INITIAL STUDY and

DRAFT MITIGATED NEGATIVE DECLARATION

MCKINLEYVILLE COMMUNITY SERVICES DISTRICT

4.5 Million Gallon Water Storage Reservoir

PUBLIC DRAFT
December 2021

Lead Agency:
McKinleyville Community Services District
1656 Sutter Road
McKinleyville, CA 95519

Prepared by:
PLANWEST PARTNERS, INC.

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1.0 Project Information

PROJECT TITLE: **McKinleyville Community Services District 4.5 Million Gallon Water Storage Reservoir**

LEAD AGENCY: McKinleyville Community Services District
CONTACT: Patrick Kaspari, General Manager
1656 Sutter Rd.
McKinleyville, CA 95519
Phone: (707) 839-3251 Email: pkaspari@mckinleyvillecsd.com

PREPARED BY: Planwest Partners, Inc.
1125 16th Street, Suite 200
Arcata, CA 95521
Phone: (707) 825-8260 Email: vanessab@planwestpartners.com

PROJECT LOCATION: Cochran Road, McKinleyville, Humboldt County, CA

ASSESSOR'S PARCEL NUMBER: 509-021-046 and 509-021-045

GENERAL PLAN DESIGNATION: APN 509-021-046 and -045: RL1 (Residential Low Density; one dwelling unit per acre)

ZONING DESIGNATION: APN 509-021-046: RS (Residential Suburban); APN 509-021-045: RS & R-1-B-3 (Residential One-Family, Special Building Site, 20,000 sq.ft.)

PROJECT DESCRIPTION:

Project Overview
McKinleyville Community Services District (MCSD or District) proposes to add a new 4.5 million-gallon (MG) water storage reservoir (tank) to its existing water distribution system. The Project consists of construction of the new reservoir and access road at MCSD's existing Cochran Road tank site (Figure 1). Two tanks with a total storage volume of 2.5 MG are currently at the site (APN 509-021-046) and will remain in use. The new reservoir will be located southeast of the existing tanks (APN 509-021-045) and will supplement MCSD's existing storage volume increasing distribution system resiliency in the event of seismic and other emergency events.

The 4.5 MG reservoir will be a circular, prestressed, concrete tank constructed onsite. The reservoir will be 142 feet in diameter and have a total height of 52 feet. It will be backfilled around its full circumference to a depth of 18 to 30 feet to resist sliding forces associated with earthquake events. Road access will be from the existing tank site off Hilltop Lane. A 17-foot wide paved road with 3-foot swale will be provided around the reservoir to provide access for routine maintenance. All permanent cut slopes will be constructed to a gradient of 2H:1V. The total area of disturbance including the tank site, outfall pipeline, construction staging area, and excavated material storage area will be approximately 113,800 square feet (2.61 acres). Temporary and/or permanent storage of excess excavated (cut) material will be onsite west of the proposed new tank. The excess cut material will be about 10 ft deep with 3H:1V slopes designed/ placed so that it will not erode or result in sedimentation down slope. The area will be revegetated if permanent placement is pursued.

A new overflow drain line will be constructed that will serve both new and existing reservoirs at the tank site. The new 18-inch drain line will be routed to the northeast to drain towards the existing storm drain

system on the south side of Cochran Road. Sections of the new drain pipeline will be buried with approximately 260 feet being constructed above ground to minimize impacts to the environmentally sensitive area located northeast of the proposed 4.5 MG reservoir. The new drain will be utilized for tank overflow and existing site stormwater drainage. Stormwater runoff created by new impervious surfaces is planned to be captured onsite in accordance with Humboldt County's MS4 General Permit requirements. Design of the stormwater capture system will take place during detailed project design. A site plan showing the new tank location, hill cut, and road access is shown in Figure 2.

The reservoir will be connected to MCSD's existing telemetry system to monitor and control water levels. A small mixer will be installed inside the reservoir to help maintain water quality by reducing water age. The existing electrical motor control center is at the end of its useful lifespan and will be replaced with a new motor control center to support the two existing storage reservoirs and the proposed new 4.5MG reservoir at the site.

Project Objectives

- Increase water system storage capacity to increase system resiliency during emergency events, such as significant seismic activity, if supply from Humboldt Bay Municipal Water District is interrupted.

Background

Humboldt Bay Municipal Water District (HBMWD) is a regional wholesale water provider that supplies water to MCSD through a single pipeline buried below the bed of the Mad River. This single source of water to MCSD is seismically vulnerable and could fail during an earthquake depending on its severity. MCSD currently has approximately two days of emergency water storage assuming normal average day demand. The addition of the new 4.5 MG water reservoir will significantly increase system resiliency helping to ensure its ability to continue providing water for up to 4 days in the event the connection to HBMWD is lost due to a seismic or other emergency event.

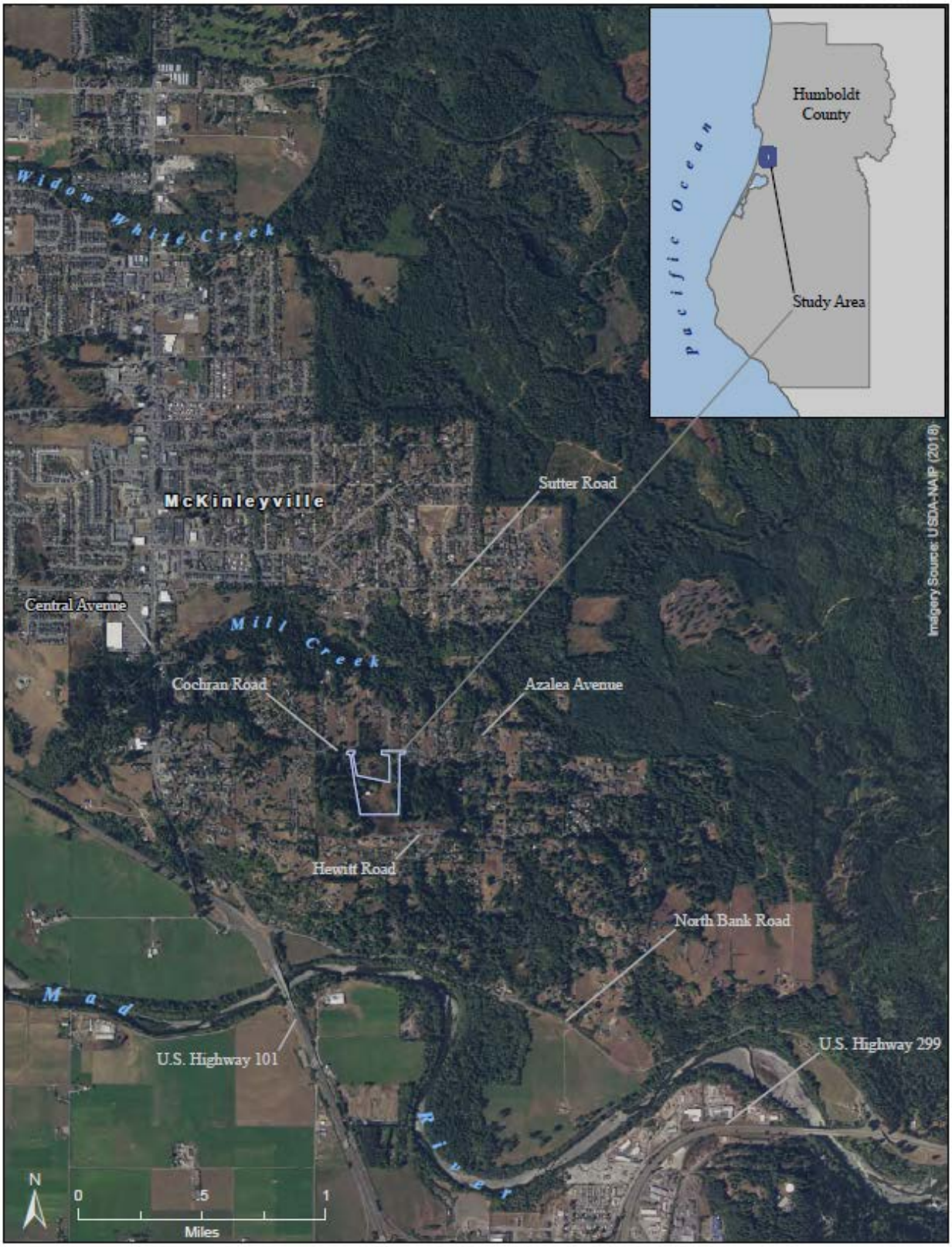
Regional Setting

The project site is located in McKinleyville on the north coast of California in Humboldt County which is approximately 280 miles north of San Francisco, California and 180 miles southwest of Medford, Oregon. The District's service area extends north from the Mad River to Patrick Creek and east from the Pacific Ocean to the foothills bordering the community of Fieldbrook. The District is located along Highway 101 approximately 12 miles north of the City of Eureka and 5 miles south of the City of Trinidad. MCSD provides water service to the community of McKinleyville which has an estimated population of 17,208[1]. The surrounding area is primarily agricultural exclusive to the south and timberland to the east and north.

Single-family residential uses are present to the north and south of the project site with small, forested areas to the east and west. The Project site is surrounded by single family low density residential properties to the north, west, and south. Directly east of the Project site is a forested wetland area (APN 509-021-054). The project site is partially developed with two existing water reservoirs and associated infrastructure located on APN 509-021-046. APN 509-021-045 is currently undeveloped with slopes ranging from 9 to 22 percent. This vegetated parcel contains upland grasses and shrubs upslope of the existing and proposed tanks and forested wetlands along the southeastern property boundary.

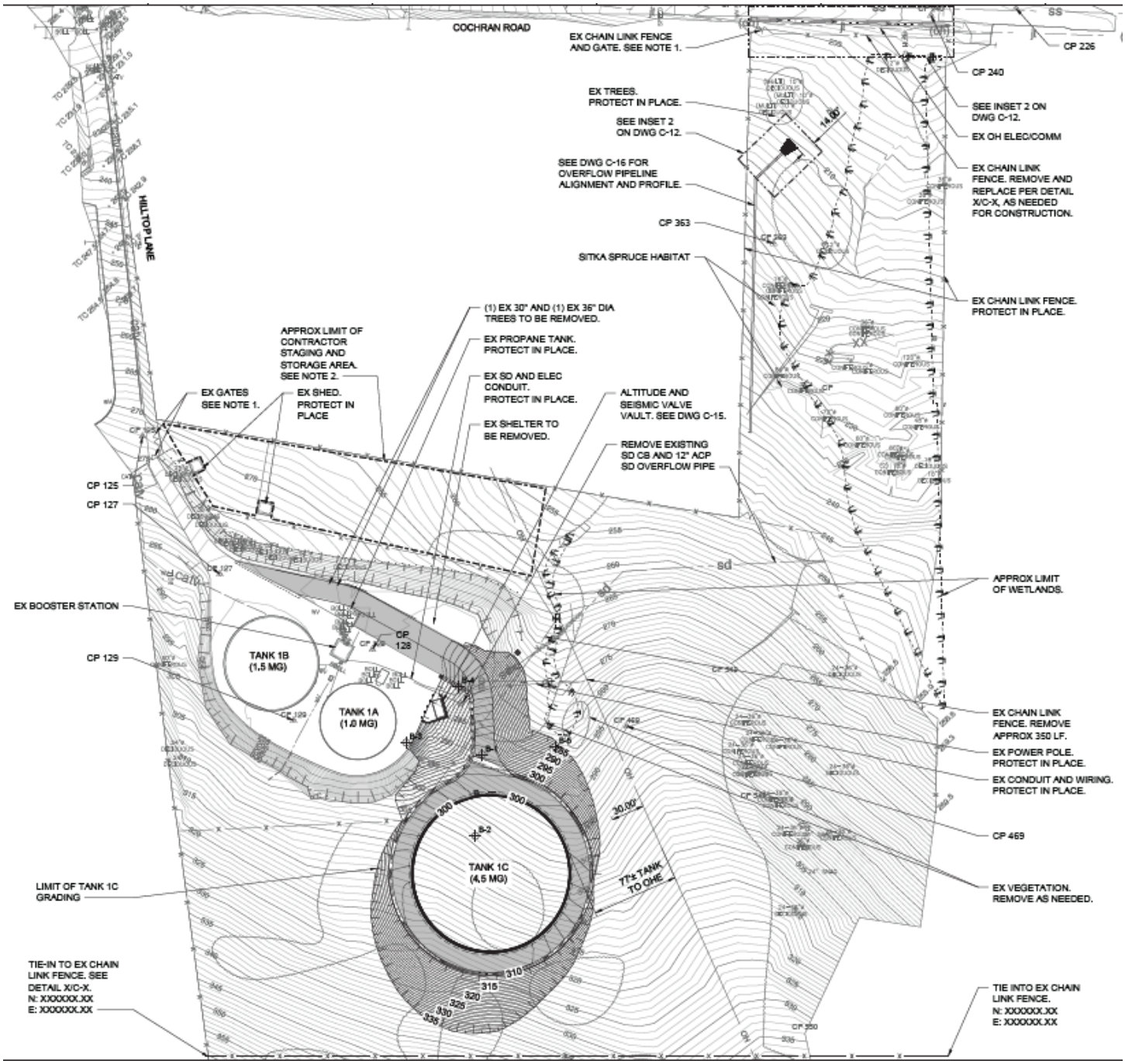
[1] US Census, American Community Survey 2019 5-year Estimates, McKinleyville CDP. Estimate is 17,208 with a margin of error of +/- 1,034. Accessed March 24, 2021.

Figure 1: Project Location



Source: JB Lovelace and Associates, Biological Resources Assessment MCSD 4.5 MG Water Reservoir.

Figure 2. Site Plan



Source: Kennedy Jenks, 30% Design.

Landscaping Plan
The project includes a planting plan with trees to provide screening of the new tank (Appendix A). As the trees mature and grow taller more screening will be provided. The planting plan includes regionally appropriate trees, shrubs, and grass species including, but not limited to, western red cedar, douglas fir, big leaf maple, rhododendron, California lilac, and red flowering current. All disturbed areas will be promptly revegetated in accordance with the project planting plan.

Construction Stormwater Management
The project would disturb more than one acre of ground surface and is therefore subject to the Construction General Permit Order 2009-0009-DWQ. A Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented for the duration of construction activities at the project site to manage and reduce the potential for pollution from concentrated stormwater runoff from the site. The SWPPP would address pollutant sources, non-stormwater discharges resulting from construction, best management practices, and other requirements specified in the Order. The BMPs would include any measures included in the project's erosion control plans. The SWPPP would also include dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. A qualified SWPPP practitioner would oversee implementation of the SWPPP, including visual inspections, sampling and analysis (if necessary), and ensuring overall compliance.

Erosion Control
The following erosion control actions would be implemented by the construction contractor to prevent soil erosion and sedimentation during construction. Erosion and sediment control actions would be in effect and maintained by the contractor on a year-round basis until all disturbed areas are stabilized.

- Stockpiled material would be covered or watered to eliminate excessive dust, as necessary.
- Fiber rolls or similar products would be utilized in appropriate locations to reduce sediment runoff from disturbed soils, as necessary.
- Storm drain inlets receiving stormwater runoff would be equipped with inlet protection, as necessary.
- A concrete washout area would be designated to clean concrete trucks and tools, as necessary.

Air Quality Emission Control During Construction
The project includes the following air quality control actions to reduce construction generated emissions:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) would be watered as necessary during dusty conditions.
- If loose material becomes airborne during transportation, all haul trucks transporting soil, sand, or other loose material off-site would be covered.
- Disturbed roadways would be re-paved as soon as possible following work in the area, as appropriate.
- All visible mud or dirt track-out onto adjacent public roads would be removed using wet power vacuum street sweepers, as necessary. The use of dry power sweeping is prohibited.
- Idling times would be minimized by shutting equipment off when not in use.
- All construction equipment would be maintained and properly tuned in accordance with manufacturer's specifications.

Noise Reduction Actions
During project construction, the following actions would be incorporated into the project to reduce daytime noise impacts to the maximum extent feasible:

- A preconstruction meeting/conference call would be held among the MCSD, construction manager and the general contractor to confirm that the following noise reduction practices are to be implemented in the appropriate phase of construction.
- Hours of construction would be limited to between 7:00 AM and 6:00 PM, Monday through Friday, and 10:00 AM and 5:00 PM on Saturdays. No construction would be allowed on Sundays, except in an emergency. Specifications/plans would note these hours of construction.
- Semi-stationary equipment (e.g., generators, compressors, etc.) would be located as far as possible from residences near the site or shielded behind a structure if feasible.
- Quietest available equipment and electrically-powered equipment would be used, rather than internal combustion engines where feasible.
- Equipment and on-site trucks used for project construction would be equipped with properly functioning noise control devices such as mufflers, shields, and shrouds. All construction equipment would be inspected at periodic intervals to ensure proper maintenance and resulting lower noise levels.
- Impact tools (e.g., jack hammers, pavement breakers, rock drills) used for project construction would be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools.

Approvals Required

The project would require the following approvals and discretionary actions:

- MCSD Adoption of the Initial Study/Mitigated Negative Declaration

Other review and/or approvals may be required from the following agencies:

- North Coast Regional Water Quality Control Board
- California Department of Fish and Wildlife
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- County of Humboldt

2.0 Statement of Findings and Determination

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

- ☐ Aesthetics
- ☐ Agricultural & Forestry Resources
- ☐ Air Quality
- ☒ Biological Resources
- ☐ Cultural Resources
- ☐ Energy
- ☐ Geology/Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards & Hazardous Materials
- ☒ Hydrology/Water Quality
- ☐ Land Use/Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Population/Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Tribal Resources
- ☐ Transportation
- ☐ Utilities/Service Systems
- ☐ Wildfire
- ☒ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature — Date: 12/08/2021

PATRICK KASPARI — Printed Name

McKINLEYVILLE C.S.D. — For

3.0 Environmental Impacts Evaluation and Checklist

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are “Less Than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be citied in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

9) The analysis of each issue should identify:

    a) the significance criteria or threshold used to evaluate each question; and
    b) the mitigation measure identified, if any, to reduce the impact to less than significance.

AESTHETICS	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings (Public views are those that are experienced from a publicly accessible vantage point)? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Setting

The project site is located on a hillside characterized by slopes of approximately 9 to 22 percent that is primarily surrounded by single family home development with the exception of a 13.8 acre parcel of forested/ shrub land located to the east. The two existing reservoirs are located south of a row of trees that slightly obscure reservoirs when looking south from Cochran Road. Due to the slope of the project site, the existing reservoirs are only partially visible from Hewitt Road looking north. Hewitt Road sits atop a ridge and provides views of McKinleyville to the north, and Arcata and Humboldt Bay to the south. A viewshed analysis was conducted for the project to illustrate tank visibility from surrounding areas (Appendix A).

Discussion

a) The project site is located on a north facing hillside with views of the low lying Mill Creek area and surrounding hillsides. The area is not a designated scenic vista and the project site is already developed with two large reservoirs and associated infrastructure. The two existing reservoirs have a base elevation of 284 feet above sea level and are approximately 40 feet above existing grade. The elevations of the new reservoir floor and its overflow will match those of the existing reservoirs[2]. The new reservoir will be approximately 52 feet tall. To minimize disposal of excess cut material and minimize potential impact on wetlands, the reservoir will be built into the existing hillside and differentially backfilled at depths ranging from 18 to 30 feet.

Hewitt Road, to the south of the project site, provides sweeping panoramic views to the south and partially to the north. The new tank will be slightly visible from the road but is not anticipated to substantially degrade the view as existing tanks are already in place. Post construction activities will include planting trees in areas around the tank to help further screen it from nearby roads and structures. As the area is not a designated scenic vista, there are existing structures on site, and design

[2] KJ, 4.5 MG Water Reservoir Preliminary Design Report. January 2021

features will be implemented to help screen the new tank, impacts to scenic vistas will be **less than significant**.

b) Based on California Scenic Highway Mapping System information, no designated state scenic highways are found adjacent to or within view of the project area[3]. There are no officially designated State Scenic Highways within Humboldt County, although Highway 101 for its entire length in Humboldt County and Highway 299 to Willow Creek have been identified by the State Scenic Highway Mapping System as eligible for State listing. The project site is not visible from either highway due to distance, topography, and vegetation. As such, the project will not substantially damage scenic resources within a state scenic highway, there will be **no impact** on scenic resources.

c) The Project site is located in a low density residential area and is bordered to the north and south by county owned and maintained roads. Hewitt Road to the south is a dead end road with a terminus above the project site and has less frequent public access. The project site and surrounding areas are zoned RS and R-1 which each have a maximum residential building height of 35 feet[4]. Essential service civic uses including water storage tanks are allowed in any zone.[5] The new reservoir would be visible from surrounding public and privately owned parcels although it will be obscured by existing vegetation and slopes in the area. As there are already two existing reservoirs on site, the typical view will not be significantly altered from current conditions.

