannabis activities. ▲ To avoid the potential for loss of northern spotted owl and their nests, or loss or fragmentation of occupied or suitable habitat for northern spotted owl, removal of old growth habitat shall be prohibited, as outlined in Mitigation Measure 3.4-3, Sensitive natural communities, riparian habitat, old growth habitat, and wetland vegetation. ▲ If the area of proposed new development activities is within suitable habitat for northern spotted owl (e.g., coniferous forest), and is within 1.3 miles (average species home range) of a known occurrence of northern spotted owl, as determined by a qualified biologist, the following measures shall be followed. ▲ Prior to removal of any trees, or ground-disturbing activities adjacent or within suitable nesting, roosting, or foraging habitat (e.g. forest clearings) for spotted owl, a qualified biologist, familiar with the life history of the northern spotted owl, shall conduct preconstruction surveys for nests within a 1.3-mile buffer around the site as described in *Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls* (USFWS 2012). Surveys shall take place between March 1 and August 31. Three complete surveys spaced at least 7 days apart must be completed by June 30. Six complete surveys over the course of 2 years must be completed to determine presence or absence of northern spotted owl.			

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	◢ If northern spotted owls are determined to be absent 1,3 miles from the site, then further mitigation is not required. ◢ If northern spotted owls are determined to be present within 1.3 miles of the site, then it is presumed that habitat removal could cause harm to northern spotted owl populations in the area, and could result in direct take of northern spotted owls. If northern spotted owls are determined to be present within 1.3 miles of the site, proposed cultivation activities will not be permitted consistent with the General Requirement and Prohibition 4 of the Attachment A of the State Water Board Policy. ◢ For pre-existing cultivation sites that submitted for permitting prior to December 31, 2019 within 0.7 miles of a known northern spotted owl activity center, a qualified biologist, familiar with the life history of the northern spotted owl, shall conduct a disturbance and habitat modification assessment to determine the presence of the species and whether the cultivation site can operate or have its operation modified to avoid take of the species. If it is determined that take of the species could occur, the cultivation site will be required to participate in the Retirement, Remediation, and Relocation provisions of the proposed ordinance to relocate the cannabis cultivation to outside of the northern spotted owl activity area. Pre-existing cultivation sites that submit for permitting after December 31, 2019 will be subject the new development provisions of this mitigation measure. **Mitigation Measure 3.4-1f: Special-status nesting bird surveys and establishment of protective buffers.** The following shall be included as performance standards in the proposed ordinance for the protection of bank swallow, little willow flycatcher, tricolored blackbird, and western yellow-billed cuckoo from new development related to cannabis activities. This will apply to any commercial cannabis activity that would result in the disturbance or loss of riparian, riverine, mudflat, or grassland habitats. ◢ To minimize the potential for disturbance or loss of bank swallow, little willow flycatcher, tricolored blackbird, western snowy plover, western yellow-billed cuckoo, or other bird nests, vegetation removal activities shall only occur during the nonbreeding season (September 1-January 31). Alteration of or disturbance to suitable river bank habitat (i.e., for bank swallow nests) and mudflat habitat (i.e., for western snowy plover) is prohibited because of limited habitat			

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	availability for this species. ▲ Prior to removal of any vegetation or any ground disturbance between February 1 and August 31, a qualified biologist shall conduct preconstruction surveys for nests on any structure or vegetation slated for removal, as well as for potential tricolored blackbird nesting habitat. The surveys shall be conducted no more than 14 days before construction commences. If no active nests or bank swallow colonies are found during focused surveys, no further action under this measure will be required. If active nests are located during the preconstruction surveys, the biologist shall notify the Planning Director and CDFW. If deemed necessary by the Planning Director in consultation with CDFW, modifications to the project design to avoid removal of occupied habitat while still achieving project objectives may be required. If the Planning Director determines in consultation with CDFW that avoidance is not feasible or conflicts with project objectives, construction shall be prohibited within a minimum of 100 feet of the nest to avoid disturbance until the nest or colony is no longer active. **Mitigation Measure 3.4-1g: Marbled murrelet preconstruction habitat suitability surveys and establishment of protective buffers.** The following shall be included as performance standards in the proposed ordinance for the protection of marbled murrelet from new development related to cannabis activities. ▲ To avoid the potential for loss of or disturbance to marbled murrelet nests and habitat, removal of old growth habitat shall be prohibited, as outlined in Mitigation Measure 3.4-3, Sensitive natural communities, riparian habitat, old growth habitat, and wetland vegetation. ▲ Prior to removal of any trees, or ground-disturbing activities adjacent or within suitable habitat for marbled murrelet between April 15 and August 5, a qualified biologist, familiar with the life history of the marbled murrelet, shall conduct preconstruction surveys for nests within a 0.25-mile buffer around the site as described in *Methods for Surveying Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research* (Evans Mack et. al 2003). ▲ If marbled murrelets are determined to be absent from the site, then no further mitigation is required. ▲ If marbled murrelets are determined to be present within the site, a 0.25-mile buffer will be established around occupied nest sites. No project activity may			