Although the new reservoir will be slightly taller than the existing reservoirs, it is not expected to substantially degrade the existing views or visual character of the site. The viewshed analysis conducted for the project includes visual simulations of the new tank from surrounding public and private vantage points (Appendix A). Figure 3 below shows photo point and visual simulation locations that are included in Appendix A. Figure 4 shows the proposed planting plan to screen the new tank and provide a visual buffer that will increase over time as the trees mature. See Figures 5 and 6 for existing views and post project visual simulations from public vantage points along Cochran and Hewitt Roads.

The new tank would be partially visible from various vantage points in the vicinity, as shown in the Figures below and in Appendix A. Based on the existing views which include the two existing reservoirs at the project site, and the use of post-construction tree planting to act as a visual screen, public views of this location would also not be detrimentally altered, and any potential impact would be **less than significant.**

d) The project site may include security lighting with associated surveillance cameras. This lighting will likely be pole mounted with shields to prevent excessive light pollution and downcast to prevent light spillover onto adjacent properties. Any lighting installed will follow guidelines set by the Humboldt County General Plan including policies which state that exterior lighting fixtures shall be shielded and installed to minimize off-site lighting.

The reservoir will be a strand-wound prestressed concrete tank as opposed to welded steel. The use of prestressed concrete will decrease glare potential and decreases overall visual impact as a portion of it can be buried which reduces the vertical profile. Based on applicable Humboldt County policies and proposed construction methods, impacts from lighting or potential glare will be **less than significant**.

[3] Caltrans, California State Scenic Highway System Map. Accessed June 17, 2021.
[4] Humboldt County Zoning Code §314-6.1 and §314-6.2.
[5] Humboldt County Zoning Code §314-58.

Figure 3: Photo Point Location Map

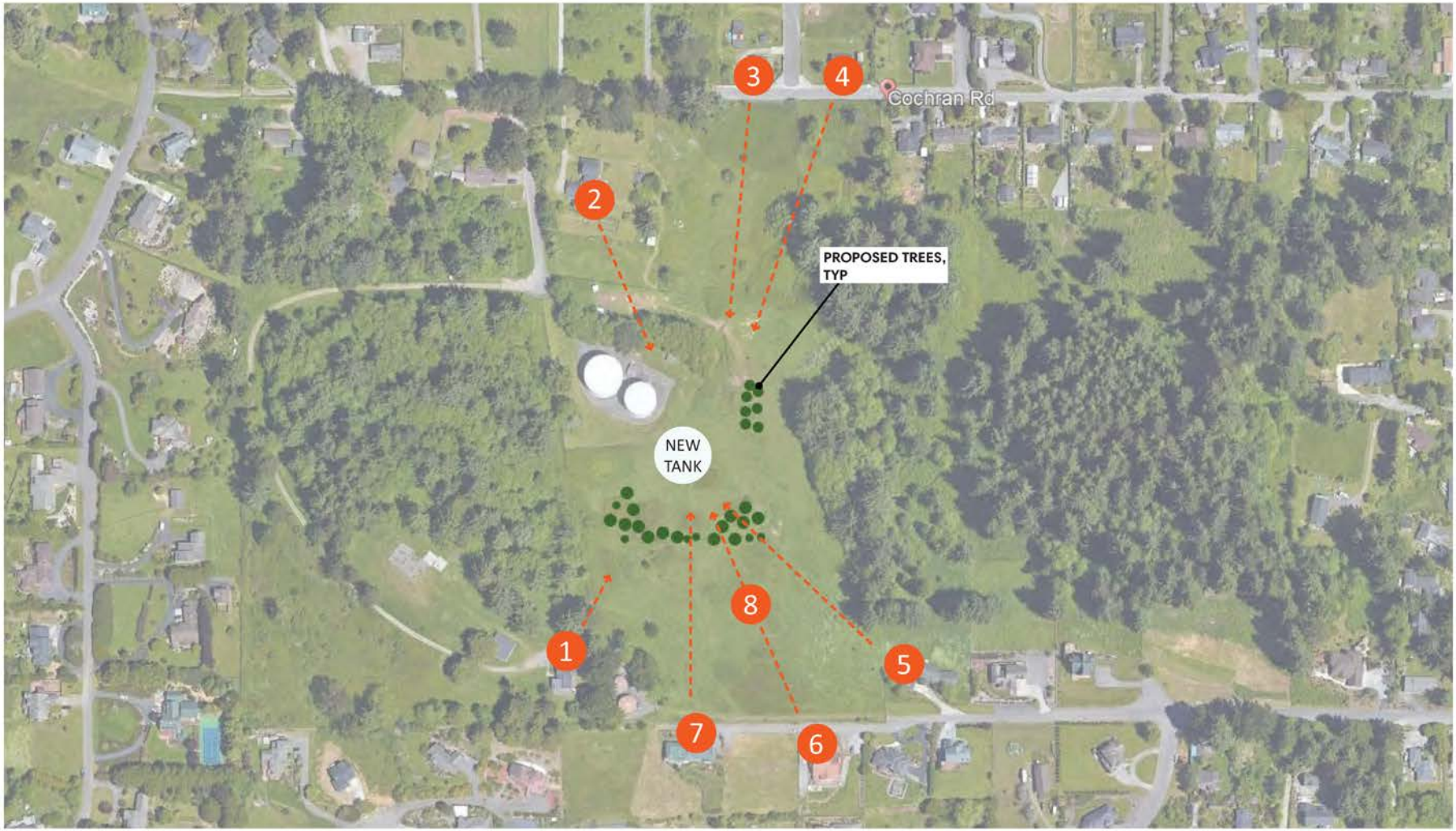


Figure 4: Proposed Planting Layout

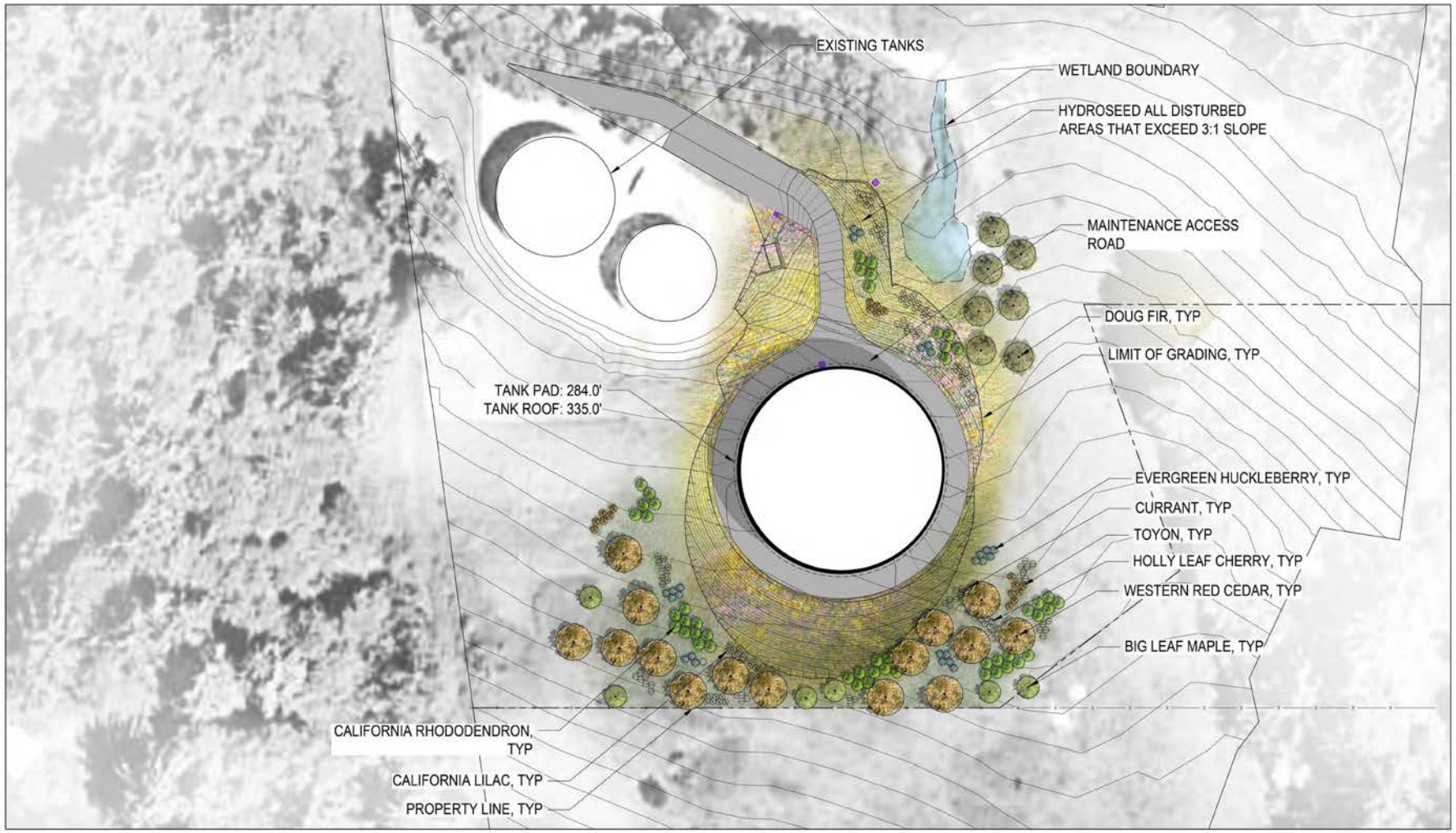


Figure 5: View Looking South from Cochran Road

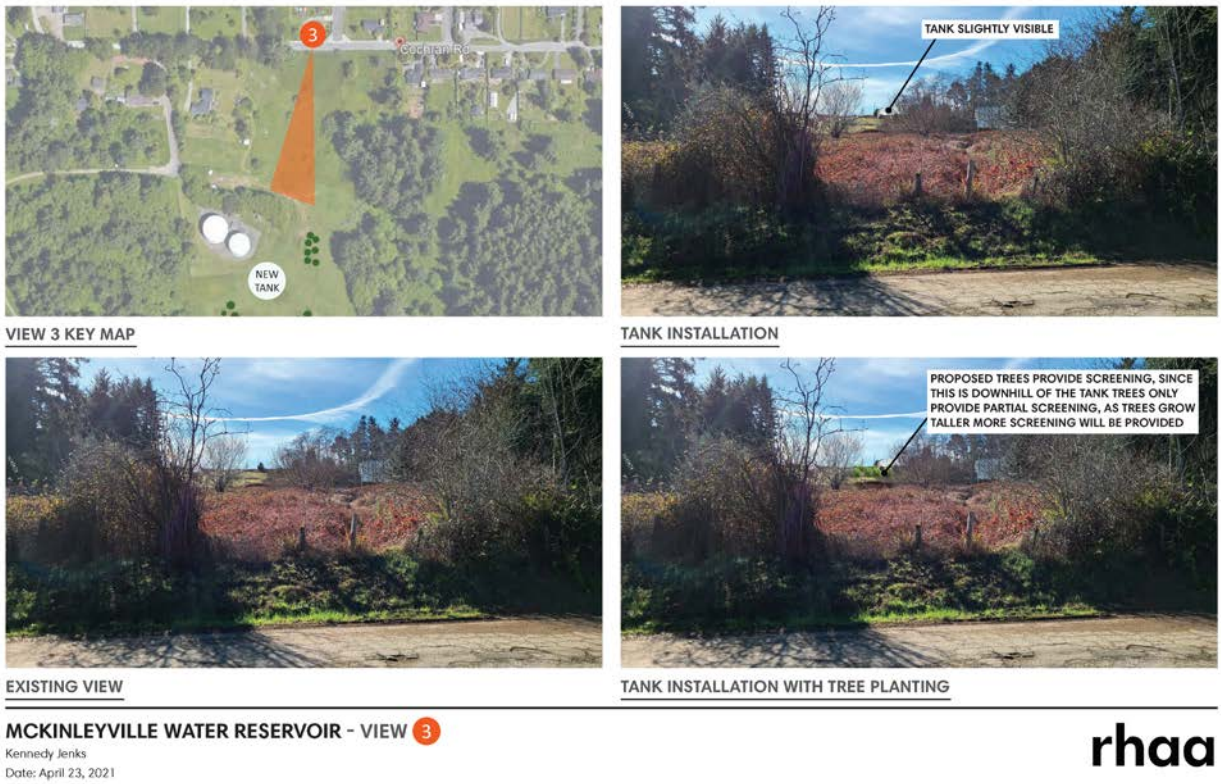


Figure 6: View Looking North from Hewitt Road

AGRICULTURE AND FOREST RESOURCES	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?				X

Setting

Maps prepared pursuant to California's Farmland Mapping and Monitoring Program (FMMP) include Humboldt County as an "Area Not Mapped" and, therefore do not categorize the project area as having any type of Important Farmland (California Department of Conservation 2018). According to MCSD's Wastewater Facilities Plan Administrative Draft (SHN 2011), approximately 2,200 acres of prime agricultural soils are located within the McKinleyville urban development area. The project site and surrounding areas are not designated for agricultural production. According to Humboldt County's GIS Portal, neither the project site nor any other parcels in the project area are zoned for agricultural uses or timber production. The closest zoned Agriculture General (AG) parcel to the project site is approximately 0.1 miles south of the project and the closest zoned Agriculture Exclusive (AE) parcel to the project site is approximately 0.4 miles southwest of the project site. There are also no parcels under Williamson Act contract within or adjacent to the project site. The project site is not designated for agricultural purposes and is not adjacent to lands that are currently in agricultural production.

a) The project site does not include Prime Farmland, Unique Farmland, or Farmland of Statewide importance as shown on any maps prepared pursuant to the FMMP. The project would not convert FMMP designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, therefore, **no impact** would occur.

b-d) The project site is zoned Residential Suburban (RS) and Residential One-Family, Special Building Site, 20,000 square feet (R-1-B-3). There are no parcels in the project site or in the vicinity under Williamson Act contract or zoned for Timberland Production (Humboldt County Web GIS). The project would not conflict with agricultural or forest land zoning or Williamson Act contracts and would not result in the loss of forest land, therefore, **no impact** would occur.

e) No forest land, timberland, or agricultural land exists at the project site or adjacent parcels. The project would not result in the loss or conversion of forest land or involve other changes in the existing environment which would result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, **no impact** would occur.

AIR QUALITY	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?				X
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?				X

Setting

The project site lies within the North Coast Air Basin (NCAB), under the authority of the North Coast Unified Air Quality Management District (NCAQMD) and the California Air Resources Board (CARB). The NCAB includes Humboldt County, Mendocino County, and Northern Sonoma County. In the NCAB, air quality is predominantly influenced by the climatic regimes of the Pacific. In summer, warm ground surfaces draw cool air in from the coast, creating frequent thick fogs along the coast and making northwesterly winds common. In winter, precipitation is high, surface wind directions are highly variable, and weather is more affected by oceanic storm patterns[6].

Humboldt County generally has good air quality and is in attainment for all federal air quality standards and all state standards except for 24-hour particulate matter less than 10 microns in size (PM_{10})[7]. PM_{10} (particulate matter less than or equal to 10 micrometers in diameter, including dust and smoke) is known to have the potential to cause serious health problems. The NCAB has been designated as

[6] North Coast Unified Air Quality Management District (NCUAQMD), 1995. Particulate Matter (PM_{10}) Attainment Plan Draft Report. May 11.

[7] Air quality standard pollutants include ozone, sulfur dioxide, lead, nitrogen oxides, carbon monoxide, and particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$).

nonattainment with respect to PM_{10} since the 1980s[8]. Primary sources of PM_{10} in the NCAB are on-road and off-road vehicles (engine exhaust and fugitive dust generated by travel on paved and unpaved roads), open burning of vegetation (both residential and commercial), residential wood stoves, and stationary industrial sources (factories). Cars and trucks and other vehicles are considered a source of PM_{10} within NCUAQMD's jurisdiction. Fugitive PM_{10} emissions generated by vehicular traffic on unpaved roadways is the largest source of particulate matter emissions within NCUAQMD's jurisdiction. Its control and mitigation plays a key role in the NCUAQMD's attainment strategy.

The NCUAQMD has not formally adopted significance thresholds but rather recommends using the Particulate Matter Attainment Plan (1995), and the Best Available Control Technology (BACT) emission rates for stationary sources as defined and listed in the NCUAQMD Rule 110, New Source Review, and Prevention of Significant Deterioration, Section 5.1 - BACT. All projects are subject to adopted NCUAQMD rules and regulations in effect at the time of construction.

Discussion

a) The California Clean Air Act (CCAA) requires the NCUAQMD to achieve and maintain state ambient air quality standards for PM_{10} by the earliest practicable date. The NCUAQMD Particulate Matter Attainment Plan (1995) includes a description of the planning area, emissions inventory, general attainment goals, and a list of cost-effective control strategies. The PM_{10} Attainment Plan establishes goals to reduce PM_{10} emissions and includes three areas of recommended control strategies to meet these goals. Control strategies include transportation control measures such as encouraging car-pooling and bicycle commuting, removal or repair of vehicles with inefficient emission control systems, and traffic flow improvements that reduce idling and vehicle miles traveled (VMT).

The project is expected to create additional vehicle trips to the site from construction related equipment and workers. However, all access roads are currently paved and maintained to Humboldt County standards. It is unlikely that construction trips will create a substantial increase in fugitive dust. However, earth moving activity may result in increased fugitive dust. In an effort to minimize the amount of fugitive dust from construction activities at the site, the contractor will employ best management practices including covering spoils and watering active construction areas as necessary. This impact will be limited to the construction phase of the project.

Emissions are also expected to be generated from passenger vehicle and construction equipment exhaust. In an effort to minimize exhaust emissions, the contractor will encourage carpooling to the site when possible and utilize best management practices for construction equipment including shutting of equipment when not in use and ensuring that all equipment is fitted with required CARB exhaust systems and is in good working order. Operational emissions are very limited and are not expected to substantially change from existing conditions.

As emissions from the project will be limited to the construction phase and applicable BMPs and State regulations concerning exhaust systems will be followed, there will be no conflict with existing air quality plans and there will be a **less than significant** impact.

b) Humboldt County is in attainment for all Federal and State criteria air pollutants, except the State 24-hour PM_{10}. The attainment status for each criteria air pollutant is based on measurements collected at monitoring stations throughout the county. Monitoring results have shown that the principal pollutant

[8] North Coast Unified Air Quality Management District (NCUAQMD), 1995. Particulate Matter (PM_{10}) Attainment Plan Draft Report: III-1. May 11.

in the NCAB, including Humboldt County, is PM_{10}. As noted above under Section (a), the project will create a temporary increase of PM_{10} emissions from earth moving work and vehicle exhaust during construction.

Generally, the most substantial project related air pollutant emissions will be dust generated from excavation, grading, and tank construction. Construction activities would also temporarily generate emissions of equipment exhaust and other air contaminants.

The NCUAQMD does not have formally adopted thresholds of significance for fugitive, dust related particulate matter emissions above and beyond Rule 104, Section D, which does not provide quantitative standards. The *Air Quality Emission Control Measures During Construction* outlined in the project description are incorporated into the project and are consistent with NCUAQMD Rule 104 (D), Fugitive Dust Emission. Therefore, with incorporation of these measures, the project would result in a less than significant impact for construction-period PM_{10} generation and would not violate or substantially contribute to an existing or projected air quality violation.