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	occur within the 0.25-mile buffer areas until the end of marbled murrelet breeding season (August 6). **Mitigation Measure 3.4-1h: Noise reduction.** The ordinance requires generators and other cannabis operations not to increase existing ambient noise levels at the property line of the site beyond 3 dB. In addition, the noise standards shall include the following standards to protect wildlife (USFWS 2006). ▲ Project-generated sound must not exceed ambient nesting conditions by 20-25 decibels. ▲ Project-generated sound, when added to existing ambient conditions, must not exceed 90 decibels. ▲ Time of day adjustment: Marbled murrelet and northern spotted owl are most active during dawn and dusk. Within approximately 2 hours of sunrise and sunset, ambient sound levels are lower than during the middle of the day (by approximately 5-10 decibels). This will be accounted for when determining impacts of project-generated sound. **Mitigation Measure 3.4-1i: American badger preconstruction survey and establishment of protective buffers.** The following shall be included as performance standards in the proposed ordinance for the protection of the American badger from new development related to cannabis activities. ▲ Prior to the commencement of construction activities, a qualified wildlife biologist shall conduct surveys of the suitable grassland or agricultural habitats slated for conversion within the site to identify any American badger burrows/dens. These surveys shall be conducted not more than 30 days prior to the start of construction. If occupied burrows are not found, further mitigation shall not be required. If occupied burrows are found, impacts to active badger dens shall be avoided by establishing exclusion zones around all active badger dens, within which construction related activities shall be prohibited until denning activities are complete or the den is abandoned. A qualified biologist shall monitor each den once per week to track the status of the den and to determine when a den area has been cleared for construction. **Mitigation Measure 3.4-1j: Fisher and Humboldt marten**			

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	preconstruction survey and preservation of active den sites. The following shall be included as performance standards in the proposed ordinance for the protection of the fisher and Humboldt marten from new development related to cannabis activities. ▲ To minimize the potential for loss of or disturbance to fisher and Humboldt marten habitat and dens, removal of old growth habitat shall be prohibited, as outlined in Mitigation Measure 3.4-3, Sensitive natural communities, riparian habitat, old growth habitat, and wetland vegetation. ▲ Prior to commencement of from new development related to cannabis activities occurring within the fisher and Humboldt marten denning season (March 1 to July 31), including tree removal (non-old growth), a qualified wildlife biologist will conduct preconstruction surveys of all suitable habitat within the site, and will identify sightings of individual fishers or martens, as well as potential dens. ▲ If individuals or potential or occupied dens are not found, further mitigation will not be required. ▲ If fisher or Humboldt marten are identified or if potential dens of these species are located, an appropriate method shall be used by a qualified wildlife biologist to confirm whether a fisher or marten is occupying the den. This may involve use of remote field cameras, track plates, or hair snares. Other devices such as fiber optic scope may be utilized to determine occupancy. If no fisher or marten occupies the potential den, the entrance will be temporarily blocked so that no other animals occupy the area during the construction period but only after it has been fully inspected. The blockage will be removed once construction activities have been completed. ▲ If a den is found to be occupied by a fisher or marten, a no-disturbance buffer will be placed around the occupied den location. The no-disturbance buffer will include the den tree (or other structure) plus a suitable buffer as determined by the biologist in coordination with USFWS and CDFW. Construction activities in the no-disturbance buffer will be avoided until the nest is unoccupied as determined by a qualified wildlife biologist in coordination with USFWS and CDFW. **Mitigation Measure 3.4-1k: Preconstruction bat survey and exclusion.** The following shall be included as performance standards in the proposed ordinance for the protection of the pallid bat and Townsend's big-eared bat from new development			

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	related to cannabis activities. ▲ Before commencing any new development related to cannabis activities, a qualified biologist shall conduct surveys for roosting bats. If evidence of bat use is observed, the species and number of bats using the roost shall be determined. Bat detectors may be used to supplement survey efforts. If no evidence of bat roosts is found, then no further study will be required. ▲ If pallid bats or Townsend's big-eared bats are found in the surveys, a mitigation program addressing mitigation for the specific occurrence shall be submitted to the Planning Director and CDFW by a qualified biologist subject to the review and approval of the Planning Director in consultation with CDFW. Implementation of the mitigation plan shall be a condition of project approval. At a minimum, the mitigation plan shall establish a 400-foot buffer area around the nest during hibernation or while females in maternity colonies are nursing young. **Mitigation Measure 3.4-1l: Preconstruction vole survey and relocation.** The following shall be included as performance standards in the proposed ordinance for the protection of the Sonoma tree vole and white-footed vole from new development related to cannabis activities. ▲ To minimize the potential for loss of or disturbance to vole habitat and nests, removal of old growth habitat shall be prohibited, as outlined in Mitigation Measure 3.4-3 Sensitive natural communities, riparian habitat, old growth habitat, and wetland vegetation. ▲ Before commencing any tree or other vegetation removal activities, or ground-disturbance, a qualified biologist shall conduct surveys for vole nests (e.g., nest searching within trees on the site, and confirming that nests belong to voles rather than squirrels or birds). If no evidence of vole nests is found, then no further study shall be required. A report summarizing the results of the surveys shall be prepared and submitted to the Planning Director and shall be subject to his review and approval in consultation with CDFW. ▲ If occupied trees or nests are identified within 100 feet of the site, the biologist shall determine whether project development activities will adversely affect the voles, based on factors such as noise level of development activities, or line of sight between the tree and the disturbance source. If it is determined that			

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	development activities would not affect the voles, then development can proceed without protective measures. ◢ If the biologist determines that development activities would likely disturb voles, the proposed area of disturbance shall be relocated a minimum of 200 feet from the nest.			
Impact 3.4-2: Disturbance to or loss of special-status fisheries.	**Mitigation Measure 3.4-2: Implement Mitigation Measure 3.8-5.**	See Impact 3.8-5	See Impact 3.8-5	
Impact 3.4-3: Disturbance to or loss of special-status plant species and habitat.	**Mitigation Measure 3.4-3a: Special-status plants.** The following shall be included as performance standards in the proposed ordinance for the protection of special-status plant species from new development related to cannabis activities. ◢ Prior to commencement of new development related to cannabis activities and during the blooming period for the special-status plant species with potential to occur in the site, a qualified botanist will conduct protocol-level surveys for special-status plants in all proposed disturbance areas following survey methods from CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2009). ◢ If special-status plants are not found, the botanist will document the findings in a letter report to USFWS, CDFW, and the applicant and no further mitigation will be required. ◢ If special-status plant species are found, a qualified biologist shall consult with CDFW to designate a no-disturbance buffer that will be reflected in the application to the County consistent with General Requirement and Prohibition 10 of the Attachment A of the State Water Board Policy. If the special-status plant species cannot be avoided, the application will be denied. **Mitigation 3.4-3b: Invasive plant species.** The following shall be included as performance standards in the proposed ordinance to avoid the introduction or spread of plants classified as invasive plant species by the California Invasive Plant Council. ◢ The application will include identification of invasive plant species that occur on	Humboldt County	These mitigation measures will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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	the site and where they are located. The application will identify specific measures to be employed for the removal invasive species and on-site management practices. As part of the County's annual inspection areas where invasive plant species were removed will be checked to verify removal. Corrective actions may be required as part of the annual permit renewal if invasive species remain or have returned. ▲ All invasive plant species shall be removed from the site using measures appropriate to the species. For example, species that cannot easily re-root, re-sprout, or disperse seeds may be left on site in a debris pile. Species that re-sprout readily (e.g., English ivy) or disperse seeds (e.g., Pampas grass) should be hauled off-site and disposed of appropriately at a landfill site. Heavy equipment and other machinery shall be inspected for the presence of invasive species prior to on-site use, and shall be cleaned prior to entering the site, to reduce the risk of introducing invasive plant species.			