The NCUAQMD also does not have established CEQA significance criteria to determine the significance of impacts that may result from a project; however, the NCUAQMD does have criteria pollutant significance thresholds for new or modified stationary source projects proposed within the NCUAQMD's jurisdiction. NCUAQMD has indicated that it is appropriate for lead agencies to compare proposed construction emissions that last more than one year to its stationary source significance thresholds, which are:

- Nitrogen oxides (NOx) – 40 tons per year
- Reactive organic gases (ROG) – 40 tons per year
- PM_{10} – 15 tons per year
- Carbon monoxide (CO) – 100 tons per year

If an individual project's emission of a particular criteria pollutant is within the thresholds outlined above, the project's effects concerning that pollutant are considered to be less than significant. The California Emissions Estimator Model (CalEEMod) was used to estimate air pollutant emissions from project construction (Appendix B)

Table 1: Total Construction Emissions (in tons)[9]

	ROG	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e** (MT)
Unmitigated	0.8137	3.2161	3.3943	0.0080	0.5246	0.2671	735.4851
BMPs*	0.8137	3.2161	3.3943	0.0080	0.4316	0.2204	735.4847

*BMPs include use of water trucks, covering soil piles, carpooling, and the like.
MT=metric ton

Table 2: Operational Emissions (in tons/year)

	ROG	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e** (MT)
Unmitigated	0.3205	0.2437	1.1954	0.0020	0.1833	0.0512	248.2253

Based on the estimated level of emissions shown in Tables 1 and 2, increase in criteria pollutants, including PM_{10}, generated by the project will be limited and temporary and would not exceed NCUAQMD's stationary sources emission thresholds. Operational emissions will be less than that of

[9] Emissions estimates were calculated using CalEEMod 2020.4.0. Report generated August 25, 2021. See Appendix B.

construction and will be similar to what is already produced from operation of the existing water reservoirs onsite. While significance thresholds have not been adopted by the NQAQMD, the very low level of emissions generated by the project will not substantially degrade air quality in the area. As such, the project would result in a **less than significant** impact.

c,d) The project is located within a residential neighborhood in southern McKinleyville. There are no sensitive receptors such as schools, senior living facilities, or hospitals within half a mile of the project site and any air quality emissions will be limited and temporary. There are also no project activities that are anticipated to create a substantial amount of odor. As such, there will be **no impact** related to sensitive receptors or other emissions such as odors.

BIOLOGICAL RESOURCES	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Depart. of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Depart. of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Physical Setting
McKinleyville is located on the Pacific Coast and is bordered to the south by the Mad River. The climate is generally mild and moist due to substantial influence from the Pacific Ocean. While the area is largely developed with urban and residential uses, wildlife corridors exist along creeks and streams in the area including Mill Creek approximately half a mile to the north of the project site. The project site is partially developed with two existing water reservoirs and associated infrastructure. Single-family residential uses are present to the north and south of the project site with small, forested areas to the east and west.

As noted in the Biological Resource Assessment for the project (Appendix C)[10], vegetation in the project area consists of Common Velvet Grass-Sweet Vernal Grass Meadows, Coastal Brambles, Sitka Spruce Forest and Woodland, Slough Sedge Swards, Small-fruited Bulrush Marsh, and Water Foxtail Meadows. The proposed reservoir will be constructed in an area that is predominantly Coastal Brambles and Velvet Grass-Sweet Vernal Grass Meadow which has be subject to grazing by cattle, goats, and pigs. There is a small portion of the project site just north of the proposed reservoir that is categorized as Water Foxtail Meadow and has been identified as a three-parameter wetland. These various vegetation types are able to support a wide range of plant and animal life as observed during site visits on June 30, 2020 and April 22, 2021.

Regulatory Setting
Section 2.0 of the Biological Resources Assessment for the project, incorporated by reference here, provides a detailed overview of the Federal and State regulatory context for the project including the California Endangered Species Act (CESA), special status species designations, and California Fish and Game Code protections. Additionally, Section 2.0 of the Wetland Delineation Report, also incorporated here by reference, provides a detailed overview of regulations pertaining to wetland resources.

The Humboldt County General Plan and associated McKinleyville Community Plan include goals and policies for the protection of natural communities and sensitive habitat areas. Specifically, the McKinleyville Community Plan includes Section 3420 (incorporated here by reference) that details policies for protection of Sensitive and Critical Habitats including Wetland and Wetland Buffer Areas.

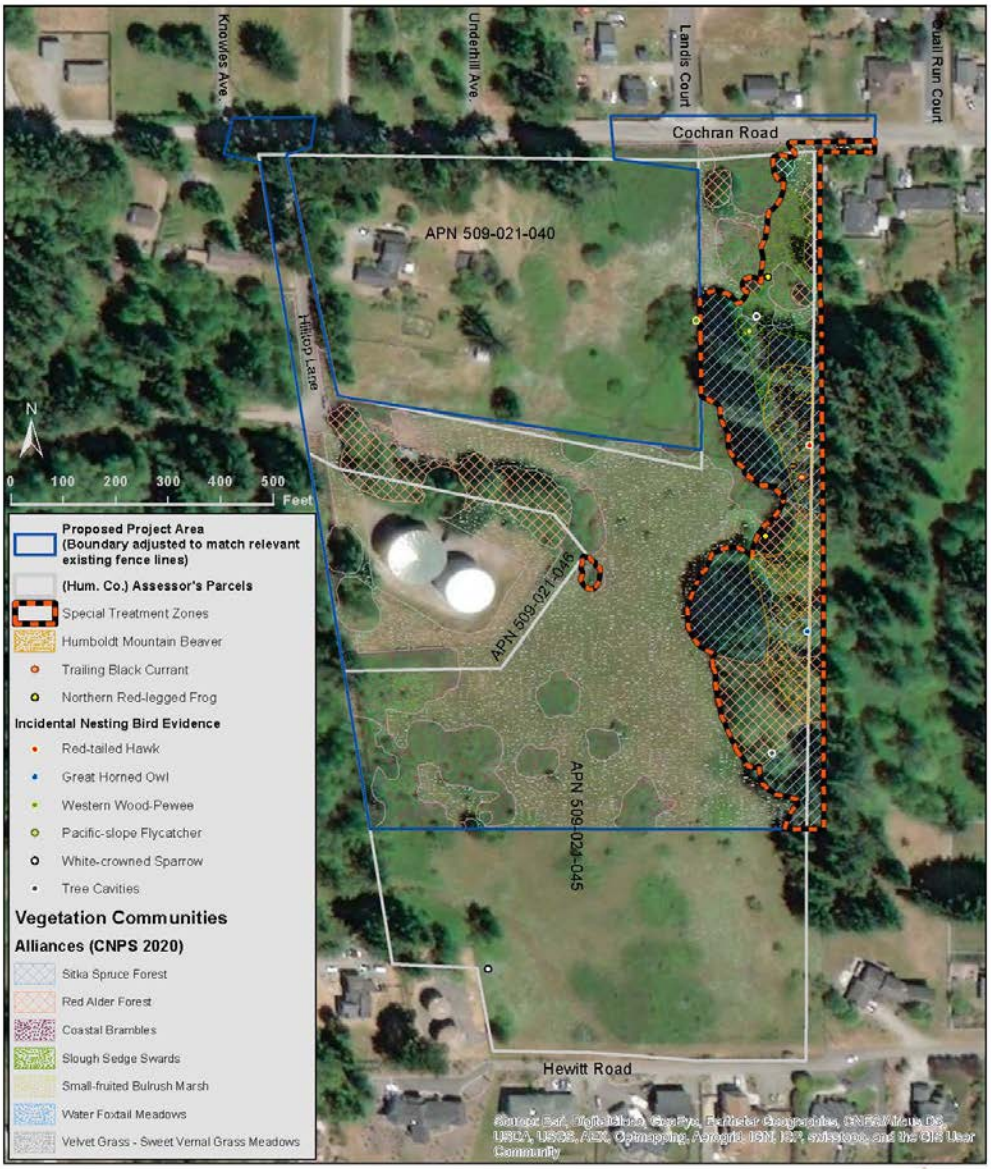
Discussion
a) A Biological Resources Assessment was prepared for the project to determine the presence of special status or sensitive species and/or sensitive habitats within the proposed project area (Appendix C). The conclusions are based on review of scientific literature, natural resource database occurrence records, consultation with resource experts, and site visits conducted June 30, 2020 and April 22, 2021. These dates were determined to be appropriate based on blooming seasons of various flora species of concern. During site visits, the following species were identified.

Botanical Species
Based on initial research, ten special status botanical species of State significance were considered to have a high potential to occur within the project area. These species are listed in Table 5 of the Biological Resources Assessment. Of the ten species, only one was detected during the April 22, 2021 site visit; no other federal- or state-listed plants, nor any other state or federal special status botanical species were found to occur within the project area during the floristically-appropriate botanical

[10] J.B. Lovelace & Associates, Biological Resources Assessment: McKinleyville Community Services District 4.5MG Water Reservoir Project. June 28, 2021.

surveys. Trailing black currant (*Ribes laxiflorum*) was found at the base of a large Sitka spruce tree along the eastern property line of APN 509-021-045. This is within a designated Special Treatment Zone and is approximately 140 –150 feet away from planned disturbance areas. Considering that this rare species occurs within the surrounding Sitka Spruce Forest and Woodland habitat, itself a California Sensitive Natural Community for which protective mitigation recommendations are provided below (BIO-1) anticipated potential project-related impacts to this rare plant occurrence are limited to construction activities associated with the removal of the existing overflow drain pipeline. To mitigate any potential impacts to this special status species, the applicant will implement mitigation measure BIO-1: Sensitive Habitat Demarcation and Monitoring. With the implementation of mitigation measure BIO-1, potential impacts to special status botanical species will be less than significant.

Figure 7: Sensitive Biological Resource Special Treatment Zones



McKinleyville Community Services District. 4.5 MG Water Reservoir Project
Sensitive Biological Resource Special Treatment Zones
(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

BIO-1: Sensitive Habitat Demarcation. In advance of any clearing and grubbing and/or other construction-related disturbance within the proposed project area, the contiguous perimeter of California Sensitive Natural Communities will be clearly staked and flagged by a qualified biologist as a special treatment zone (see Figure 7 above). Temporary access within such areas is limited to the minimum necessary to complete respective construction tasks including construction of the above-grade pipeline with supportive footings and pipeline outfall. Immediately following task completion, staking and flagging will be revised to re-establish the efficacy of respective protective buffers. All flagging and staking should be removed upon conclusion of final restoration activities or earlier if determined appropriate by a qualified biologist.

Additionally, if there is removal of vegetation near the existing trailing black current occurrence, a qualified biologist will be onsite to ensure adequate protection of the existing and any potential new occurrences of the species.

Wildlife Species

Based on initial research, 12 wildlife species of State significance were considered to have a high potential to occur within the project area including *Aplodontia rufa humboldtiana* (Humboldt mountain beaver) which is known to occur at the nearby Azalea Park State Reserve located approximately one mile southeast of the project site. Of the 12 species, seven were detected during site visits which are listed in Table 3 below.

Table 3: Special Status Wildlife Species Observed at the Project Site

Species	FESA Status	CESA Status	CDFW Status
Chaetura vauxi (Vaux's swift)	None	None	Species of Special Concern
Elanus leucurus (white-tailed kite)	None	None	Fully Protected
Haliaeetus leucocephalus (bald eagle)	None	Endangered	Fully Protected
Poecile atricapillus (black-capped chickadee)	None	None	Watch List
Aplodontia rufa humboldtiana* (Humboldt mountain beaver)	None	None	N/A
Rana aurora (northern red-legged frog)	None	None	Species of Special Concern
Selasphorus spp. (selasphorus hummingbird)	None	None	-

Humboldt mountain beaver is monitored by CDFW due to specific habitat requirements and vulnerability to similar threats and constraints facing *A. rufa nigra* (Point Arena mountain beaver), a closely related subspecies, which is a federally listed endangered species and California species of special concern. As construction activities for the drain pipeline will be taking place in close proximity to beaver habitat, there is a potential for minor impacts to occur from temporary construction activities and placement of permanent concrete footings. With implementation of BIO-2, potential impacts to special status mammals will be less than significant.

BIO-2: Pre-Construction Survey for Humboldt Mountain Beaver. No more than one week prior to the initiation of vegetation removal and/or ground disturbance within 50 feet of Humboldt mountain beaver habitat, a qualified biologist shall preform a pre-construction survey for the presence of active Humboldt mountain beaver burrows. Should any signs of beaver activity be observed in close proximity to construction areas, an appropriately sized "no-entry" buffer zone will be clearly staked and flagged. If deemed necessary during the pre-construction survey, a qualified biological monitor will also be utilized during construction.

Temporary construction related activities within the project area have the potential to either directly or indirectly impact special status birds, raptors, and other protected nesting birds. This includes removal of nesting habitat, "take" of eggs, juveniles, or adults, disturbances from construction related noise and vibrations, and attraction of nest predators to the construction site. Two other federally regulated special status species were observed during site visits. There was a fly-over detection of Elanus leucurus ("white-tailed kite") and detection of an undetermined species of the Selasphorus hummingbird species which may have been nesting in the nearby area.

Ideally, construction would be limited to September – January which is outside of the nesting season for most bird species. However, as this schedule will likely be infeasible due to damp winter conditions, the following mitigation measure will be implemented in or to reduce potential impacts to less than significant levels.

BIO-3: Pre-Disturbance Surveys for Nesting Birds. Vegetation clearing and other ground-disturbance activities associated with construction shall occur, if possible, during fall and/or winter months outside the bird nesting season (February-August). If such work cannot be confined to outside the nesting season a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area. Nesting bird surveys should focus on the footprint of the action area and include a 100-foot radius around its perimeter (where breeding habitat exists). Should active bird nesting be confirmed, species appropriate "no entry" buffers will be clearly staked and flagged by a qualified biologist. The size of such protective buffers should be developed in consultation with the California Department of Fish and Wildlife and should take into account the nature and intensity of the offending disturbance to ensure they are appropriately sized in order to prevent nest failure. In cases where such focused surveys are performed, a qualified biologist may be able to provide a more precise breeding and corresponding seasonal restriction period for the species being considered.

Other species of concern are *Rana aurora* (northern red-legged frog) which was observed during the April 2021 site visit, *Rana boylii* (foothill yellow-legged frog), and *Emys marmorata* (western pond turtle). While suitable breeding habitat for both northern red-legged and foothill yellow-legged frog is not present at the project site, there is potential for juvenile and adult frogs to utilize the vegetated habitat with saturated soils. Pre-construction surveys are recommended to ensure no frogs are present in the area. Additionally, construction activities are encouraged to avoid the creation of temporary ponds which could attract breeding frogs. It is also unlikely that western pond turtle exists in the area due to the frequency of coastal fog. However, to ensure that no impacts to the species occur, the following mitigation measure is proposed:

BIO-4: Pre-Disturbance Surveys for Amphibian and Reptile Species of Concern. No more than one week prior to commencement of construction activities, the active construction site within 50 feet of suitable habitat shall be surveyed by a qualified biologist for the presence of northern red-legged frog, foothill yellow-legged frog, and western pond turtle. Should any of these species be observed, the qualified biologist shall relocate any individuals found to nearby suitable habitat away from active construction areas and a barrier, such as wildlife exclusion fencing, shall be placed around the excavation area to prevent these species from moving into work areas. If any of the above species are observed during the pre-construction survey, CDFW shall be consulted to determine the best way to avoid impacts.

Two types of bees, *Bombus occidentalis* (Western bumble bee) and *Bombus caliginosus* (Obscure bumble bee), may also occur in the project area and are both California state candidate endangered species. Pre-construction surveys for emergent queen bumble bees are recommended to determine if either species is present in the project area. It is also recommended that post-construction restoration and revegetation efforts include planting locally appropriate native forage plant species known to be frequented by bumble bees. To ensure that no impacts to the species occur, the following mitigation measure is proposed:

BIO-5: Survey for Western Bumble Bee. Between mid-March to mid-April, conduct a survey for Western Bumble Bee prior to any excavation and/or grading during the period to assess for the presence of this California state Candidate Endangered species at the site. If this species is not detected, no seasonal constraints specific to this insect are warranted. If Western Bumble Bee is detected at the site, ground excavation and/or grading should commence during the period between when it can be determined that the majority of queen Western Bumble Bee emergence has occurred and the majority of new colony initiation has not yet begun.

Sensitive Natural Communities

Based on initial research, six sensitive natural communities were considered to have reasonable potential to occur at the project site. Of those, four were identified during site visits which are listed in Table 4 below.

Table 4: Sensitive Natural Communities Observed at Project Site

Community	GRank/ SRank
Picea sitchensis Forest and Woodland Alliance/ Sitka Spruce Forest and Woodland	G5/S2
Rubus (parviflorus, spectabilis, ursinus) Shrubland Alliance/ Coastal Brambles	G4/S3
Carex obnupta Herbaceous Alliance/ Slough Sedge Swards	G4/S3
Scirpus microcarpus Herbaceous Alliance/ Small-Friuted Bulrush Marsh	G4/S2

It should be noted that the Coastal Brambles community is largely populated with *R. ursinus* (California blackberry). This species is likely to be removed from this sensitive community alliance within the next

year due to its relative abundance and wide geographic range.[11] As such, it will not be treated as a sensitive natural community for this project.

While construction of the new reservoir is not anticipated to impact any sensitive communities, construction of the overflow drain pipeline has potential to impact the Sitka Spruce Forest and Woodland community by disturbing shallow root systems of maturing Sitka spruce trees. In an effort to reduce impacts to this community, the pipeline in this area has been designed to be above ground and supported by concrete footings every 15 to 20 feet. The pipeline has also been routed along the western extent of the community rather than through it as depicted in original design plans. These measures will reduce the overall footprint of disturbance and reduce impacts to less than significant levels.

With the incorporation of the above referenced design features and mitigation measures project impacts will be **less than significant with mitigation**.

b,c) A wetland delineation was performed in the proposed project area between August 26-28, 2020 with a subsequent site visit performed on April 22, 2021. A full summary of methods and analysis of findings can be found in Wetland Delineation Report prepared by J.B. Lovelace & Associates (June 2021) which is incorporated here by reference (Appendix D). [12]

Results of the wetland delineation showed two distinct areas of wetlands in the project area totaling 1.083 acres of freshwater wetland habitat. One, that is made up of two different wetland types, is located in the northeast portion of parcel APN 509-021-045 and the other is located in the northern central section just east of the two existing water reservoirs (Figure 8). The wetland areas identified consist of palustrine emergent wetlands and palustrine forested wetlands that are either seasonally saturated or seasonally flooded-saturated.

Wetland 1, as identified in Figure 8, is located in the northeast corner of the project area and is classified as a palustrine emergent persistent seasonally flooded-saturated wetland (PEM1E). This area is a downhill continuation of Wetland 2 and is characterized by persistent herbaceous wetland vegetation and soils that are typically saturated year round with surface water present for extended periods during the growing season.

Wetland 2 is upslope of Wetland 1 and is classified as seasonally saturated palustrine forested wetlands (PFO4B). The area is characterized by aerial coverage of woody vegetation, specifically Sitka spruce (*Picea sitchensis),* and soils remain saturated at or near the surface for extended periods of time during the growing season.

Wetland 3 is located in the central northern section of the project area and is also classified as PEM1E. It is a naturally occurring spring that emerges near the toe of the current slope and drains downhill for approximately 30 meters (100 feet). Standing water was present during summer fieldwork which allowed a resident domestic pig to create a wallow. A regularly traveled dirt path also crosses the downhill drainage of the spring.

[11] J.B. Lovelace & Associates, Biological Resource Assessment, Section 5.2.3. June 2021.
[12] J.B. Lovelace & Associates, Wetland Delineation Report, McKinleyville CSD 4.5MG Water Reservoir Project. June 4, 2021.

Figure 8: Wetland Habitats

McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Distribution of Delineated Wetland Habitats

(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

The project includes installation of a new 18" drainpipe that will cross under a narrow (<5ft.) portion of the Wetland 3 drainage channel. Additionally, the toe of an engineered slope supporting the base of the new reservoir will end approximately 10 feet from the edge of Wetland 3. The drainpipe will transition to above ground outside the western edge of Wetlands 1 and 2. Approximately 17 reinforced concrete footings (42"L x 48"W x 30"D) will be placed every 15-20 feet along the approx. 260ft. length of the above ground section. The 30% design plans for the Project took into consideration potential impacts to wetlands. Primarily, the placement of the new reservoir was pushed south to avoid direct impacts and allow for a small buffer from Wetland 3. Additionally, the pipeline, which was originally proposed to be underground near Wetland 1 and 2, was moved above ground and outside the western edge of the wetlands to reduce potential impacts.

Humboldt County's *Streamside Management Areas and Wetlands Ordinance* (Humboldt County Code § 314-61.1.7.6.6) specify that development standards for wetlands (outside of the Coastal Zone) shall be consistent with the standards for streamside management areas; typical wetland setback buffer widths are as follows (with the setback being measured from the edge of respective delineated wetlands): Seasonal wetlands = fifty (50) feet; Perennial wetlands = one hundred fifty (150) feet. These standards and the code provide for potential reductions in wetland buffer widths based on site-specific analysis and consultation with the California Department of Fish and Wildlife. The project proposes reduced wetland buffers due to site constraints and existing conditions.

Anticipated temporary impacts from the project include trenching across the narrow portion of Wetland 3 in order to remove the old drainpipe and install the new one. After construction this area will be restored to pre-project conditions. With implementation of mitigation measures BIO-6 and BIO-7 impacts to wetlands would be less than significant. The project also involves installation of approximately 17 supportive concrete footings to support the above ground pipeline and associated outfall within the wetland buffer area along with temporary disturbances from construction activities. To reduce these anticipated impacts, the following mitigation measures are proposed:

BIO-6: Wetland Identification and Demarcation. Prior to construction related disturbance within the project area, the perimeters of protective wetland habitat areas will be clearly staked and flagged by a qualified biologist as a special treatment zone (see mitigation measure BIO-1 and associated figure). Exceptions to allow temporary access within the wetland feature is restricted to the minimum limits of access required to complete respective construction tasks including:

- Open-trenching across the wetland feature to remove and replace the existing overflow drain infrastructure with the new overflow drain pipeline; and
- Construction access across the wetland feature between the various construction elements and the proposed staging area below the existing tanks, accessed from Hilltop Lane.

Immediately following task completion, staking and flagging will be revised to re-establish the efficacy of respective protective buffers. All flagging and staking should be removed upon conclusion of final restoration activities or earlier if determined appropriate by a qualified biologist.

BIO-7: Open-Trenching Construction and Restoration. Where open-trenching occurs within wetland areas, the top 6-12 inches of excavated material (i.e. topsoil) will be stockpiled separately from deeper material and kept moist for use during backfilling to aid in rapid revegetation of the trench footprint and maintain pre-construction soil texture and drainage properties. This surface layer will not be compacted and may be filled 1-2 inches above grade to allow for natural settling. The overflow drain pipeline will be backfilled with native material except where engineered material is required by design constraints. Excess spoils from construction will be placed in a manner that will prevent discharge into wetland areas. Should trench conditions indicate significant potential for redirection of groundwater along the trench alignment, transverse baffles will be installed periodically as needed to prevent such redirection.

BIO-8: Stormwater Pollution Prevention Plan. Prior to construction, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the project consistent with State Water Resources Control Board regulations. The SWPPP will include erosion and sediment control measures, and dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. A Qualified SWPPP Practitioner will oversee implementation of the Project SWPPP.

BIO-9: Construction Monitoring. During construction, a qualified biologist shall be engaged to periodically monitor the construction process, evaluate implementation of adopted mitigation measures during construction, and provide recommendations as necessary to ensure the protection of biological and wetland resources.

BIO-10: Post-Construction Restoration and Revegetation. After completion of construction activities, the project area will be restored to pre-project grades and contours, where possible (with the exception of the new reservoir footprint, its access route, and associated cut and fill slopes). In areas where significant soil compaction has occurred, the soil will be disked or scared in an effort to restore pre-project surface infiltration and drainage characteristics. All disturbed areas will be promptly revegetated in accordance with the project planting plan with locally-sourced, regionally appropriate species to the extent possible.

With the implementation of the above mitigation measures and project design elements, impacts to wetlands or riparian habitats are considered **less than significant with mitigation**.

d) No perennial streams capable of supporting fish species occur on the project site or in the immediate vicinity. Mill Creek is approximately 2,000 feet downstream of the proposed project area and is known to support resident Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*) (CNDDB 2021, etc.). Tank construction activities will not impact the existing off-site stormwater system or Mill Creek. Tank operation and maintenance activities will be consistent with those already occurring as part of current tank maintenance operations. As such, the project would not interfere substantially with the movement of any native resident or migratory fish species. Additionally, the project area is also not known to be in regular use as a migratory corridor or nursery area for wildlife

species. The project area is within the Pacific Flyway, a corridor used by migratory birds traveling between summer and winter habitat areas and could be used as a resting area. However, due to the slopes, brambles, and forested lands located in the project area, it is unlikely it would be used regularly as there are more suitable resting areas within close proximity of the project site.

As stated previously, the area may be used by nesting bird species and implementation of the project could result in impacts should nests or nesting areas be disturbed or removed. Implementation of Mitigation Measure BIO-2 will reduce impacts to less than significant levels. Based on the absence of stream habitats, limited potential for nursery sites, and use of mitigation measures, project impacts will be **less than significant with mitigation.**

e) The project complies with Humboldt County's *Development Standards for Wetlands and Other Wet Areas* (Humboldt County General Plan Chapter 10 [Biological Resources] § 10.3.4, BRS10) which provides for wetland buffer reductions. See discussion above for the project's potential wetland impacts and mitigation measures. The project does not conflict with local policies or ordinances protecting biological resources and is consistent with applicable policies related to biological resources in the Humboldt County General Plan and McKinleyville Area Plan. Therefore, a **less than significant impact** would occur.

f) There are no known local, regional, or state Habitat Conservation Plans, Natural Community Conservation Plans, or other approved conservation plans that apply to this project. As such, **no impact** would occur.

CULTURAL RESOURCES	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?			X	
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Setting

The general area has a long history of human use associated with the Mad River including Native American and later with European settlers beginning around 1850.The project area is within the ethnographic territory of the Wiyot and the general area has high potential for archaeological sites.

A Cultural Resource Investigation Report for the project was prepared by Roscoe and Associates Cultural Resources Consultants in the summer of 2020 for the project area of potential effect (APE) (RACRC, 2020). The report includes a review of regional archaeological and ethno-geographic literature, historical maps and aerial photography, a project area record search at the California Historical Resources Information System's Northwest Information Center, correspondence with local Native American tribal representatives, and a pedestrian field survey conducted on July 24, 2020. The field

survey resulted in the identification of two isolated pieces of flaked chert debitage. According to the report, "No artifacts, features, or sites were identified in the APE during this investigation". The report also includes recommendations for inadvertent discovery of archaeological material and/or human remains in alignment with California Health and Safety Code and Public Resources Code ((HSC) §7050.5 and PRC §5097.98).

Inadvertent Discovery of Archaeological Material

The following provides means of responding to the circumstance of a significant discovery during the cultural monitoring of the final implementation of the proposed agricultural development within the project parcel. If cultural materials for example: chipped or ground stone, historic debris, building foundations, or bone are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery, per the requirements of CEQA (Title 14 CCR 15064.5 (f)). MCSD representatives shall be immediately notified and work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action.

Inadvertent Discovery of Human Remains

If human remains are discovered during project construction, work will stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). MCSD representatives shall be immediately notified. The Humboldt County coroner will be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98.

Discussion

a, b) The cultural resource investigation completed by Roscoe and Associates (2020) included communication with tribal representatives, archival research, and field investigation. All field investigations were negative for evidence of cultural resources (Roscoe and Associates 2020).The project site is not known to contain archaeological, historical, or tribal cultural resources and is not located on any mapped cultural sites. As mentioned above, the cultural resource investigation completed by Roscoe and Associates (2020) included communication with tribal representatives, archival research, and field investigation. All field investigations were negative for evidence of cultural resources. Additionally, no structures over 45 years of age will be removed as part of the project.

There is potential for subsurface excavation activities to uncover previously unknown subsurface archaeological resources. Implementation of standard cultural resource construction procedures as outlined above regarding inadvertent discovery would reduce potential impacts to a less than significant level. No significant archaeological or historic resources were observed during RACRC's investigation. Based on these findings, the project's potential to cause a substantial adverse change in the significance of a historical or archaeological resource would be **less than significant**.

c) There are no known human remains on the project site. Implementation of standard cultural resource construction procedures regarding inadvertent discovery, including Humboldt County General Plan

policies and California Health and Safety Code §7050.5, would reduce potential impacts to a **less than significant** level.

ENERGY	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

Setting

Water treatment and distribution generally requires large amounts of energy in order to pump water from sources, convey water to treatment facilities, store water, and convey water to consumers. According to the report "Refining Estimates of Water-Related Energy Use in California", the recommended revised water-energy proxy for indoor use is 5,411 kWh/MG. This includes supply, conveyance, treatment, distribution, and wastewater treatment[13].

Discussion

a,b) Construction of the project will require energy intensive activities including grading and construction of the reservoir. However, as this is an existing site for water storage with associated road access and utilities, it is not anticipated that construction will create a significant environmental impact due to wasteful consumption of energy resources. Inefficient construction-related operations will also be avoided due to the project's air quality emission control measures. Because construction will not encourage activities that will result in the use of large amounts of fuel and energy in a wasteful manner idling time, impacts related to the inefficient use of construction-related fuels will be less than significant.

Using a water-energy proxy of 5,411 kWh/MG, the water stored in the 4.5 MG reservoir is anticipated to utilize 24,349.5 kWh of energy. However, as this is water that would be treated and supplied to customers whether or not the tank was in place, this is not considered to be an increase of energy usage. Additionally, as the tank is to be sited at the location of existing pumping and storage facilities, it will not require additional transmission or pumping equipment which would result in increased energy use. As such, the project will increase efficiency for the water system. The primary goal of the project is to provide additional water storage for the community so that in the event of water supply disruption from seismic activity, water services can still be provided. By providing increased water storage, MCSD will be reducing the potential need to truck in water in the event of an emergency which has the potential to use a greater amount of energy and fuels.

[13] California Energy Commission, Refining Estimates of Water-Related Energy Use in California, Table ES-1. December 2006.

Since the project will improve efficiency of the water system, the project will not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; and will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, a **less than significant impact** on energy resources will occur.

GEOLOGY AND SOILS	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X

Setting

The Northern California coast is located in the southern portion of the Cascadia Subduction Zone and is a seismically active area noted by numerous fault zones (Clarke and Carver 1992). McKinleyville is located in the Mad River fault zone which is considered active by the State of California. This zone consists of several major northwest trending thrust faults and numerous minor, secondary synthetic and antithetic faults. Major faults within the zone include, from north to south, the Trinidad, McKinleyville, Mad River, and Fickle Hill faults. The McKinleyville and Mad River faults both pass through McKinleyville and are mapped as Alquist-Priolo Earthquake Fault Zones. The project site is located approximately 0.5 miles from the Mad River fault to the south of McKinleyville (Humboldt County GIS, 2021).

The region as a whole is subject to potentially strong seismic ground shaking with earthquakes of 8.4 magnitude or greater (Clarke and Carver 1992). Multiple earthquake sources capable of generating moderate to strong earthquakes are in close proximity to the project site (as noted above) and strong seismic shaking is a regional hazard that could cause major damage to the project area. Due to the proximity to active seismic sources, localized areas in McKinleyville may be subject to secondary seismic effects, such as liquefaction, lateral spread, and seismically-induced land sliding. Liquefaction is the sudden loss of soil shear strength due to a rapid increase of soil pore water pressures caused by cyclic loading from a seismic event.

MCSD obtains water from the Humboldt Bay Municipal Water District by way of a transmission main that crosses the Mad River Fault Zone. This line is subject to potential seismic failure which could disrupt service to MCSD. The project proposes to increase storage within MCSD in order to provide emergency backup supplies in the event of such a failure.

Discussion

a.i-iv, c) The project site is located in close proximity (approximately 0.5 miles) to the Alquist-Priolo Mad River Earthquake Fault Zone which has the potential to rupture creating strong seismic ground shaking. HBMWD's water line extends from Arcata across the fault under the bed of the Mad River to supply MCSD with potable water for the community. In the event of a major earthquake, this line could rupture and leave the community without a regular supply of potable water. As this is a major vulnerability to water supply in the area, MCSD is constructing the new 4.5 million gallon reservoir in order to provide additional water storage capacity to support the community in the event of a major earthquake that causes a main line break. However, as the project site is almost a half mile away from the fault zone, it is unlikely that a rupture will occur on site[14].

As the existing and proposed new reservoirs are near a major fault line, they are susceptible to seismic ground shaking in the event of an earthquake. Depending on the intensity of shaking, there is potential for damage including water line breaks and minor structural damage. In an effort to plan for such shaking, a seismic control valve will be provided to automatically isolate the tank during a seismic event. Strong seismic ground shaking can also cause liquefaction in saturated sands or soft silts. In order to assess the liquefaction potential at the project site, a quantitative analysis was conducted as part of the geotechnical investigation. Results showed that there is limited to no potential for liquefaction or lateral spread at the project site[15].

Other potential ground failure issues include landslides. The project site is located on a hill with 15 to 20 percent slopes. During site visits for boring, no signs of slope instability were observed. Additionally,

[14] LACO, Geotechnical Report for MCSD Cochran Road Water Tank (APN 509-021-046), Section 6.1. January 2014.
[15] LACO, Geotechnical Report, Section 6.3.2.

the area is mapped as Low Instability on the Humboldt County GIS Hazards layer[16]. Slope stability analysis for cut and engineered slopes around the new reservoir was conducted and it was recommended that all permanent or temporary cut-slopes have a gradient no steeper than 1.5H:1V and permanent fill slopes be no steeper than 2H:1V[17]. Available project designs indicate all permanent cut slopes will be 2H:1V. This is within the safety recommendations of the geotechnical investigation and as such, no slope instability or sliding is anticipated.

Based on the location, geotechnical investigations for the project site, and project design elements, impacts related to rupture of faults, strong seismic ground shaking, liquefaction, and landslides will be **less than significant**.

b) The project involves excavating approximately 20,000 cubic yards of material to accommodate the new reservoir and access road. Excavation will expose soil and may lead to erosion during rain events. Additionally, excavated material is planned to be stored either temporarily or permanently onsite. In order to prevent erosion of exposed soils, erosion control measures and best management practices will be utilized during construction. In the event excavated material is permanently stored onsite, the area will be vegetated to help prevent erosion of exposed soils.

Additional erosion may occur at the drain pipe outlet near Cochran Road. Without adequate protection, water flowing out of the pipe may scour and erode soil in the area. To prevent this type of erosion, the drain outlet will include a riprap apron which will slow water velocity before reaching the soil surface. Based on implementation of standard construction related erosion control measures and project design, impacts pertaining to soil erosion will be **less than significant**.

d) Expansive soil is defined as soil that expands to a significant degree upon wetting and shrinks upon drying. Generally, expansive soils contain a high percentage of clay. Based on site borings conducted in 2013, the site consists of medium-dense to dense, yellow-brown silty sands and medium-dense to very dense, red-brown poorly graded sands which generally have a low-expansive potential[18]. As such, the project will result in **no impact** from expansive soils.

e) No septic or sewer systems are proposed as part of the project. As such, **no impact** will occur.

f) No unique paleontological or geological resources are known to exist at the project site. Additionally, soil disturbance activities will be limited to surface layers and extend to a maximum of 36 feet in depth to accommodate the reservoir floor elevation. Based on borings taken in 2013, sandy soils extend to a depth of approximately 43 feet where the base of the reservoir will be located (Boring 2)[19]. Based on the depth of the bedrock, it is unlikely geologic material containing paleontological resources would be encountered. As such, there will be **no impact** on unique paleontological or geological resources.

[16] Humboldt County, Web GIS, Hazards, Seismic Safety and Slope Stability, Seismic Safety Layer. Accessed June 23, 2021.
[17] LACO, Geotechnical Report, Section 8.5.
[18] LACO, Geotechnical Report, Section 6.9.
[19] LACO, Geotechnical Report, Appendix 2 – Boring Logs.

GREENHOUSE GAS EMISSIONS	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Setting

Global temperatures are affected by naturally occurring and anthropogenic-generated atmospheric gases such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). Emissions of GHGs from human activities such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere and are reported to have led to a trend of unnatural warming of the earth's climate, known as global warming or global climate change, and should be lessened and/or mitigated whenever possible. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

- Carbon dioxide (CO_2), primarily a byproduct of fuel combustion;
- Nitrous oxide (N_2O), a byproduct of fuel combustion and also associated with agricultural operations such as the fertilization of crops;
- Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g., livestock), wastewater treatment, and landfill operations;
- Chlorofluorocarbons (CFCs), which were used as refrigerants, propellants, and cleaning solvents, although their production has been mostly prohibited by international treaty;
- Hydrofluorocarbons (HFCs), which are now widely used as a substitute for chlorofluorocarbons in refrigeration and cooling; and
- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF6) emissions, which are commonly created by industries such as aluminum production and semiconductor manufacturing.

In 2002, the California legislature declared that global climate change was a matter of increasing concern for the state's public health and environment, and enacted laws requiring the state Air Resources Board (ARB) to control GHG emissions from motor vehicles (Health & Safety Code §32018.5 et seq.). CEQA Guidelines define greenhouse gases to include carbon dioxide (CO_2), nitrous oxide (N_2O), hydrofluorocarbons, perfluorcarbons, and sulfur hexafluoride. The California Global Warming Solutions Act of 2006 (Assembly Bill 32) definitively established the state's climate change policy and set GHG reduction targets (Health & Safety Code §38500 et seq.). The State set its target at reducing greenhouse gases to 1990 levels by 2020. In 2011, the CEQA Guidelines Section 15064.4 Appendix G was modified to include evaluation of Greenhouse Gas emissions.

Discussion

a, b) Construction of the project would cause GHG emissions as a result of combustion of fossil fuels used in construction equipment, vehicles from workers commuting to and from the site, and the

importing of construction material for the reservoir. The project would require the use of several pieces of heavy earthmoving and construction equipment in addition to other small engine-powered tools and equipment. The NCUAQMD has not adopted a threshold for construction-related GHG emissions against which to evaluate significance and has not established construction-generated criteria air pollutant screening levels above which quantitative air quality emissions would be required. Although, the discussion below contains a qualitative analysis of GHG impacts, as discussed in the Air Quality section of this document the California Emissions Estimator Model (CalEEMod) was used to estimate air pollutant emissions from project construction (Appendix B). The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

Humboldt County is in the process of drafting a Regional Climate Action Plan that will include specific goals and implementation measures related to reducing GHG emissions in the county. While the document is still in draft form, a complete CAP has not been formally adopted to date. However, Humboldt County's General Plan does include goals, policies, and standards related to the reduction of GHG emissions. Applicable policies and standards include:

> *AQ-P17. Preservation and Replacement of On-site Trees.* Projects requiring discretionary review should preserve large trees, where possible, and mitigate for carbon storage losses attributable to significant removal of trees.
>
> *AQ-S3. Evaluate Air Quality Impacts.* During environmental review of discretionary projects, evaluate new commercial and industrial sources of emissions using analytical methods and significance criteria used, or recommended by, the NCAQMD.

The project has been designed in an effort to avoid impacts to existing vegetation including Sitka spruce habitat located in the northeastern corner of the project area. As much of the existing vegetation will be maintained around the existing storage reservoirs and no large diameter trees are proposed for removal. Additional trees will also be planted post construction in order to reduce the visual impact of the new reservoir. This aligns with AQ-P17 above and will help with carbon sequestration.

As discussed above and under the Air Quality section of this document, analysis of criteria pollutants and GHG emissions was conducted for the project. The results show that a temporary and limited amount of pollutants will be generated from construction (approximately 735 MT CO2e) and that operational emissions will also be negligible (248 MT/year CO2e). Therefore, due to its relatively small size and other project features, the project would not be expected to generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. In addition, the project does not conflict with an applicable plan or policy and a **less than significant impact** will occur.

HAZARDS AND HAZARDOUS MATERIALS	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	

HAZARDS AND HAZARDOUS MATERIALS	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X

Setting

Humboldt County is the primary agency responsible for emergency response and evacuation planning in the County. Local agencies are required to coordinate emergency planning with the Humboldt County Office of Emergency Services (HCOES). The Humboldt County Emergency Operations Plan (EOP) and Local Area Hazard Mitigation Plan (LAHMP) serve to address planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting Humboldt County. These plans establish the organization, responsibilities, and procedures to adequately respond to natural and man-made emergencies.