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Impact 3.4-4: Disturbance to or loss of riparian habitat, old growth habitat, or other sensitive natural communities.	**Mitigation 3.4-4: Sensitive natural communities, riparian habitat, and wetland vegetation.** The following shall be included as performance standards in the proposed ordinance for the protection of sensitive natural communities and riparian habitat. ▲ For projects that could disturb sensitive natural communities or riparian habitat, the application shall include a report prepared by a qualified biologist that surveys the site for these sensitive resources, including riparian habitat associated with aquatic features; old growth Sitka spruce, Douglas fir, and redwood forests; coastal oak woodlands; special-status fish stream habitats; marsh habitats; and northern foredune grassland near Humboldt Bay and the Mattole River; coastal terrace prairie within Table Bluff Ecological Reserve; and any designated environmentally sensitive habitat area (ESHA). ▲ The report shall include requirements that before development activities commence, all sensitive areas identified above shall be flagged or fenced with brightly visible construction flagging and/or fencing under the direction of the qualified biologist to require that grading, excavation, other ground-disturbing activities, and vegetation removal will not occur within these areas. Foot traffic by construction personnel shall also be limited in these areas to prevent the introduction of invasive or weedy species. Periodic inspections during construction shall be conducted by the monitoring biologist to maintain the integrity of exclusion fencing/flagging throughout the period of construction involving ground disturbance. ▲ If the report documents that site development would affect the bed, bank, channel, or associated riparian habitat subject to CDFW jurisdiction under Fish and Game Code Section 1602, a Streambed Alteration Notification shall be submitted to CDFW, pursuant to Section 1600 et seq. of the California Fish and Game Code. If proposed activities are determined to be subject to CDFW jurisdiction, the project proponent shall abide by the conditions of any executed agreement prior to the issuance of a grading permit by Humboldt County. ▲ Subject to the review and approval of the Planning Director in consultation with CDFW applicants shall compensate for permanent loss of riparian habitat at a minimum of a 2:1 ratio through contributions to a CDFW approved wetland mitigation bank or through the development and implementation of a Compensatory Stream and Riparian Mitigation and Monitoring Plan for creating	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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	or restoring in-kind habitat in the surrounding area (such as the proposed ordinance site reconfiguration criteria for existing cultivation sites). If mitigation credits are not available, stream and riparian habitat compensation shall include establishment of riparian vegetation on currently unvegetated bank portions of streams affected by the project and enhancement of existing riparian habitat through removal of nonnative species, where appropriate, and planting additional native riparian plants to increase cover, continuity, and width of the existing riparian corridor along streams in the site and surrounding areas. Construction activities and compensatory mitigation shall be conducted in accordance with the terms of a streambed alteration agreement as required under Section 1602 of the Fish and Game Code as well as the State Water Board Cannabis Cultivation Policy. The Compensatory Stream and Riparian Mitigation and Monitoring Plan shall include the following: ▲ identification of compensatory mitigation sites and criteria for selecting these mitigation sites; ▲ in kind reference habitats for comparison with compensatory riparian habitats (using performance and success criteria) to document success; ▲ monitoring protocol, including schedule and annual report requirements (Compensatory habitat will be monitored for a minimum of 5 years from completion of mitigation, or human intervention [including recontouring and grading], or until the success criteria identified in the approved mitigation plan have been met, whichever is longer.); ▲ ecological performance standards, based on the best available science and including specifications for native riparian plant densities, species composition, amount of dead woody vegetation gaps and bare ground, and survivorship; at a minimum, compensatory mitigation planting sites must achieve 80 percent survival of planted riparian trees and shrubs by the end of the five-year maintenance and monitoring period or dead and dying trees will be replaced and monitoring continued until 80 percent survivorship is achieved; ▲ corrective measures if performance standards are not met; ▲ responsible parties for monitoring and preparing reports; and ▲ responsible parties for receiving and reviewing reports and for verifying success			

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	or prescribing implementation or corrective actions.			
Impact 3.4-5: Disturbance to or loss of waters of the United States.	**Mitigation 3.4-5: Waters of the United States.** The following shall be included as performance standards in the proposed ordinance for the protection of waters of the United States from new development related to cannabis activities. ▲ The application shall include a report prepared by a qualified biologist that surveys the site for sensitive resources, including wetlands, streams, and rivers. Wetlands and other waters of the United States are of special concern to resource agencies and are afforded specific consideration, based on Section 404 of the Clean Water Act and other applicable regulations. ▲ If the report documents waters of the United States to be present, a delineation of waters of the United States, including wetlands that would be affected by the project, shall be prepared by a qualified biologist through the formal Section 404 wetland delineation process. The delineation shall be submitted to and verified by USACE. ▲ If, based on the verified delineation, it is determined that fill of waters of the United States would result from implementation of the project, authorization for such fill will be secured from USACE through the Section 404 permitting process. ▲ Any waters of the United States that would be affected by site development shall be replaced or restored on a "no-net-loss" basis in accordance with USACE mitigation guidelines (or the applicable USACE guidelines in place at the time of construction). In association with the Section 404 permit (if applicable) and prior to the issuance of any grading permit, Section 401 Water Quality Certification from the RWQCB will be obtained. ▲ USACE may not issue a Section 404 permit for activities associated with cannabis cultivation. If a Section 404 permit cannot be obtained, then the applicant shall modify the proposed project to avoid any wetlands or other waters of the United States by providing a buffer of at least 50 feet around these features.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	
Impact 3.4-6: Interference with resident or migratory wildlife corridors or native	**Mitigation 3.4-6a: Implement Mitigation Measure 3.4-5: Waters of the United States.** **Mitigation 3.4-6b: Retention of fisher and Humboldt marten habitat**	Humboldt County	This mitigation measure will be incorporated into the performance standards and	

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wildlife nursery sites.	**features** The following shall be included as performance standards in the proposed ordinance for the protection of the habitat for fisher and Humboldt marten. ▲ To minimize the potential for loss of or disturbance to fisher and Humboldt marten habitat, removal of old growth habitat shall be prohibited, as outlined in Mitigation Measure 3.4-3, Sensitive natural communities, riparian habitat, and wetland vegetation. ▲ Habitat features within non-old growth habitat, such as large trees, large snags, coarse woody debris, and understory vegetation (e.g., shrubs) shall be retained within the site to the extent feasible, to maintain connectivity of fisher and marten habitat.		application requirements of the proposed ordinance.	
3.5 **Cultural Resources**				
Impact 3.5-1: Change in the significance of a historic resource.	**Mitigation 3.5-1: Protection of historic resources.** The following shall be included as performance standards in the proposed ordinance for the protection of historic resources. ▲ Applicants shall identify and evaluate all historic-age (over 45-years in age) buildings and structures that are proposed to be removed and modified as part of cannabis operations. This will include preparation of an historic structure report and evaluation of resources to determine their eligibility for recognition under State, federal, or County Local Official Register of Historic Resources criteria. The evaluation shall be prepared by an architectural historian, or historical architect meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualification Standards. The evaluation shall comply with CEQA Guidelines Section 15064.5(b), and, if federal funding or permits are required, with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. § 470 et seq.). ▲ If resources eligible for inclusion in the NRHP, CRHR, or Local Official Register of Historic Resources are identified, an assessment of impacts on these resources shall be included in the report, as well as detailed measures to avoid impacts. If avoidance of a significant architectural/built environment resource is not feasible, additional mitigation options include, but are not limited to, specific design plans for historic districts, or plans for alteration or adaptive re-use of a	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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	historical resource that follows the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitation, Restoring, and Reconstructing Historic Buildings*.			