Discussion

a,b) Construction of the project would require the use and transport of hazardous materials including fuels, oils, and other chemicals used during construction activities. Improper use and transportation of hazardous materials could result in accidental releases or spills, potentially posing health risks to workers, the public, and the environment. These activities are controlled by County code provisions and state regulations (Health and Safety Code Division 20: Miscellaneous Health and Safety Provisions). Additionally, construction activities at the project site will incorporate current best management

practices (BMPs) for construction, including site housekeeping practices, hazardous material storage, inspections, maintenance, worker training in pollution prevention measures, and secondary containment of releases to prevent pollutants from being carried off-site via runoff.

The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, a **less than significant impact** would occur.

c-f) The project is located at the southern extent of McKinleyville and is not located within a quarter mile of an existing school, on a site designated as hazardous, or in an airport plan area or within two miles of an existing airport. The California Redwood Coast – Humboldt County Airport is located approximately three miles north northwest of the project site. The new reservoir will be located adjacent to existing reservoirs and access routes and will not block any existing roadways that may be used as evacuation routes. As the project is not located near schools or airports and will not interfere with existing evacuation plans, **no impact** will occur.

g) The project site is located in a Moderate Fire Hazard Severity area that is primarily residential except for a 13.8 acre forested parcel located east of the project area. Approximately one mile to the west is the beginning of densely forested lands that are designated with High Fire Hazard Severity[20]. However, due to the areas influence from the Pacific Ocean causing regularly foggy and damp conditions, risk of catastrophic fire is lower than inland areas. Additionally, the new reservoir would provide an additional 4.5 million gallons of water to area which could be utilized in the event of a major fire. Based on the low potential of wildfire and addition of water storage, there will be **no impact**.

HYDROLOGY AND WATER QUALITY	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on or offsite;		X		
(ii) substantially increase the rate or amount of surface runoff in a manner		X		

[20] Humboldt County Web GIS, Hazards, Fire – Fire Hazard Severity. Accessed June 24, 2021.

HYDROLOGY AND WATER QUALITY	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
which would result in flooding on- or offsite;				
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or		X		
(iv) impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

Setting

McKinleyville is located on along the Pacific Ocean in the Pacific Northwest. The region is generally moist with ample amounts of precipitation. Annual precipitation at the project site averages 50 inches.[21] The Mad River is located approximately half a mile to the south of the project site and a third of a mile from Mill Creek.

The project site is a generally north east facing slope with typical drainage infiltrating on-site and/or flowing downhill towards Cochran Road to an existing storm drain system that is piped under Cochran Road and opens to an earthen ditch system that continues along Quail Run Court before eventually flowing towards Mill Creek to the north. Existing three-parameter[22] wetlands are located in the northern central and northeast corner sections of the project area as detailed under Biological Resources. Existing development at the project site includes stormwater catch basins and a drain system for the two existing reservoirs. This system drains though a 12-inch pipeline that daylights approximately 400 feet northeast of the existing tanks where water then surface flows downhill to the ditch system along Cochran Road. The project will include construction of a new 142-foot diameter reservoir and associated access road which will increase the amount of impervious surfaces at the site. The project also includes construction of a new 18-inch drainage pipe that will daylight approximately 100 feet from Cochran Road. Erosion control at the drain outlet will include a riprap apron prior to flowing towards the existing storm drain system.[23]

McKinleyville is included in Humboldt County's Phase II MS4 Permit boundary issued by the State Water Resources Control Board. The MS4 permit requirements mandate all stormwater created by impervious surfaces onsite must be detained onsite using Low Impact Development (LID) or other approved measures to ensure no net increase in stormwater runoff. Condition E.12 of the MS4 General Permit requires local agencies to require that development projects comply with post-construction stormwater requirements based on LID standards. These standards are intended to maintain a site's pre-

[21] NOAA, Climate Data Online, Daily Summaries Station Details, McKinleyville 2.7SE, CA US, January 2010 to December 2020. Accessed May 21, 2021.
[22] Three-parameter wetlands are defined as areas where hydrology, vegetation, and soil exist that qualify as wetland indicators.
[23] Kennedy Jenks, 4.5 MG Water Reservoir Preliminary Design Report, Section 5.2 Site Grading and Drainage. January 2021.

development runoff characteristics by using design techniques that capture, treat, and infiltrate stormwater on site. Because this project will create greater than 1 acre of impervious surface, it will be classified as a Hydromodification Project in accordance with the Humboldt Low Impact Development Stormwater Manual v2.0.[24]

Discussion

a) The methods used to detain and convey stormwater at new developments are regulated at the State and local levels. The State Water Resources Control Board (SWRCB) and North Coast Regional Water Quality Control Boards (NCRWQCB) regulate water quality of surface water and groundwater bodies in the region. The project does not involve any activities with MCSD's sanitary sewer system and therefore will have no impact on the District's current waste discharge requirements. Additionally, no new groundwater pumping or surface discharge is proposed that could potentially impact groundwater resources. The proposed project would adhere to relevant programs and practices, such as BMP's, to protect water quality.

Construction activities associated with the proposed project would cause disturbance of soil during excavation work, which could adversely affect water quality. Contaminants from construction vehicles and equipment and sediment from soil erosion could increase the pollutant load in runoff being transported to receiving waters during development. Project construction involves excavation for installation of a new tank, removal of the existing drainpipe, and installation of a new drainpipe. To protect water quality and limit discharges into waterways, mitigation measures BIO-7: Open Trenching Construction and Restoration and BIO-8: Stormwater Pollution Prevention Plan, will be implemented. This will ensure that BMPs to control erosion and sediment during construction will be in place, that natural soils are returned to wetland areas, and that disturbed areas are returned to pre-project conditions upon completion of the project.

As the project will comply with all relevant policies and permit procedures, it is not expected the project will violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. A **less than significant impact** would occur.

b) The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. MCSD obtains its water from HBMWD, a wholesaler that supplies water to several municipalities in the region including MCSD, City of Arcata, City of Eureka, and others. The source of HBMWD's water is several groundwater wells located along the Mad River to the northeast of Arcata. Groundwater is recharged by infiltration from the Mad River which has regulated flow out of Ruth Lake[25]. Although the project will increase impervious area on the site, the potential to impact groundwater supplies would not be substantial because: the increase in impervious surface would be insignificant compared to the total surface area of the Mad-Redwood groundwater basin, there would be no large-scale increase in water demand, and there are no existing or proposed groundwater wells in the immediate project vicinity. Therefore, the project will have **no impact** on groundwater supplies or recharge.

c.i-iv) The proposed project would not alter the course of a stream or river and would generally maintain the existing site drainage features and the direction of site runoff. The project site includes two existing catch basins that collect stormwater from the existing development and channel it to the existing storm drainage system. Any surface flow not directed to these two catch basins appears to

[24] LACO Associates, Humboldt Low Impact Development Stormwater Manual V2.0. June 20, 2016.
[25] City of Arcata, Urban Water Management Plan 2015. Updated February 2018.

infiltrate on-site or flow north, downhill towards Cochran Road. The catch basins also collect water from the overflow and drainpipes of the existing reservoirs[26]. As noted previously, the existing drain pipeline from the site daylights northeast of the project area where water flows towards the drainage system along Cochran Road.

The project includes construction of a new water storage reservoir and wrap around access road which will result in additional impervious surfaces on the project site. A three foot drainage swale will be located along the outside edge of the access road. Runoff from the road and drainage swale will be conveyed to a separate stormwater drainage system that will be developed during detailed project design. Since the project will disturb greater than one acre of impervious surface, it is considered a hydromodification project under the County's MS4 permit. This requires that post-project runoff will not exceed the estimated pre-project flow rate for the 2-year, 24-hour storm. As such, the site's final drainage plan will be designed to comply with this requirement (mitigation measure HYD-1).

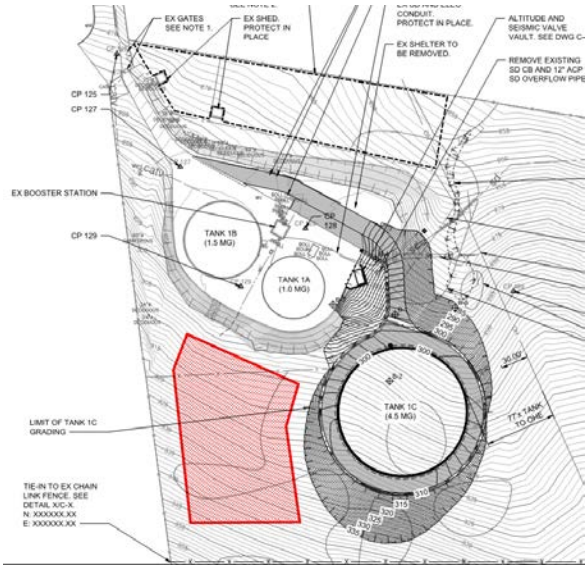
> **HYD-1: Detailed Design for Onsite Stormwater Runoff Capture.** Detailed project design will include a stormwater drainage system that will capture natural stormwater runoff from newly created impervious surfaces for onsite irrigation and infiltration. The system will be designed to meet the County's MS4 permit standards which requires that post-project runoff shall not exceed the estimated pre-project flow rate for the 2-year, 24-hour storm. Design elements may include, but are not limited to, Low Impact Development (LID) features such as rain gardens, bioswales, bioretention features, and on-site infiltration basins.

Water collected from the site via the overflow drains for each tank will be directed though a new 18-inch pipeline that will daylight northeast of the reservoirs approximately 100 feet from Cochran Road. In order to prevent erosion, a riprap apron will be installed at the drain pipe outlet[27]. Discharges are expected to both infiltrate and sheetflow overland though existing vegetation prior to reaching the existing stormwater system.

Engineered slopes at the project site will be designed to match existing slopes where possible. This will help reduce the amount of excess runoff as a result of the project and allow water to infiltrate onsite. Excavated soil that is stored either temporarily or permanently onsite will adhere to BMPs to prevent soil erosion and excess siltation in potential stormwater runoff. In the event that soil is permanently stored onsite, the area (shown in the Figure 9 below) would be about 10 ft. deep with 3H:1V slopes. A 20-ft. clearance between the filled area and the fence lines and tops of excavated slopes would be maintained and the slope would be vegetated to prevent erosion and runoff (mitigation measure HYD-2).

[26] Kennedy Jenks, Preliminary Design Report, MCSD 4.5 MG Water Reservoir Project. January 2021.
[27] KJ, Preliminary Design Report. January 2021.

Figure 9: Proposed Excavated Soil Storage Site



HYD-2: Permanent Onsite Storage of Excavated Soils. In the event excavated soil is permanently stored onsite, the storage area will be limited to the slope directly south of the existing water storage reservoirs and west of the proposed reservoir as shown in Figure 9. Soils will be graded to match existing slopes and hydroseeded with a native grass seed mix. Straw wattles will be kept in place around the storage area in accordance with BMPs for stormwater management until such a time the area has been revegetated and is considered stable.

Based on the project design elements, implementation of BMPs, current conditions, and proposed mitigation measures, the project would not result in substantial erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; and would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. In addition the project is not located in a FEMA 100-year flood zone and would not impede or redirect flood flows. Impacts related to erosion and surface water runoff will be **less than significant with mitigation**.

d) The project site is not located within a flood, seiche, or tsunami zone. As such, there will be **no impact** from potential project inundation.

e) The relevant water quality control plan for the project area is the NCRWQCB Basin Plan, which establishes thresholds for key water resource protection objectives for both surface waters and groundwater. As discussed above, stormwater water runoff from newly constructed impervious surfaces will be collected in catch basins adjacent to or near the reservoirs and be conveyed downslope to the existing stormwater drainage system along Cochran Road. Additional stormwater from the project site will be allowed to surface flow naturally to the northeast into existing drainage systems. As noted previously, the project will have no impact on groundwater resources. As such, there will be no conflict with existing water quality plans, and **no impact** will occur.

LAND USE AND PLANNING	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

Setting

Humboldt County General Plan Land Use designations identify both the types of development that are permitted (e.g., residential, commercial, and industrial) and the density or intensity of allowed development. The General Plan Land Use designation for the project site is Residential Low Density one dwelling unit per acre (RL1). The zoning is Residential Suburban (RS) and Residential One-Family, Special Building Site, 20,000 square feet (R-1-B-3). The new water storage reservoir is considered a civic use type under essential services "Community wells, water storage tanks, and associated water treatment facilities," which is permitted in any zone without a Use Permit, per Humboldt County Code section 314-58.1.

Discussion

a) The project involves adding a new 4.5-million-gallon water storage reservoir to MCSD's existing water distribution system. The new reservoir will be constructed at MCSD's Cochran Road tank site. Two tanks with a total storage volume of 2.5 MG are currently at the site. No aspect of the project would divide an existing community, therefore, **no impact** would occur.

b) The General Plan Land Use designation for the project site is Residential Low Density one dwelling unit per acre (RL1). The zoning is Residential Suburban (RS) and Residential One-Family, Special Building Site, 20,000 square feet (R-1-B-3). The new water storage reservoir is considered a civic use type which is permitted in any zone without a Use Permit, per Humboldt County Code section 314-58.1. Additionally, the Humboldt County Planning Commission found the project to be in conformance with the goals and policies of the Humboldt County General Plan during a hearing held on November 4, 2021. A detailed staff report was prepared that considered each element of the General Plan and an explanation of how the proposed project aligns with the element's goals[28]. The project would not require a General Plan Land Use designation or zoning change and would not conflict with any applicable plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As such, **no impact** would occur.

[28] Humboldt County Planning and Building Department, County of Humboldt General Plan Conformance Review – Case Number PLN-2021-17386 for Assessor's Parcel Number 509-021-045 & 46 (McKinleyville Area). November 4, 2021.

MINERAL RESOURCES	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Setting

Current mineral resource production in the County is primarily limited to sand, gravel, and rock extraction. According to Humboldt County Web GIS, there are no State Surface Mining and Reclamation Act (SSMARA) parcels in the project site. The closest SSMARA parcels are located approximately 0.5 miles from the project site.

Discussion

a,b) No mineral resources and no mineral resource extraction currently occurs within the project site. No mining is proposed. The project would not affect the availability of a known mineral resource that would be of value to the region, nor would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a specific, general plan or other land use plan. Therefore, **no impact** would occur.

NOISE	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive ground borne vibration or ground borne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

Setting

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound. Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions).

The project site is located in a rural residential area of McKinleyville. The McKinleyville Community Plan lists the Arcata-Eureka airport and roads as the principal permanent sources of noise in the community. The primary roads of concern are Highway 101, Central Avenue, and other major arterials. Under Community Plan Policy 3242 the maximum interior noise levels from exterior sources shall be limited to a Community Noise Equivalent Level (CNEL) of 45 (or 45 Ldn). Additionally, The Humboldt County General Plan (2017) includes policy N-S7 for Short-term Noise Performance Standards (Lmax).

SHORT-TERM NOISE STANDARDS (Lmax)		
Zoning Classification	Day (maximum) 6:00 a.m. to 10:00 p.m. dBA	Night (maximum) 10:00 p.m. to 6:00 a.m. dBA
MG, MC, AE, TPZ,TC, AG, FP, FR, MH	80	70
CN, MB, ML, RRA, CG, CR C-1, C-2. C-3,	75	65
RM, R-3, R-4	65	60
RS, R-1, R-2, NR	65	60

Discussion

a) The construction phase of the project will include use of heavy machinery and frequent trips by construction vehicles which will temporarily increase noise levels in the local vicinity. These noise increases will be limited to permitted hours (7 a.m. – 6p.m. weekdays, 9 a.m. – 6 p.m. weekends, lower ambient noise levels within 2 hours of sunrise/sunset). Noise impacts resulting from construction would depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive areas. Potential noise levels from construction equipment are included in the table below.

Equipment	Noise Level (dB)	Equipment	Noise Level (dB)
Drill rig truck	84	Jackhammer	85
Horizontal Boring Hydraulic Jack	80	Large Generator	82
Front-end Loader or Backhoe	80	Paver or Roller	85
Excavator	85	Dump Truck	84

Source: Federal Highway Administration, 2005.

Sound from a point source is known to attenuate, or reduce, at a rate of 6 dB for each doubling of distance. For example, a noise level of 84 dB as measured at 50 feet from the noise source would attenuate to 78 dB at 100 feet from the source and to 72 dB at 200 feet from the source to the receptor. Based on the reference noise levels, above, the noise levels generated by construction equipment at the project site may reach a maximum of approximately 85 dB at 50 feet during site

excavation, and construction which exceeds the Short Term Noise Standards set by the Humboldt County General Plan.

The nearest dwellings are approximately 400 to 500 feet away from the proposed construction site. A standard stick built house can decrease noises from outside sources by 15dB[29]. The combination of distance from the construction site and decrease from household walls decreases the effect of the short term construction noise to within normally accepted levels of approximately 46dB.

Operational noise comes from an existing booster station and other minor electrical equipment required for operation. No new additional equipment is proposed for operations and as such, there will be no change from existing conditions.

The project is not anticipated to generate substantial increases in noise levels in excess of established standards. Since noise from construction activities will be limited to permitted hours, temporary in nature, and attenuated to within acceptable levels for the current rural residential land designation; and operational noise levels are very limited and not expected to change from existing conditions, effects from the project will be **less than significant**.

b) The project is not expected to generate unusual ground borne vibration or ground borne noise levels. Construction activities typically create a small increase in ground borne vibrations, but the vibration level is rarely significant and diminishes rapidly with distance from the construction equipment unless unusual geological conditions are present. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Construction equipment and construction operations for the project would be similar to construction operations at many construction sites. Vibrations may be slightly perceptible but would be unlikely to cause damage to any structure. As there are no unusual geological conditions within the project area and residential households are located approximately 400 feet or more from the project site, there will **be less than significant** impacts from ground borne vibrations.

c) The project site is located approximately 2.5 miles from the Arcata-Eureka airport (California Redwood Coast-Humboldt County Airport). As such, the project is not located within the vicinity of an airport and would not expose people residing or working in the project area to excessive airport-related noise levels, and **no impact** would occur.

POPULATION AND HOUSING	**Potentially Significant**	**Less Than Significant with Mitigation**	**Less Than Significant**	**No Impact**
Would the project:				
a) Induce substantial unplanned population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X

[29] MCP, Noise. December 2002.

POPULATION AND HOUSING	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Setting

McKinleyville is the most populated unincorporated area in Humboldt County and is one of the fastest growing communities in the county. The 2019 American Community Survey (ACS) reported that McKinleyville Census Designated Place had a population of approximately 17,208. Overall, the County is anticipated to have a low growth rate of 0.25% from 2016 – 2025[30]. Utilizing the 2019 ACS estimate and a 0.25% growth rate, there could be a population of approximately 17,700 by 2030.

In the recent past, unincorporated Humboldt County has seen limited housing development and has been unable to meet estimated housing needs. This is largely due to the fees associated with new construction[31]. The 2019 ACS estimated 6,973 households in McKinleyville which is an increase of 400 units from 2010 decennial census data. In an effort to help increase housing development, the County has developed numerous policies and implementation measures as part of their 2019 Housing Element Update. This includes the following:

H-IM66. Expand Public Water and Sewer Capacity for Housing. The County shall work with community service districts to identify and overcome constraints to providing service for housing, including but not limited to the Redway Community Services District ("RCSD") …. The County shall also work with the McKinleyville Community Services District (MCSD) to identify capacity constraints and develop phasing plans to allow development within the limits of utility constraints and work to pursue funding mechanisms for the MCSD to design and implement capacity improvements.

Discussion

a,b) The project involves - the addition of a new water storage reservoir to an existing water distribution system. This is in compliance with Housing Element Implementation Measure H-IM66 listed above as the project can be considered a capacity improvement. However, the project does not create any housing or necessitate the development of housing. It would not result in the extension of utilities or roads or other infrastructure into outlying areas and would not directly or indirectly lead to the development of new sites that would induce population growth. The project would not result in the displacement of any housing or people. **No impact** would occur.

[30] Humboldt County General Plan, Land Use Element, Section 4.2.2 County Population Trends. October 23, 2017.
[31] Humboldt County General Plan, 2019 Housing Element, Section 8.3.1.

PUBLIC SERVICES	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?				X
b) Police protection?				X
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X

Setting

For fire protection services, the project area is served by the Arcata Fire Protection District (FPD). The Arcata FPD provides structural fire protection and emergency services to McKinleyville and Arcata and surrounding areas. The McKinleyville Station is located approximately two miles from the project site at 2149 Central Avenue.