Impact 3.5-2: Disturb unique archaeological resources.	**Mitigation 3.5-2: Avoid potential effects on unique archaeological resources.** The following shall be included as performance standards in the proposed ordinance for the protection of archaeological resources. ▲ Applicants for projects that include any ground disturbance shall retain a qualified archaeologist to conduct archaeological surveys of the site. The applicant shall follow recommendations identified in the survey, which may include activities such as subsurface testing, designing, and implementing a Worker Environmental Awareness Program, construction monitoring by a qualified archaeologist, avoidance of sites, or preservation in place. ▲ All projects shall include the following requirements as a condition of approval: If evidence of any prehistoric or historic-era subsurface archaeological features or deposits are discovered during construction-related earth-moving activities (e.g., ceramic shard, trash scatters, lithic scatters), all ground-disturbing activity in the area of the discovery shall be halted and the County shall be notified immediately. A qualified archaeologist shall be retained to assess the significance of the find. If the find is a prehistoric archeological site, the appropriate Native American group shall be notified. If the archaeologist determines that the find does not meet NRHP or CRHR standards of significance for cultural resources, construction may proceed. If the archaeologist determines that further information is needed to evaluate significance, a data recovery plan shall be prepared. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with the project applicant to avoid disturbance to the resources, and if complete avoidance is not feasible in light of project design, economics, logistics, and other factors, follow accepted professional standards in recording any find including submittal of the standard DPR Primary Record forms (Form DPR 523) and location information to NCIC.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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3.6 Geology and Soils				
Impact 3.6-5: Damage to or destruction of undiscovered paleontological resources.	**Mitigation Measure 3.6-5 Protection of discovered paleontological resources.** The following shall be included as performance standards in the proposed ordinance for the protection of paleontological resources. ▲ If a paleontological discovery is made during construction, the contractor shall immediately cease all work activities in the vicinity (within approximately 100 feet) of the discovery and shall immediately contact the County. ▲ A qualified paleontologist shall be retained to observe all subsequent grading and excavation activities in the area of the find and shall salvage fossils as necessary. The paleontologist shall establish procedures for paleontological resource surveillance and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of fossils. If major paleontological resources are discovered that require temporarily halting or redirecting of grading, the paleontologist shall report such findings to the County. The paleontologist shall determine appropriate actions, in cooperation with the applicant and the County, that ensure proper exploration and/or salvage. Excavated finds shall first be offered to a State-designated repository such as the Museum of Paleontology, University of California, Berkeley, or the California Academy of Sciences. Otherwise, the finds shall be offered to the County for purposes of public education and interpretive displays. The paleontologist shall submit a follow-up report to the County that shall include the period of inspection, an analysis of the fossils found, and the present repository of fossils.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	
3.7 Hazards and Hazardous Materials				
Impact 3.7-2: Create potential human hazards from exposure to on-site hazardous materials.	**Mitigation Measure 3.7-2a: Prepare Environmental Site Assessments** The following shall be included as performance standards in the proposed ordinance for proposed development of commercial cannabis facilities on existing commercial, business park, or industrial sites: ▲ Applications for new cannabis activities in commercial, business park, or industrial sites shall include a site assessment for the presence of potential hazardous materials, including an updated review of environmental risk	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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Impact	Mitigation Measure	Implementation Responsibility	Timing	Verification
	databases. If this assessment indicates the presence or likely presence of contamination, the applicant shall prepare a Phase I ESA in accordance with the American Society for Testing and Materials' E-1527-05 standard. For work requiring any demolition, the Phase I ESA shall make recommendations for any hazardous building materials survey work that shall be done. All recommendations included in a Phase I ESA prepared for a site shall be implemented. If a Phase I ESA indicates the presence or likely presence of contamination, the applicant shall prepare a Phase II ESA, and recommendations of the Phase II ESA shall be fully implemented prior to ground disturbance, which will be made a condition of approval for the project. **Mitigation Measure 3.7-2b: Prepare a Hazardous Materials Contingency Plan for Construction Activities** The following shall be included as performance standards in the proposed ordinance for proposed development of commercial cannabis facilities on existing commercial, business park, or industrial sites: ▲ Applications for new cannabis activities in commercial, business park, or industrial sites shall include f a hazardous materials contingency plan for review and approval by Humboldt County Division of Environmental Health. The plan shall describe the necessary actions that would be taken if evidence of contaminated soil or groundwater is encountered during construction. The contingency plan shall identify conditions that could indicate potential hazardous materials contamination, including soil discoloration, petroleum or chemical odors, and presence of USTs or buried building material. The plan shall include the provision that, if at any time during constructing the project, evidence of soil and/or groundwater contamination with hazardous material is encountered, the project applicant shall immediately halt construction and contact Humboldt County Division of Environmental Health. Work shall not recommence until the discovery has been assessed/treated appropriately (through such mechanisms as soil or groundwater sampling and remediation if potentially hazardous materials are detected above threshold levels) to the satisfaction of Humboldt County Division of Environmental Health, RWQCB, and DTSC (as applicable). The plan, and obligations to abide by and implement the plan, shall be incorporated into the conditions of approval for the project.			

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3.8 Hydrology and Water Quality				
Impact 3.8-2: Operational water quality impacts.	**Mitigation Measure 3.8-2: Minimum Size of Commercial Cultivation Activities** The County shall amend the proposed ordinance to demonstrate compliance with the requirements of the State Water Board *Cannabis Cultivation Policy – Guidelines for Cannabis Cultivation* for all new commercial cannabis cultivation operations and not limited by a minimum cultivation area size.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance. Annual inspections as part of permit renewals will verify continued compliance with this mitigation measure.	
Impact 3.8-3: Groundwater supply impacts.	**Mitigation Measure 3.8-3: Annual groundwater monitoring and adaptive management.** The following requirement will be included as an additional performance standard of the ordinance associated wells on small parcels: - As part of the ordinance's annual inspection process, cultivation operators shall provide the County with groundwater monitoring data for on-site well facilities that documents well production and changes in groundwater levels during each month of the year. Should this monitoring data identify potential drawdown impacts to adjacent well(s) and indicate a connection to operation of the on-site wells, the cultivation operators, in conjunction with the County, shall develop adaptive management measures to allow for recovery of groundwater levels. Adaptive management measures may include forbearance (e.g., prohibition of groundwater extraction from the months of May to October), water conservation measures, reductions in on-site cannabis cultivation, alteration of the groundwater pumping schedule, or other measures determined appropriate. Adaptive management measures will remain in place until groundwater levels have recovered based on annual monitoring data provided to the County as part of subsequent annual inspections.	Humboldt County.	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance. Annual inspections and review of water records as part of permit renewals will verify continued compliance with this mitigation measure.	

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Impact	Mitigation Measure	Implementation Responsibility	Timing	Verification
Impact 3.8-4: Surface drainage impacts on on-site and offsite flooding.	**Mitigation Measure 3.8-4: Provision of drainage facilities to attenuate increases in drainage flows.** The County shall include the following drainage requirement in the proposed ordinance application requirements: ◢ Applications will provide details of drainage facilities and stormwater management. This will include a drainage analysis of increases or alteration of on-site and off-site drainage flows from project facilities and identification of drainage swales, detention basins, or other facilities that will ensure that the project will retain pre-project drainage conditions.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	
Impact 3.8-5: Effects of diversion of surface water.	**Mitigation 3.8-5: Implement water diversion restrictions and monitoring and reporting requirements.** The text of the proposed ordinance shall be modified to align with the State Water Resources Control Board Cannabis Cultivation Policy, which includes the following measures: ◢ The period of forbearance shall extend from April 1 through October 31 of each year, and be subject to the following additional restrictions: ◢ From November 1 through December 14 of each year, the surface water diversion period shall not begin until after seven consecutive days in which the surface waterbody's real-time Numeric Flow Requirement are met (see Appendix E). ◢ From December 15 through March 31 of each surface water diversion period, surface water diversion may occur on any day in which the surface waterbody's real-time daily average flow is greater than the Numeric Flow Requirement (see Appendix E). ◢ The State Water Board will monitor instream flows during the dry season and evaluate whether the number or location of groundwater diversions to determine whether imposition of a groundwater forbearance period or other measures. The State Water Board will notify cannabis cultivators the possibility of a groundwater forbearance period or other measures may be imposed to address the low flow condition. ◢ Cannabis cultivators shall bypass a minimum of 50 percent of the surface water flow past their point of diversion, as estimated based on visually observing	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance. Annual inspections and review of water records as part of permit renewals will verify continued compliance with this mitigation measure. The County will also notify water users (surface and groundwater) of any diversion restrictions based on water conditions and compliance with the State Water Board.	

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	surface water flow at least daily. ◢ Water diversion rates may be further restricted in a manner to provide minimum instream flow requirements needed for fish spawning, migration, and rearing, and the flows needed to maintain natural flow variability by the State Water Resources Control Board and/or California Department of Fish and Wildlife as part of state surface water diversion approvals in circumstances where multiple diversions existing along a single waterway. ◢ The cannabis cultivator shall not divert more than a maximum instantaneous diversion rate of 10 gallons per minute, unless authorized under an existing appropriative water right. ◢ Cannabis cultivators shall plug, block, cap, disconnect, or remove diversion intake structures associated with cannabis cultivation activities during the source water forbearance period, unless the diversion intake is used for other beneficial uses. ◢ Diverted water storage systems for cannabis cultivation shall be separated from storage systems used for other beneficial uses within a cultivation site. ◢ Cannabis cultivation shall inspect for leaks in mainlines, laterals, in-irrigation connections, sprinkler headers, and/or the ends of drop tape and feeder lines on a monthly basis. Any leaks discovered shall be immediately repaired upon detection. Worn, outdated, or inefficient irrigation system components and equipment shall be regulatory replaced to ensure a properly function, leak-free irrigation system at all times. Records of the date of inspections, repairs, and replacements shall be maintained. ◢ Cannabis cultivators shall retain irrigation, inspection, and repair records at the cannabis cultivation site and shall make all records available for review by the Water Boards, CDFW, and the County upon request for a period of 10 years.			