The Humboldt County Sheriff's Office provides a variety of public safety (court services, corrections, emergency operations) and law enforcement services throughout the county including McKinleyville. The Humboldt County Sheriff's McKinleyville Station provides law enforcement services to the residents of McKinleyville, Fieldbrook, Westhaven, Orick and all other unincorporated areas North of Arcata, and is located at 1608 Pickett Road in McKinleyville.

The school districts serving the project area include McKinleyville Union School District (elementary and middle school) and Northern Humboldt Union High School District (high school). Schools within approximately two miles of the project site include: Morris Elementary School, McKinleyville High School, and McKinleyville Middle School.

MCSD provides recreational facilities and programs throughout the community. Park and recreation facilities (including open space) nearest the project site include Azalea State Nature Preserve and the Hammond Trail which are managed by the County of Humboldt. The nearest library to the project site is the McKinleyville Library located at 1606 Pickett Road in Pierson Park in McKinleyville which is also managed by the County of Humboldt.

Discussion

a-e) As discussed in the Population and Housing section, the project would not directly or indirectly induce population growth nor create new demand for services. The Project will not necessitate new or physically altered government facilities. Therefore, the project would have no impact on the service ratios, response times, or other performance objectives of schools, parks, and other public facilities and services that are based on population growth. **No impact** would occur.

RECREATION	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Setting

Reference the section above titled "Public Services" for information on recreational resources in McKinleyville. The project site does not include any recreational facilities.

Discussion

a,b) As discussed in the section titled Population and Housing the project would not directly or indirectly induce substantial population growth nor would the project expand services. Therefore, the project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur or be accelerated. The project would not include recreational facilities. Therefore, the project would not require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. **No impact** would occur.

TRANSPORTATION	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?			X	
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?			X	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d) Result in inadequate emergency access?				X

Physical Setting

The project site is located within a developed residential area of McKinleyville just off Cochran Road and accessed by Hilltop Lane, a private residential road that leads to a residence south of the project site. Cochran Road, located in the southeastern part of McKinleyville, runs east west and intersects with Azalea Avenue. The project site is approximately 2.0 road miles from the intersection of Sutter Road and Central Avenue. The site can also be accessed from the south by way of North Bank Road which is approximately 1.3 road miles away along Azalea Avenue. Access includes rural residential two lane stripped and unstripped roadways that provide access to low density residential neighborhoods.

The McKinleyville Community Plan under the Humboldt County General Plan shows Sutter Road and Azalea Road as Urban Collectors. Central Avenue is designated an Urban Minor Arterial and North Bank Road is a Rural Major Collector. Cochran Road was shown as part of a proposed Class II or III Bike Route[32] and is currently listed as an intermediate bike route on the Humboldt Bay Area Bike Map[33].

Public transportation services in McKinleyville are provided by Redwood Transit System which operates under the Humboldt Transit Authority. Service is predominantly located along Central Avenue with additional stops located at McKinleyville High School on McKinleyville Avenue and Humboldt County Airport off Airport Road. The project is approximately 2.1 road miles from the nearest service stop located at Central Avenue and School Avenue[34].

Regulatory Setting

The Humboldt County Association of Governments conducts a regular update to the Humboldt County Regional Transportation Plan, which is currently being updated with anticipated adoption in December 2021. The plan serves as a guide for coordinated and efficient development of the transportation system in the region. It also takes into consideration several other regional plans including bike plans, transit development plans, and trails plans to promote an efficient and useful multimodal transportation network for area residents.

In January 2019, the Governor's Office of Planning and Research released comprehensive updates to the CEQA Guidelines, including updates to the Transportation Section, including changing the title of the section from "Transportation and Traffic" to simply "Transportation", and adding a new section regarding determining the significance of a project's transportation impacts (CEQA Guidelines Section 15064.3). The updated guidelines exhibit a clear intent to prioritize infill projects and shift away from congestion-based Level of Service (LOS) standards to Vehicle Miles Traveled (VMT), which more efficiently analyzes a project's energy usage and overall environmental impact. Using VMT also ensures that infill projects, which may cause traffic congestion but also decrease energy inefficiencies, are not penalized.

CEQA Guidelines Section 15064.3. Determining the Significance of Transportation Impacts.

(a) Purpose. This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) (regarding

[32] Humboldt County General Plan, McKinleyville Community Plan, December 2002.
[33] Humboldt County Association of Governments, Humboldt Bay Area Bike Map, April 2018.
[34] Humboldt Transit Authority, Redwood Transit System. Accessed on December 4, 2020 from https://hta.org/agencies/redwood-transit-system/.

roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.

Discussion

a) The McKinleyville Community Plan includes many policies for enhancing roadway safety for all users including pedestrians, cyclists, and equestrian riders. These policies focus on creating safer roadways by improving surfaces, creating better circulation, and encouraging off street parking[35].

The project site will be accessed by roadways that are considered collectors and are part of existing designated bike routes within McKinleyville. There will be an increase of traffic on the roadways from construction vehicles and equipment including concrete mixers, large flatbeds carrying construction equipment and other necessary equipment for staging, grading, and construction of the new reservoir. Increased traffic from oversized vehicles and equipment may have an impact on roadway accessibility for non-motorized users. However, this impact will be intermittent and temporary with no long-term effects. Additionally, equipment will be staged away from main roadways when possible in order to better facilitate access by non-motorized users during construction of the reservoir.

Impacts to traffic and safety along existing roadways and bike path networks will be minimal and temporary. Additionally, the project does not propose any alterations to existing roads, trails, or other non-vehicle paths of travel. As such, the project will not conflict with any policies regarding transportation in the McKinleyville area and a **less than significant impact** will occur.

b) The project would create additional vehicle miles traveled during the construction phase. Since MCSD employees and others associated with operation and maintenance of the existing reservoirs already periodically visit the project site, operation of the project is not anticipated to create any additional VMTs.

Construction of the new reservoir will create additional VMTs due to trips from construction workers and delivery of materials. It is unknown where construction workers would be traveling from and as such it is difficult to estimate the actual number of vehicle miles that will be generated. It is also unknown how many delivery trips will be required to bring all necessary construction materials to the site. However, these trips will only last for the duration of construction which is anticipated to take approximately nine months. After construction is completed, vehicle trips are expected to return to pre-project conditions. As the project will not generate any additional VMTs during operation and construction VMTs will be limited and temporary, impacts to VMTs will be **less than significant**.

c,d) The Project does not propose any modifications to existing roadways or associated infrastructure. A new circular access road will be constructed around the reservoir for maintenance purposes. This roadway will be designed according to current Humboldt County regulations and will not create any hazardous circumstances. As the project does not propose any modifications to local roadways, it will also not create inadequate emergency access. During construction, access roads will be kept clear in the event of an emergency in order to facilitate adequate access. As such, there will be **no impact** from design features, incompatible uses, or inadequate emergency access.

[35] McKinleyville Community Plan, Chapter 4 – Public Services and Facilities. December 2002.

TRIBAL CULTURAL RESOURCES	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project: Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1 (k), or			X	
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American Tribe.			X	

Setting

Wiyot occupation of the Humboldt Bay region preceded Euroamerican history from "time immemorial." The general area has a long history of human use associated with the Mad River including Native American and later with European settlers beginning around 1850.The project area is within the ethnographic territory of the Wiyot and the general area has high potential for archaeological sites.

A Cultural Resource Investigation Report for the project was prepared by Roscoe and Associates Cultural Resources Consultants in the summer of 2020 for the project area or area of potential effect (APE) (RACRC, 2020). The report includes a review of regional archaeological and ethno-geographic literature, historical maps and aerial photography, a project area record search at the California Historical Resources Information System's Northwest Information Center, correspondence with local Native American tribal representatives, and a pedestrian field survey conducted on July 24, 2020. According to the report, "No artifacts, features, or sites were identified in the APE during this investigation". The report also includes recommendations for inadvertent discovery of archaeological material and/or human remains.

Discussion

a, b) Consistent with the requirements of CEQA and the requirements of Public Resources Code section 21080.3.1, MCSD initiated consultation regarding tribal cultural resources pursuant to Assembly Bill (AB) 52 via letter on October 1, 2021, with the Bear River Band of the Rohnerville Rancheria, Blue Lake Rancheria, Cher-Ae Heights Indian Community of the Trinidad Rancheria, and the Wiyot Tribe. MCSD received emails from both the Blue Lake Rancheria and Wiyot Tribe declining AB 52 consultation. As discussed in the *Cultural Resources* section of this document, RACRC found no evidence of tribal or other cultural resources and determined that no impact would result from the project. No tribal cultural resources are known to occur within the project area, therefore, **no impact** to tribal cultural resources will result.

UTILITIES AND SERVICE SYSTEMS	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

Setting

MCSD currently provides water and wastewater services to the McKinleyville area. The water system includes four pressure zones and primary water storage is located at the project site with additional storage located on Norton Road in northern McKinleyville. Electricity is provided by PG&E in association with the Redwood Coast Energy Authority. The site is currently served electricity to support operations of the two existing reservoirs and the McKluski reservoirs located south of the project site on Hewitt Road.

Discussion

a) The project involves expansion of water storage in order to provide adequate backup water supply to the community in the event of a HBMWD supply line break. No additional wastewater or telecommunication facilities will be required to support the project as adequate facilities are already in place.

McKinleyville has an existing stormwater system that is subject to the Humboldt County's Phase II MS4 Permit issued by the State Water Resources Control Board. As discussed under *Hydrology and Water Quality*, stormwater from the site flows to existing stormwater facilities along Cochran Road and down Quali Run Rd. to the northeast of the new reservoir. The existing drainage ditches and culverts will be

adequate to serve the project and no expansion of the system will be required. See *Hydrology and Water Quality Section c* for more information.

The new reservoir and associated telemetry and pumping equipment will create an additional load on the power line currently serving the site. The new load will be relatively small with three tank mixers, valves, instrumentation, cameras, and lights. PG&E will be informed when new loads, about 3 kW for this project, are added to a transformer to assure the existing transformer is properly sized[36]. Based on the existing infrastructure in place and the limited amount of new demand created by the project, impacts will be **less than significant**.

b) MCSD purchases water wholesale from HBMWD. Water is delivered to MCSD through a single 18-inch transmission pipeline buried below the bed of the Mad River. As discussed under *Hydrology and Water Quality Section B*, HBMWD currently has excess water supply under its current water rights allocations and is seeking to find beneficial uses for this water. This indicates that there is ample supply to support regular filling of the new reservoir. As such, there will be **no impact**.

c) The project does not involve any development that would require additional wastewater capacity or construction of facilities that would increase demands from existing developments. As such, there will be **no impact**.

d,e) The project will create construction related solid waste. However, operations will not increase the amount of solid waste above existing levels. During construction and operation of the project, MCSD must comply with all County and State solid waste diversion, reduction, and recycling mandates, including compliance with the Humboldt County Integrated Waste Management Plan. As such, impacts will be **less than significant**.

WILDFIRE	**Potentially Significant**	**Less Than Significant With Mitigation**	**Less Than Significant**	**No Impact**
If located in or near state responsibility areas or lands classified as very high fire severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutants from a wildfire or the uncontrolled spread of wildfire?				X
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X

[36] KJ, Preliminary Design Report. Section 5.5 – Electrical.

WILDFIRE	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage change?				X

Setting

Wildland fire protection in California is the responsibility of either the State, local, or federal government. A State Responsibility Area (SRA) is a legal term defining the area where the State has financial responsibility for wildland fire protection. Incorporated cities and areas of federal ownership are not included. The prevention and suppression of fires in all areas that are not SRAs are primarily the responsibility of local or federal agencies. There are more than 31 million acres in state responsibility area with an estimated 1.7 million people and 750,000 existing homes. Local Responsibility Areas (LRAs) include incorporated cities, cultivated agriculture lands, and portions of the desert. Local responsibility area fire protection is typically provided by: city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government.

The project site is within the Arcata Fire Protection District area and is in a Cal Fire State Responsibility Area (SRA). The Arcata Fire Protection District provides structural fire protection and emergency services to McKinleyville and Arcata and surrounding areas. The McKinleyville Station is located at 2149 Central Avenue, approximately two miles from the project site. According to Humboldt County Web GIS, the project site is in moderate fire hazard severity zones.

Discussion

a) Construction work at the project site would be temporary and roads would still be accessible so as to not impair an adopted emergency plan or emergency evacuation plan by ensuring access in the event of an emergency or evacuation. Therefore, there would be **no impact.**

b-d) The project does not include site-specific modifications that would expose project occupants to pollutants from a wildfire or other uncontrolled spread of wildfire. The project includes installation of a new water storage reservoir that would not exacerbate fire or result in temporary or ongoing impacts to the environment, or expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage change, As such, there would be **no impact**.

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Discussion

Certain mandatory findings of significance must be made to comply with CEQA Guidelines §15065. The proposed project has been analyzed, and it has been determined that it would not:

- Substantially degrade environmental quality;
- Substantially reduce fish or wildlife habitat;
- Cause a fish or wildlife population to fall below self-sustaining levels;
- Threaten to eliminate a plant or animal community;
- Reduce the numbers or range of a rare, threatened, or endangered species;
- Eliminate important examples of the major periods of California history or pre-history;
- Achieve short term goals to the disadvantage of long-term goals;
- Have environmental effects that will directly or indirectly cause substantial adverse effects on human beings; or
- Have possible environmental effects that are individually limited but cumulatively considerable when viewed in connection with past, current, and reasonably anticipated future projects.

The project has been evaluated in this initial study and determined to have no potentially significant unmitigated impacts. With implementation of the proposed mitigation measures all potentially significant impacts would be reduced to less than significant levels.

a) Due to the developed and residential nature of the project site and surrounding land uses, and with implementation of the design elements and Mitigation Measures presented herein, the project as a whole does not have the potential to significantly degrade the quality of the environment, including air quality, fish or wildlife species or their habitat, plant or animal communities, important examples of the major periods of California history or prehistory, geologic resources, hazards, water resources, land use compatibility, noise, traffic movement, or other adverse effects, directly or indirectly, on human beings.

Although the project will have temporary construction impacts to biological resources, impacts will be reduced to a less than significant level with implementation of the following Mitigation Measures:

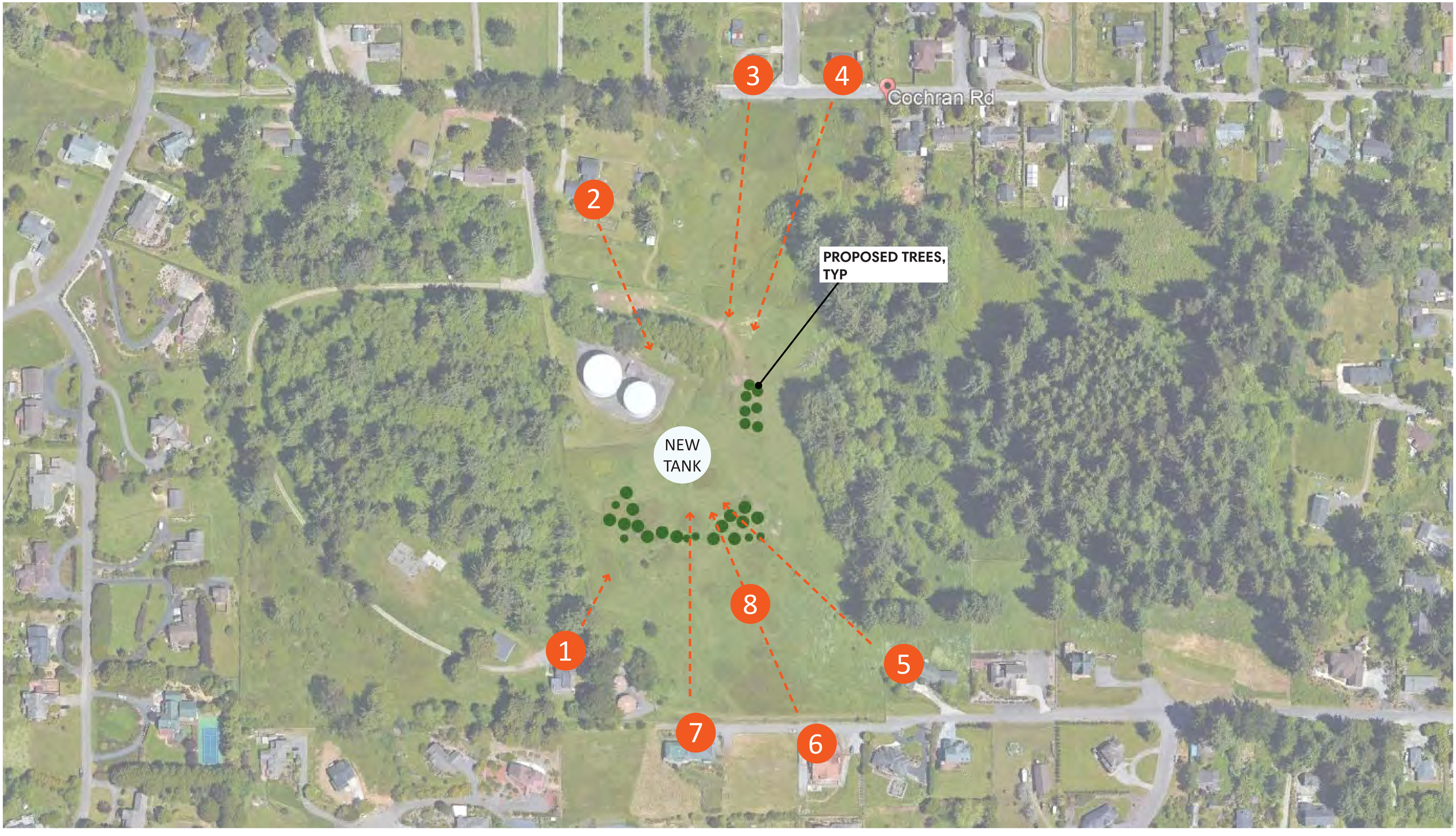
- BIO-1: Sensitive Habitat Demarcation
- BIO-2: Pre-Construction Survey for Humboldt Mountain Beaver
- BIO-3: Pre-Disturbance Surveys for Nesting Birds
- BIO-4: Pre-Disturbance Surveys for Amphibian and Reptile Species of Concern
- BIO-5: Survey for Western Bumble Bee
- BIO-6: Wetland Identification and Demarcation
- BIO-7: Open-Trenching Construction and Restoration
- BIO-8: Stormwater Pollution Prevention Plan
- BIO-9: Construction Monitoring
- BIO-10: Post-Construction Restoration and Revegetation

With incorporation of the mitigation measures listed above, construction impacts will be reduced to a less than significant level. As evaluated in this IS/MND, operation of the Project will not substantially degrade the quality of the environment. The impacts will be less than significant with mitigation.

b) Cumulative impacts are defined as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines § 15355). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. There are no known projects to be considered under cumulative effects with proximity to the proposed project. The project’s individual impacts would not add appreciably to any existing or foreseeable future significant cumulative impact, such as visual quality, historic resources, traffic impacts, or air quality degradation. Incremental impacts, if any, would be small and undetectable. As reported throughout this document, any impacts to which this project would contribute would be mitigated to a less than significant level.

c) The Project has been planned and designed to avoid significant environmental impacts. As discussed in the analysis throughout this IS/MND, the Project would not have environmental effects that would cause substantial adverse direct or indirect effects on human beings.

Appendix A – Viewshed Analysis & Planting Plan



MCKINLEYVILLE WATER RESERVOIR - VIEWSHED ANALYSIS

Kennedy Jenks

Date: April 23, 2021

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rhaa

VIEW 1 KEY MAP

TANK INSTALLATION

EXISTING VIEW

TANK INSTALLATION WITH TREE PLANTING

MCKINLEYVILLE WATER RESERVOIR - VIEW 1

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 2 KEY MAP

EXISTING VIEW

TANK INSTALLATION

MCKINLEYVILLE WATER RESERVOIR - VIEW 2

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 3 KEY MAP

TANK INSTALLATION

EXISTING VIEW

TANK INSTALLATION WITH TREE PLANTING

MCKINLEYVILLE WATER RESERVOIR - VIEW 3

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 4 KEY MAP

EXISTING VIEW

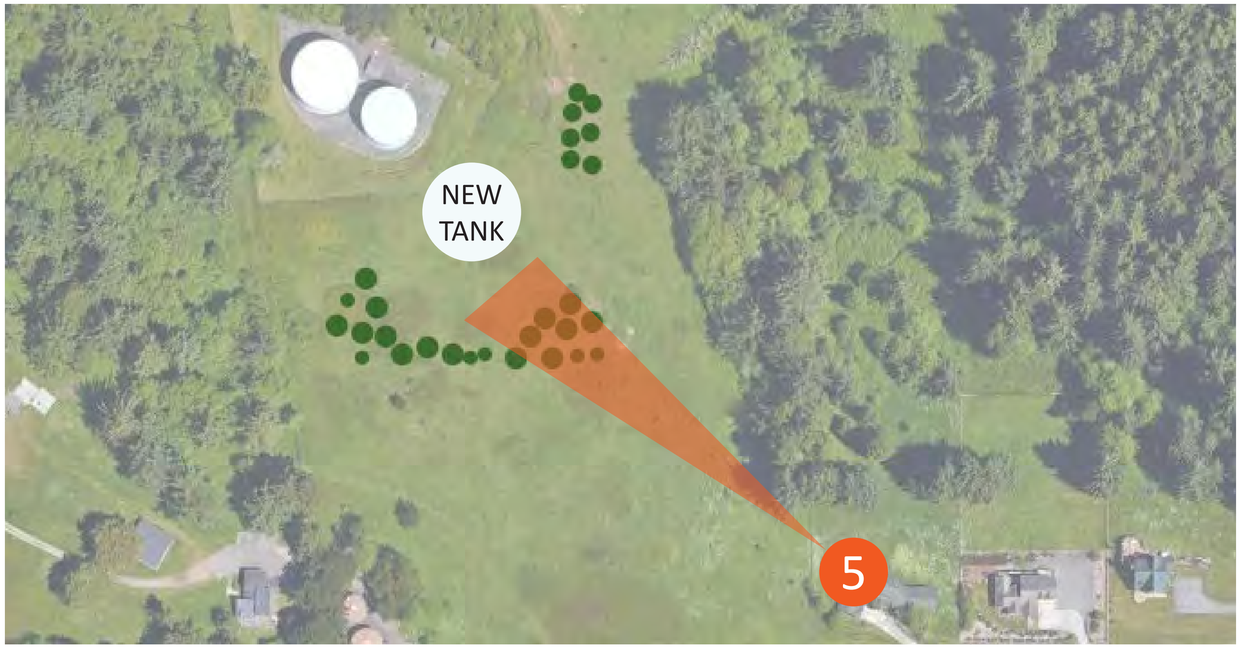
TANK INSTALLATION

MCKINLEYVILLE WATER RESERVOIR - VIEW 4

Kennedy Jenks

Date: April 23, 2021

rhaa



VIEW 5 KEY MAP

TANK INSTALLATION

EXISTING VIEW

TANK INSTALLATION WITH TREE PLANTING

MCKINLEYVILLE WATER RESERVOIR - VIEW 5

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 6 KEY MAP

EXISTING VIEW

TANK INSTALLATION

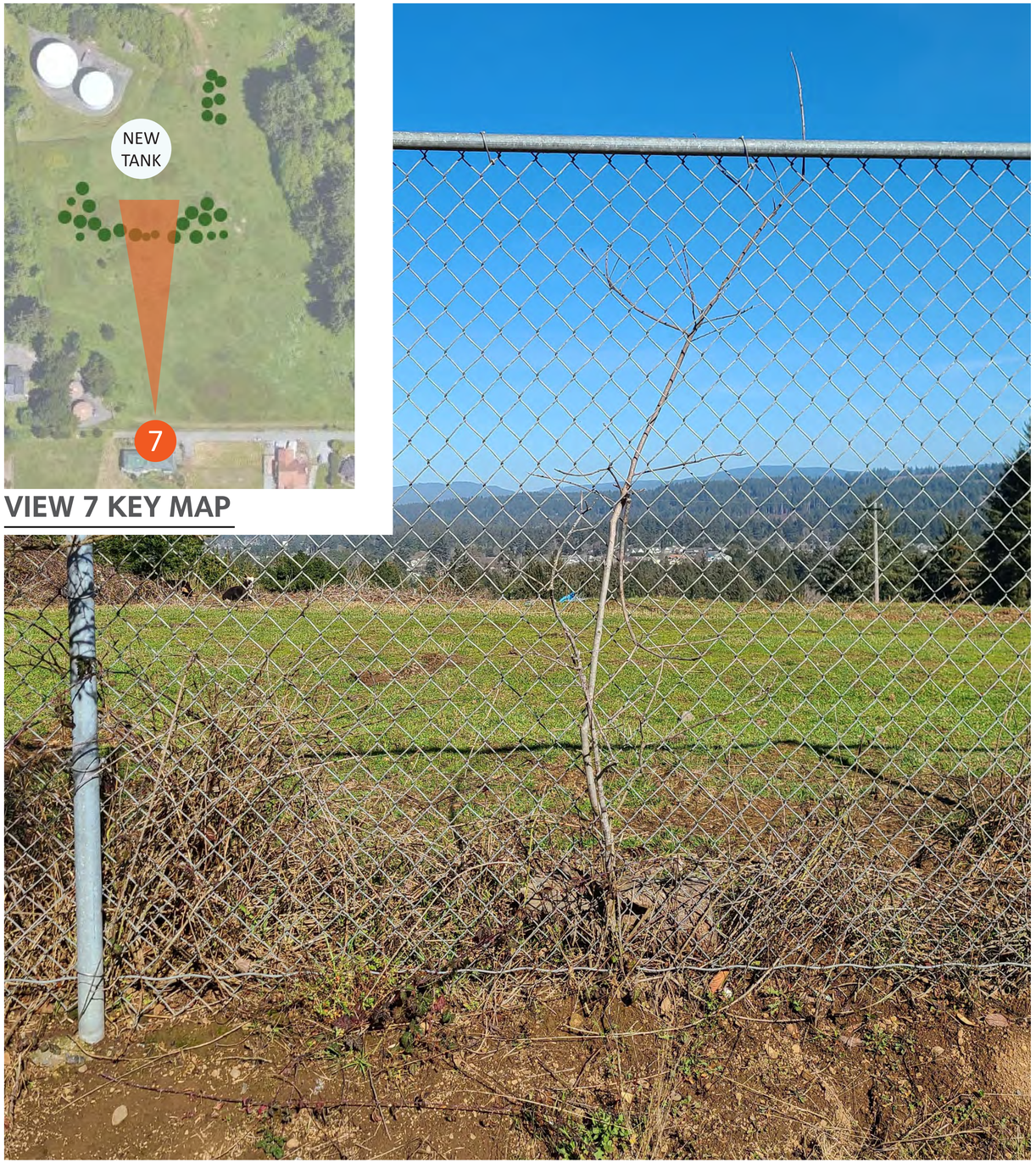
MCKINLEYVILLE WATER RESERVOIR - VIEW 6

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 7 KEY MAP



EXISTING

TANK INSTALLATION

MCKINLEYVILLE WATER RESERVOIR - VIEW 7

Kennedy Jenks

Date: April 23, 2021

rhaa

VIEW 8 KEY MAP

TANK INSTALLATION

EXISTING VIEW

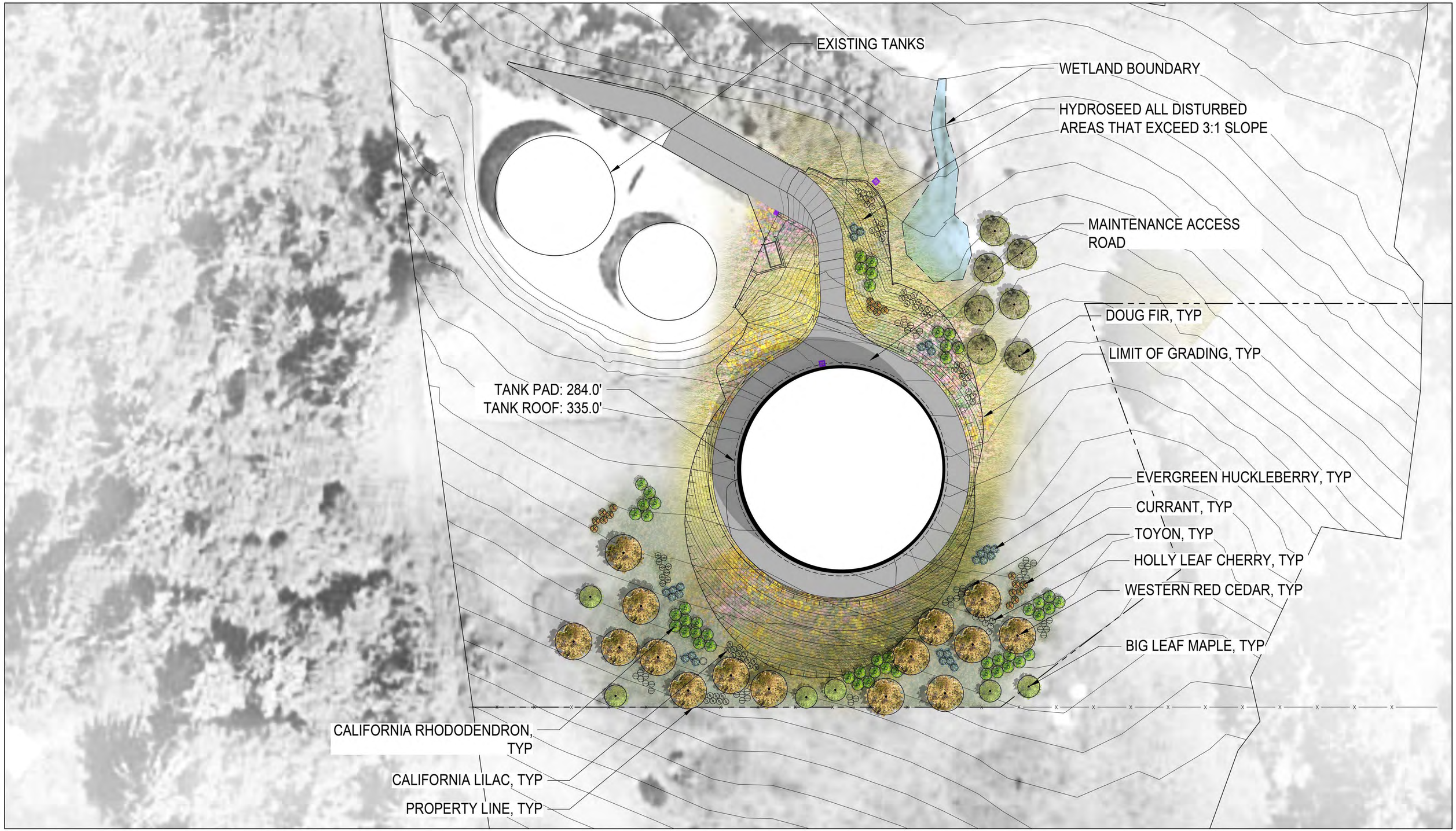
TANK INSTALLATION WITH TREE PLANTING

MCKINLEYVILLE WATER RESERVOIR - VIEW 8

Kennedy Jenks

Date: April 23, 2021

rhaa



MCKINLEYVILLE WATER RESERVOIR - PLANTING PLAN

Kennedy Jenks

Date: April 23, 2021

0 10' 20' 30' 60'

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ACER MACROPHYLLUM
BIG LEAF MAPLE

PSEUDOTSUGA MENZIESII
DOUGLAS FIR

THUJA PLICATA
WESTERN RED CEDAR

TREES

SYM.	ABBR.	SCIENTIFIC NAME	COMMON NAME
	ACE MAC	ACER MACROPHYLLUM	BIG LEAF MAPLE
	PSE MEN	PSEUDOTSUGA MENZIESII	DOUGLAS FIR
	THU PLI	THUJA PLICATA	WESTERN RED CEDAR

SHRUBS

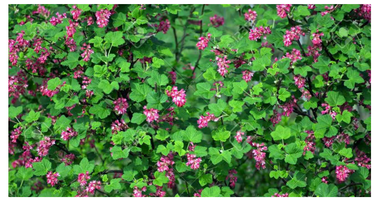
SYM.	ABBR.	SCIENTIFIC NAME	COMMON NAME
	CEA THY	CEANOTHUS THYRSIFLORUS	CALIFORNIA LILAC
	HET ARB	HETEROMELES ARBUTIFOLIA	TOYON
	PRU ILI	PRUNUS ILICIFOLIA	HOLLY LEAF CHERRY
	RHO MAC	RHODODENDRON MACROPHYLLUM	CALIFORNIA RHODODENDRON
	RIB SAN	RIBES SANGUINEUM	RED FLOWERING CURRANT
	VAC OVA	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY

CEANOTHUS THYRSIFLORUS
CALIFORNIA LILAC

HETEROMELES ARBUTIFOLIA
TOYON

PRUNUS ILICIFOLIA
HOLLY LEAF CHERRY

RHODODENDRON MACROPHYLLUM
CALIFORNIA RHODODENDRON



RIBES SANGUINEUM
RED FLOWERING CURRANT

VACCINIUM OVATUM
EVERGREEN HUCKLEBERRY

HYDROSEED MIX

SYM.	ABBR.	SCIENTIFIC NAME	COMMON NAME
	BRO CAR	BROMUS CARINATUS	NATIVE CALIFORNIA BROME
	CLA AMO	CLARKIA AMOENA SSP AMOENA	
	ELY GLA	ELYMUS GLAUCUS	BLUE WILD RYE
	ESC CAL	ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY
	FES IDA	FESTUCA IDAHOENSIS	IDAHO FESCUE
	HOR BRA	HORDEUM BRACHYANTHERUM SSP. CALIFORNICUM	CALIFORNIA BARLEY
	LAS CAL	LASTHENIA CALIFORNICA SSP. CALIFORNICUM	GOLDFIELDS
	LAY PLA	LAYIA PLATYGLOSSA	TIDY TIPS
	LUP AFF	LUPINIUS AFFINIS	
	POA SEC	POA SECUNDA	NATIVE PINE BLUEGRASS
	STI PUL	STIPA PULCHRA	PURPLE NEEDLEGRASS
	TRI VER	TRIPHYSARIA VERSICOLOR SSP. VERSICOLOR	YELLOW OWL'S CLOVER

MCKINLEYVILLE WATER RESERVOIR - PLANTING PALETTE

Kennedy Jenks

Date: April 23, 2021

rhaa

Appendix B – CalEEMod Project Report

MCSD 4.5MG Reservoir - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

MCSD 4.5MG Reservoir

Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	36.00	1000sqft	0.83	36,000.00	0
City Park	8.67	Acre	8.67	377,665.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - LI is closest land use type. LI area was determined using the footprint of the reservoir (approx 26,000 sq ft for tank, road, and swale), addtional entry roadway (approx 6,000 sq ft), and overflow pipeline (approx 4,000 sq ft) for a total of 36,000 sq ft. Rest of lot will be open space.

Construction Phase - Estimated constuction timeline is 12 months.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - Area of disturbance will be approximatley 1 acre. Rest of site is open space and undisturbed.

Stationary Sources - Emergency Generators and Fire Pumps -

Land Use Change - Forest and grasslands will be returned to pre-project conditions where possible.

Sequestration - Tree planting done to reduce visual impacts of new reservoir.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblSequestration	NumberOfNewTrees	0.00	7.00
tblSequestration	NumberOfNewTrees	0.00	15.00
tblSequestration	NumberOfNewTrees	0.00	6.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,875.00

2.0 Emissions Summary

MCSD 4.5MG Reservoir - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2157	1.8988	1.7392	4.3100e-003	0.2792	0.0761	0.3553	0.1148	0.0712	0.1860	0.0000	389.3660	389.3660	0.0556	0.0222	397.3759
2023	0.5980	1.3173	1.6551	3.7000e-003	0.1168	0.0525	0.1693	0.0318	0.0493	0.0811	0.0000	332.3555	332.3555	0.0454	0.0155	338.1092
Maximum	**0.5980**	**1.8988**	**1.7392**	**4.3100e-003**	**0.2792**	**0.0761**	**0.3553**	**0.1148**	**0.0712**	**0.1860**	**0.0000**	**389.3660**	**389.3660**	**0.0556**	**0.0222**	**397.3759**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2157	1.8988	1.7392	4.3100e-003	0.1862	0.0761	0.2623	0.0682	0.0712	0.1393	0.0000	389.3657	389.3657	0.0556	0.0222	397.3757
2023	0.5980	1.3173	1.6551	3.7000e-003	0.1168	0.0525	0.1693	0.0318	0.0493	0.0811	0.0000	332.3553	332.3553	0.0454	0.0155	338.1090
Maximum	**0.5980**	**1.8988**	**1.7392**	**4.3100e-003**	**0.1862**	**0.0761**	**0.2623**	**0.0682**	**0.0712**	**0.1393**	**0.0000**	**389.3657**	**389.3657**	**0.0556**	**0.0222**	**397.3757**

MCSD 4.5MG Reservoir - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	23.49	0.00	17.73	31.81	0.00	17.46	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2022	8-31-2022	1.0722	1.0722
2	9-1-2022	11-30-2022	0.7780	0.7780
3	12-1-2022	2-28-2023	0.7260	0.7260
4	3-1-2023	5-31-2023	0.7067	0.7067
5	6-1-2023	8-31-2023	0.7544	0.7544
		Highest	1.0722	1.0722

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1859	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Energy	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	20.7416	20.7416	2.4000e-003	4.0000e-004	20.9204
Mobile	0.1339	0.2376	1.1899	1.9700e-003	0.1804	2.4700e-003	0.1829	0.0484	2.3300e-003	0.0508	0.0000	181.8347	181.8347	0.0143	0.0113	185.5584
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	9.2138	0.0000	9.2138	0.5445	0.0000	22.8267
Water						0.0000	0.0000		0.0000	0.0000	2.6411	7.5131	10.1543	0.2725	6.5500e-003	18.9191
Total	**0.3205**	**0.2437**	**1.1954**	**2.0100e-003**	**0.1804**	**2.9400e-003**	**0.1833**	**0.0484**	**2.8000e-003**	**0.0512**	**11.8549**	**210.0903**	**221.9452**	**0.8338**	**0.0182**	**248.2253**

MCSD 4.5MG Reservoir - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1859	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Energy	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	20.7416	20.7416	2.4000e-003	4.0000e-004	20.9204
Mobile	0.1339	0.2376	1.1899	1.9700e-003	0.1804	2.4700e-003	0.1829	0.0484	2.3300e-003	0.0508	0.0000	181.8347	181.8347	0.0143	0.0113	185.5584
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	9.2138	0.0000	9.2138	0.5445	0.0000	22.8267
Water						0.0000	0.0000		0.0000	0.0000	2.6411	7.5131	10.1543	0.2725	6.5500e-003	18.9191
Total	**0.3205**	**0.2437**	**1.1954**	**2.0100e-003**	**0.1804**	**2.9400e-003**	**0.1833**	**0.0484**	**2.8000e-003**	**0.0512**	**11.8549**	**210.0903**	**221.9452**	**0.8338**	**0.0182**	**248.2253**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	19.3740
Vegetation Land Change	-4.3100
Total	**15.0640**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2022	6/28/2022	5	20	
2	Site Preparation	Site Preparation	6/29/2022	7/12/2022	5	10	
3	Grading	Grading	7/13/2022	8/9/2022	5	20	
4	Building Construction	Building Construction	8/10/2022	6/27/2023	5	230	
5	Paving	Paving	6/28/2023	7/25/2023	5	20	
6	Architectural Coating	Architectural Coating	7/26/2023	8/22/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