3.10 Noise				
Impact 3.10-1: Short-term, construction-related noise.	**Mitigation Measure 3.10-1: Implement construction-noise reduction measures.** The County shall include the following construction noise requirement for new commercial cannabis operations and modifications to existing commercial cannabis operations in the ordinance:	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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	◢ All outdoor construction activity and use of heavy equipment outdoors shall take place between 7:00 a.m. and 6:00 p.m., Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Saturday and Sunday.			
3.12 Transportation and Circulation				
Impact 3.12-2: Long-term increase in traffic.	**Mitigation Measure 3.12-2: Proper design of highway access points.** The proposed ordinance's roadway design standards shall be modified to include the following requirement: ◢ An evaluation of the existing or proposed new roadway access point to a state highway shall be provided. The evaluation will identify the required improvements to ensure proper function of the access based on anticipated traffic volumes. Improvements may include widening of the throat of the driveway to a minimum of 20 feet, provision of adequate sight distances, and other improvements determined necessary to comply with County and Caltrans standards. This improvement shall be in place prior to construction of the commercial cannabis operation. A copy of the approved Caltrans encroachment permit (if required) will be provided to the County.	Humboldt County	This mitigation measure will be incorporated into the performance standards and application requirements of the proposed ordinance.	
3.13 Utilities and Service Systems				
Impact 3.13-1: Exceed wastewater treatment requirements or wastewater treatment capacity and related infrastructure.	**Mitigation Measure 3.13-1a: Prepare a treatment program for all new indoor cultivation and non-cultivation activities.** Applicants for new commercial indoor cultivation and non-cultivation cannabis operations shall prepare a materials management program that will address each permit type sought within a site. The program shall include: ◢ a detailed description of activities and processes occurring on site, including: ◤ equipment type and number; ◤ detailed standard operating procures for processes; ◤ chemical requirements and reactions; ◤ cleaning procedures for equipment; and ◤ disposal methods for all materials (e.g., plant materials, solvents, empty containers), and ◢ type and quantity of items produced:	Humboldt County	These mitigation measures will be incorporated into the performance standards and application requirements of the proposed ordinance.	

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	◤ Material Safety Data Sheets for all chemical substances occurring on site; ◤ manifests for each chemical describing quantities purchased, date used, and quantities disposed; ◤ facility site plan with storage map, showing where hazardous materials will be stored; ◤ an inventory of all emergency equipment with the location and description of items, including: ▪ personal protective equipment; ▪ fire extinguishing systems; ▪ spill control equipment and decontamination equipment, and ▪ communication and alarm systems. ▪ an employee training plan that includes: ▪ emergency response procedures and incident reporting, and ▪ chemical handling procedures. The materials management program shall be submitted to Humboldt County Division of Environmental Health and public agencies or private enterprises accepting waste materials, including CSDs and waste transfer stations. Commercial cannabis permits shall not be granted without approval of the materials management program relevant agencies. **Mitigation Measure 3.13-1b: Verification of adequate wastewater service and necessary improvements for public wastewater systems.** Applicants shall determine whether sufficient wastewater treatment capacity exists for a proposed project. These determinations must ensure that the proposed development can be served by its existing or planned treatment capacity and wastewater conveyance through approval of the relevant service provider. If adequate capacity does not exist, applicants shall coordinate with the relevant service provider to ensure that adequate improvements are made accommodate the increased demand, and if not, infrastructure improvements for the appropriate public service or utility shall be identified. The relevant public service provider or utility shall be responsible for undertaking project-level review as necessary to provide CEQA clearance and implementation of adopted mitigation measures for new facilities.			