MCSD 4.5MG Reservoir - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 54,000; Non-Residential Outdoor: 18,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading	6	15.00	0.00	1,875.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	174.00	68.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.0000e-004	5.4900e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1700e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9986	0.9986	5.0000e-005	4.0000e-005	1.0125
Total	**8.3000e-004**	**6.0000e-004**	**5.4900e-003**	**1.0000e-005**	**1.1600e-003**	**1.0000e-005**	**1.1700e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9986**	**0.9986**	**5.0000e-005**	**4.0000e-005**	**1.0125**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.0000e-004	5.4900e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1700e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9986	0.9986	5.0000e-005	4.0000e-005	1.0125
Total	**8.3000e-004**	**6.0000e-004**	**5.4900e-003**	**1.0000e-005**	**1.1600e-003**	**1.0000e-005**	**1.1700e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9986**	**0.9986**	**5.0000e-005**	**4.0000e-005**	**1.0125**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0983	0.0000	0.0983	0.0505	0.0000	0.0505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0983**	**8.0600e-003**	**0.1064**	**0.0505**	**7.4200e-003**	**0.0579**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.2900e-003	1.0000e-005	6.9000e-004	1.0000e-005	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5992	0.5992	3.0000e-005	3.0000e-005	0.6075
Total	**5.0000e-004**	**3.6000e-004**	**3.2900e-003**	**1.0000e-005**	**6.9000e-004**	**1.0000e-005**	**7.0000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5992**	**0.5992**	**3.0000e-005**	**3.0000e-005**	**0.6075**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0442	0.0000	0.0442	0.0227	0.0000	0.0227	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0442**	**8.0600e-003**	**0.0523**	**0.0227**	**7.4200e-003**	**0.0302**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.2900e-003	1.0000e-005	6.9000e-004	1.0000e-005	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5992	0.5992	3.0000e-005	3.0000e-005	0.6075
Total	**5.0000e-004**	**3.6000e-004**	**3.2900e-003**	**1.0000e-005**	**6.9000e-004**	**1.0000e-005**	**7.0000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5992**	**0.5992**	**3.0000e-005**	**3.0000e-005**	**0.6075**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0708	0.0000	0.0708	0.0343	0.0000	0.0343	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0548	26.0548	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0708**	**9.4100e-003**	**0.0802**	**0.0343**	**8.6600e-003**	**0.0429**	**0.0000**	**26.0548**	**26.0548**	**8.4300e-003**	**0.0000**	**26.2654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1500e-003	0.1883	0.0293	6.0000e-004	0.0155	1.7200e-003	0.0172	4.2600e-003	1.6400e-003	5.9000e-003	0.0000	57.4128	57.4128	1.8000e-004	9.0200e-003	60.1060
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.0000e-004	5.4900e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1700e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9986	0.9986	5.0000e-005	4.0000e-005	1.0125
Total	**4.9800e-003**	**0.1889**	**0.0348**	**6.1000e-004**	**0.0166**	**1.7300e-003**	**0.0184**	**4.5700e-003**	**1.6500e-003**	**6.2200e-003**	**0.0000**	**58.4114**	**58.4114**	**2.3000e-004**	**9.0600e-003**	**61.1185**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0319	0.0000	0.0319	0.0154	0.0000	0.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0319**	**9.4100e-003**	**0.0413**	**0.0154**	**8.6600e-003**	**0.0241**	**0.0000**	**26.0547**	**26.0547**	**8.4300e-003**	**0.0000**	**26.2654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1500e-003	0.1883	0.0293	6.0000e-004	0.0155	1.7200e-003	0.0172	4.2600e-003	1.6400e-003	5.9000e-003	0.0000	57.4128	57.4128	1.8000e-004	9.0200e-003	60.1060
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.0000e-004	5.4900e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1700e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9986	0.9986	5.0000e-005	4.0000e-005	1.0125
Total	**4.9800e-003**	**0.1889**	**0.0348**	**6.1000e-004**	**0.0166**	**1.7300e-003**	**0.0184**	**4.5700e-003**	**1.6500e-003**	**6.2200e-003**	**0.0000**	**58.4114**	**58.4114**	**2.3000e-004**	**9.0600e-003**	**61.1185**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0879	0.8042	0.8427	1.3900e-003		0.0417	0.0417		0.0392	0.0392	0.0000	119.3385	119.3385	0.0286	0.0000	120.0533
Total	**0.0879**	**0.8042**	**0.8427**	**1.3900e-003**		**0.0417**	**0.0417**		**0.0392**	**0.0392**	**0.0000**	**119.3385**	**119.3385**	**0.0286**	**0.0000**	**120.0533**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0103	0.2380	0.0681	7.7000e-004	0.0225	2.3300e-003	0.0248	6.5200e-003	2.2300e-003	8.7600e-003	0.0000	73.5970	73.5970	4.5000e-004	0.0106	76.7510
Worker	0.0495	0.0356	0.3278	6.5000e-004	0.0691	5.0000e-004	0.0696	0.0184	4.6000e-004	0.0189	0.0000	59.6566	59.6566	2.9200e-003	2.5300e-003	60.4840
Total	**0.0598**	**0.2736**	**0.3958**	**1.4200e-003**	**0.0916**	**2.8300e-003**	**0.0944**	**0.0249**	**2.6900e-003**	**0.0276**	**0.0000**	**133.2536**	**133.2536**	**3.3700e-003**	**0.0131**	**137.2350**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0879	0.8042	0.8427	1.3900e-003		0.0417	0.0417		0.0392	0.0392	0.0000	119.3384	119.3384	0.0286	0.0000	120.0531
Total	**0.0879**	**0.8042**	**0.8427**	**1.3900e-003**		**0.0417**	**0.0417**		**0.0392**	**0.0392**	**0.0000**	**119.3384**	**119.3384**	**0.0286**	**0.0000**	**120.0531**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0103	0.2380	0.0681	7.7000e-004	0.0225	2.3300e-003	0.0248	6.5200e-003	2.2300e-003	8.7600e-003	0.0000	73.5970	73.5970	4.5000e-004	0.0106	76.7510
Worker	0.0495	0.0356	0.3278	6.5000e-004	0.0691	5.0000e-004	0.0696	0.0184	4.6000e-004	0.0189	0.0000	59.6566	59.6566	2.9200e-003	2.5300e-003	60.4840
Total	**0.0598**	**0.2736**	**0.3958**	**1.4200e-003**	**0.0916**	**2.8300e-003**	**0.0944**	**0.0249**	**2.6900e-003**	**0.0276**	**0.0000**	**133.2536**	**133.2536**	**3.3700e-003**	**0.0131**	**137.2350**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0999	0.9134	1.0315	1.7100e-003		0.0444	0.0444		0.0418	0.0418	0.0000	147.1960	147.1960	0.0350	0.0000	148.0714
Total	**0.0999**	**0.9134**	**1.0315**	**1.7100e-003**		**0.0444**	**0.0444**		**0.0418**	**0.0418**	**0.0000**	**147.1960**	**147.1960**	**0.0350**	**0.0000**	**148.0714**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8600e-003	0.2482	0.0748	9.2000e-004	0.0277	1.6300e-003	0.0294	8.0400e-003	1.5600e-003	9.6000e-003	0.0000	87.9563	87.9563	3.9000e-004	0.0125	91.6916
Worker	0.0573	0.0389	0.3681	7.8000e-004	0.0852	5.7000e-004	0.0858	0.0227	5.3000e-004	0.0232	0.0000	71.3924	71.3924	3.2600e-003	2.8600e-003	72.3273
Total	**0.0662**	**0.2871**	**0.4430**	**1.7000e-003**	**0.1129**	**2.2000e-003**	**0.1151**	**0.0308**	**2.0900e-003**	**0.0328**	**0.0000**	**159.3486**	**159.3486**	**3.6500e-003**	**0.0154**	**164.0189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0999	0.9134	1.0315	1.7100e-003		0.0444	0.0444		0.0418	0.0418	0.0000	147.1958	147.1958	0.0350	0.0000	148.0712
Total	**0.0999**	**0.9134**	**1.0315**	**1.7100e-003**		**0.0444**	**0.0444**		**0.0418**	**0.0418**	**0.0000**	**147.1958**	**147.1958**	**0.0350**	**0.0000**	**148.0712**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8600e-003	0.2482	0.0748	9.2000e-004	0.0277	1.6300e-003	0.0294	8.0400e-003	1.5600e-003	9.6000e-003	0.0000	87.9563	87.9563	3.9000e-004	0.0125	91.6916
Worker	0.0573	0.0389	0.3681	7.8000e-004	0.0852	5.7000e-004	0.0858	0.0227	5.3000e-004	0.0232	0.0000	71.3924	71.3924	3.2600e-003	2.8600e-003	72.3273
Total	**0.0662**	**0.2871**	**0.4430**	**1.7000e-003**	**0.1129**	**2.2000e-003**	**0.1151**	**0.0308**	**2.0900e-003**	**0.0328**	**0.0000**	**159.3486**	**159.3486**	**3.6500e-003**	**0.0154**	**164.0189**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.3000e-004	5.0000e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1600e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9692	0.9692	4.0000e-005	4.0000e-005	0.9819
Total	**7.8000e-004**	**5.3000e-004**	**5.0000e-003**	**1.0000e-005**	**1.1600e-003**	**1.0000e-005**	**1.1600e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9692**	**0.9692**	**4.0000e-005**	**4.0000e-005**	**0.9819**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.3000e-004	5.0000e-003	1.0000e-005	1.1600e-003	1.0000e-005	1.1600e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9692	0.9692	4.0000e-005	4.0000e-005	0.9819
Total	**7.8000e-004**	**5.3000e-004**	**5.0000e-003**	**1.0000e-005**	**1.1600e-003**	**1.0000e-005**	**1.1600e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9692**	**0.9692**	**4.0000e-005**	**4.0000e-005**	**0.9819**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.4191**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	1.2300e-003	0.0117	2.0000e-005	2.7000e-003	2.0000e-005	2.7200e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.2615	2.2615	1.0000e-004	9.0000e-005	2.2911
Total	**1.8200e-003**	**1.2300e-003**	**0.0117**	**2.0000e-005**	**2.7000e-003**	**2.0000e-005**	**2.7200e-003**	**7.2000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.2615**	**2.2615**	**1.0000e-004**	**9.0000e-005**	**2.2911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.4191**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	1.2300e-003	0.0117	2.0000e-005	2.7000e-003	2.0000e-005	2.7200e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.2615	2.2615	1.0000e-004	9.0000e-005	2.2911
Total	**1.8200e-003**	**1.2300e-003**	**0.0117**	**2.0000e-005**	**2.7000e-003**	**2.0000e-005**	**2.7200e-003**	**7.2000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.2615**	**2.2615**	**1.0000e-004**	**9.0000e-005**	**2.2911**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1339	0.2376	1.1899	1.9700e-003	0.1804	2.4700e-003	0.1829	0.0484	2.3300e-003	0.0508	0.0000	181.8347	181.8347	0.0143	0.0113	185.5584
Unmitigated	0.1339	0.2376	1.1899	1.9700e-003	0.1804	2.4700e-003	0.1829	0.0484	2.3300e-003	0.0508	0.0000	181.8347	181.8347	0.0143	0.0113	185.5584

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	6.76	16.99	18.99	21,286	21,286
General Light Industry	178.56	71.64	180.00	477,315	477,315
Total	185.32	88.63	198.99	498,601	498,601

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.443629	0.069650	0.207187	0.154075	0.057336	0.011288	0.006778	0.008856	0.000975	0.000221	0.034425	0.001490	0.004089
General Light Industry	0.443629	0.069650	0.207187	0.154075	0.057336	0.011288	0.006778	0.008856	0.000975	0.000221	0.034425	0.001490	0.004089

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	14.0562	14.0562	2.2700e-003	2.8000e-004	14.1952
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	14.0562	14.0562	2.2700e-003	2.8000e-004	14.1952
NaturalGas Mitigated	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.6854	6.6854	1.3000e-004	1.2000e-004	6.7252
NaturalGas Unmitigated	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.6854	6.6854	1.3000e-004	1.2000e-004	6.7252

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	125280	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.6854	6.6854	1.3000e-004	1.2000e-004	6.7252
Total		**6.8000e-004**	**6.1400e-003**	**5.1600e-003**	**4.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**6.6854**	**6.6854**	**1.3000e-004**	**1.2000e-004**	**6.7252**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	125280	6.8000e-004	6.1400e-003	5.1600e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.6854	6.6854	1.3000e-004	1.2000e-004	6.7252
Total		**6.8000e-004**	**6.1400e-003**	**5.1600e-003**	**4.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**6.6854**	**6.6854**	**1.3000e-004**	**1.2000e-004**	**6.7252**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	151920	14.0562	2.2700e-003	2.8000e-004	14.1952
Total		**14.0562**	**2.2700e-003**	**2.8000e-004**	**14.1952**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	151920	14.0562	2.2700e-003	2.8000e-004	14.1952
Total		**14.0562**	**2.2700e-003**	**2.8000e-004**	**14.1952**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1859	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Unmitigated	0.1859	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0417					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Total	**0.1859**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.0000e-004**	**8.0000e-004**	**0.0000**	**0.0000**	**8.5000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0417					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Total	**0.1859**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.0000e-004**	**8.0000e-004**	**0.0000**	**0.0000**	**8.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.1543	0.2725	6.5500e-003	18.9191
Unmitigated	10.1543	0.2725	6.5500e-003	18.9191

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 10.3301	3.3452	5.4000e-004	7.0000e-005	3.3783
General Light Industry	8.325 / 0	6.8090	0.2719	6.4900e-003	15.5408
Total		**10.1543**	**0.2725**	**6.5600e-003**	**18.9191**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 10.3301	3.3452	5.4000e-004	7.0000e-005	3.3783
General Light Industry	8.325 / 0	6.8090	0.2719	6.4900e-003	15.5408
Total		**10.1543**	**0.2725**	**6.5600e-003**	**18.9191**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.2138	0.5445	0.0000	22.8267
Unmitigated	9.2138	0.5445	0.0000	22.8267

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.75	0.1522	9.0000e-003	0.0000	0.3772
General Light Industry	44.64	9.0615	0.5355	0.0000	22.4495
Total		**9.2138**	**0.5445**	**0.0000**	**22.8267**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.75	0.1522	9.0000e-003	0.0000	0.3772
General Light Industry	44.64	9.0615	0.5355	0.0000	22.4495
Total		**9.2138**	**0.5445**	**0.0000**	**22.8267**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	0	0	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (0 - 11 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	15.0640	0.0000	0.0000	15.0640

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	5 / 4	-4.3100	0.0000	0.0000	-4.3100
Trees	3.75 / 3.75	0.0000	0.0000	0.0000	0.0000
Total		**-4.3100**	**0.0000**	**0.0000**	**-4.3100**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Cedar/Larch	15	7.9200	0.0000	0.0000	7.9200
Douglas Fir	7	6.2580	0.0000	0.0000	6.2580
Soft Maple	6	5.1960	0.0000	0.0000	5.1960
Total		**19.3740**	**0.0000**	**0.0000**	**19.3740**

Appendix C – Biological Resource Assessment

Biological Resource Assessment

McKinleyville Community Services District 4.5MG Water Reservoir Project

Humboldt County, California

Prepared for Planwest Partners, Inc.
1125 16th Street
Arcata, California
95521

Submitted: June 28, 2021

J.B. Lovelace & Associates
HC 69, Box 38
Covelo, CA 95428
www.jblovelace.com

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Summary

The McKinleyville Community Services District (MCSD) has secured funding through a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant being administered by the grant recipient, California Office of Emergency Services (CAL-OES), to increase the seismic resiliency of MCSD's municipal water delivery system. Towards that end MCSD is proposing the addition of a new 4.5 million-gallon (MG) water storage reservoir adjacent to two existing water storage tanks in the southern portion of the unincorporated township of McKinleyville, California (Humboldt County). Construction of the new water reservoir would help ensure MCSD's ability to continue providing water to its customers should the system's connection to the regional wholesale water provider, Humboldt Bay Municipal Water District (HBMWD), be lost due to a seismic event.

In the summer of 2020, J.B. Lovelace & Associates was engaged to conduct a biological resource assessment at the proposed project location (Humboldt County APNs 509-021-045 and 046) to evaluate the potential for the proposed project to affect federal- and/or state-protected sensitive biological resources. Based on a combination of field reconnaissance on June 30, 2020 and a review of relevant scientific literature and natural resource database occurrence records, it was determined that suitable habitat exists within the project area for one federal and state Endangered plant, *Lilium occidentale* ("western lily") as well as other special status botanical species. Floristically appropriate botanical surveys were performed during the period July 26–27, 2020 and on April 22, 2021 for all special status botanical species potentially occurring within the proposed project area. One occurrence of the rare deciduous shrub, *Ribes laxiflorum* ("trailing black currant") was identified within the coniferous forest along the northeastern project area boundary. No other special status botanical species were encountered during our fieldwork.

Four California Sensitive Natural Communities were identified at the site. Three of these are associated with wetland habitats. The vegetation composition of these communities is addressed herein, and a more thorough discussion of wetland-specific methods, findings, assessments, and recommendations are provided elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021), being prepared concurrently. The fourth vegetation community is currently being reassessed and the revised description and downgraded conservation rating (pending, CNPS 2021) indicate that the variant encountered within the proposed project area does not warrant consideration as a Sensitive Natural Community at this time.

Assessment of habitat conditions in the immediate vicinity of the project area revealed potentially suitable habitat for numerous special status wildlife species, as well as nesting raptors and/or other migratory birds that have reasonable potential to occur at the site. Maturing coniferous forest at and adjacent to the parcels of interest was initially considered for the potential to support two federal- and state-listed wildlife species (i.e., Marbled Murrelet, *Brachyramphus marmoratus* and Northern Spotted Owl, *Strix occidentalis caurina*) but this habitat was determined to be too small in area, too displaced from larger similar habitats, and lacking in sufficient stand-structural complexity to be potentially suitable for either.

No focused special status wildlife surveys were conducted as part of this effort. However, seven special status wildlife species, including Northern Red-legged Frog (*Rana aurora*), as well as actively nesting raptors (i.e., Red-tailed Hawk and Great Horned Owl) and other migratory birds (Pacific-slope Flycatcher, Western Wood-Pewee, etc.) were detected within the proposed project area incidentally during our fieldwork.

Considering current (30% Submittal) design plans available at the time of this writing, the proposed project does have the potential to impact special status botanical and wildlife species observed within the proposed project area during our fieldwork, other special status fish and wildlife species potentially occurring within the vicinity of the project area, as well as nesting raptors and/or other migratory birds. Herein we identify potential project-related impacts to relevant identified sensitive biological resources and recommend various mitigation measures to attempt to avoid and/or minimize such impacts.

1.0 Introduction

In June of 2020, J.B. Lovelace & Associates was engaged by Planwest Partners, Inc. to conduct a biological resource assessment for McKinleyville Community Services District's (MCSD) proposed 4.5 million-gallon (MG) water reservoir construction project in the unincorporated township of McKinleyville, in Humboldt County, California (Figures 1–3). Our assessment included a review of current natural resource database records and relevant scientific literature, consultation with resource experts and nearby natural resource land management staff, site reconnaissance fieldwork to identify sensitive natural communities and suitable habitat for special status fish and wildlife species, and the performance of seasonally-appropriate targeted field surveys for special status botanical species. Focused wildlife surveys were not performed as part of this effort, though incidental wildlife observations were documented during our assessment for potentially suitable habitat. This document describes the methodologies and findings associated with this effort, addresses potential project-related impacts to relevant sensitive biological resources, and provides recommendations to mitigate identified potential impacts.

1.1 Purpose and Need

Humboldt Bay Municipal Water District (HBMWD) is a regional wholesale water provider that supplies water sourced from the Mad River to MCSD through a single pipeline buried below the bed of the Mad River. This single source of water to MCSD's customers is seismically vulnerable and could fail during a severe earthquake. In the event of such a failure, MCSD's current emergency water storage capacity would last for approximately two days, assuming normal average daily demand. The addition of the proposed new 4.5 MG water reservoir would significantly increase system resiliency, helping to ensure MCSD's ability to continue providing water to its customers should the connection to HBMWD be lost due to a seismic event.

1.2 Project Location and Description

The proposed augmentation of MCSD's water storage capacity would occur in the northern portion of Humboldt County Assessor's Parcel number (APN) 509-021-045 in southern McKinleyville (Humboldt County, California), with related construction activities also involving two existing water storage tanks located on the immediately adjacent APN 509-021-046 (Appendix A, Figure 1). Both parcels in question are located outside of the California Coastal Zone and are currently zoned as "Rural Residential (Low Density)," "Residential Suburban" (Humboldt County 2021). Primary access to the project area would be by way of a gated private driveway (Hilltop Lane) from Cochran Road, though unimproved access is also potentially possible directly from Cochran Road at the northeastern portion of the project area and from Hewitt Road along its southern boundary. Although

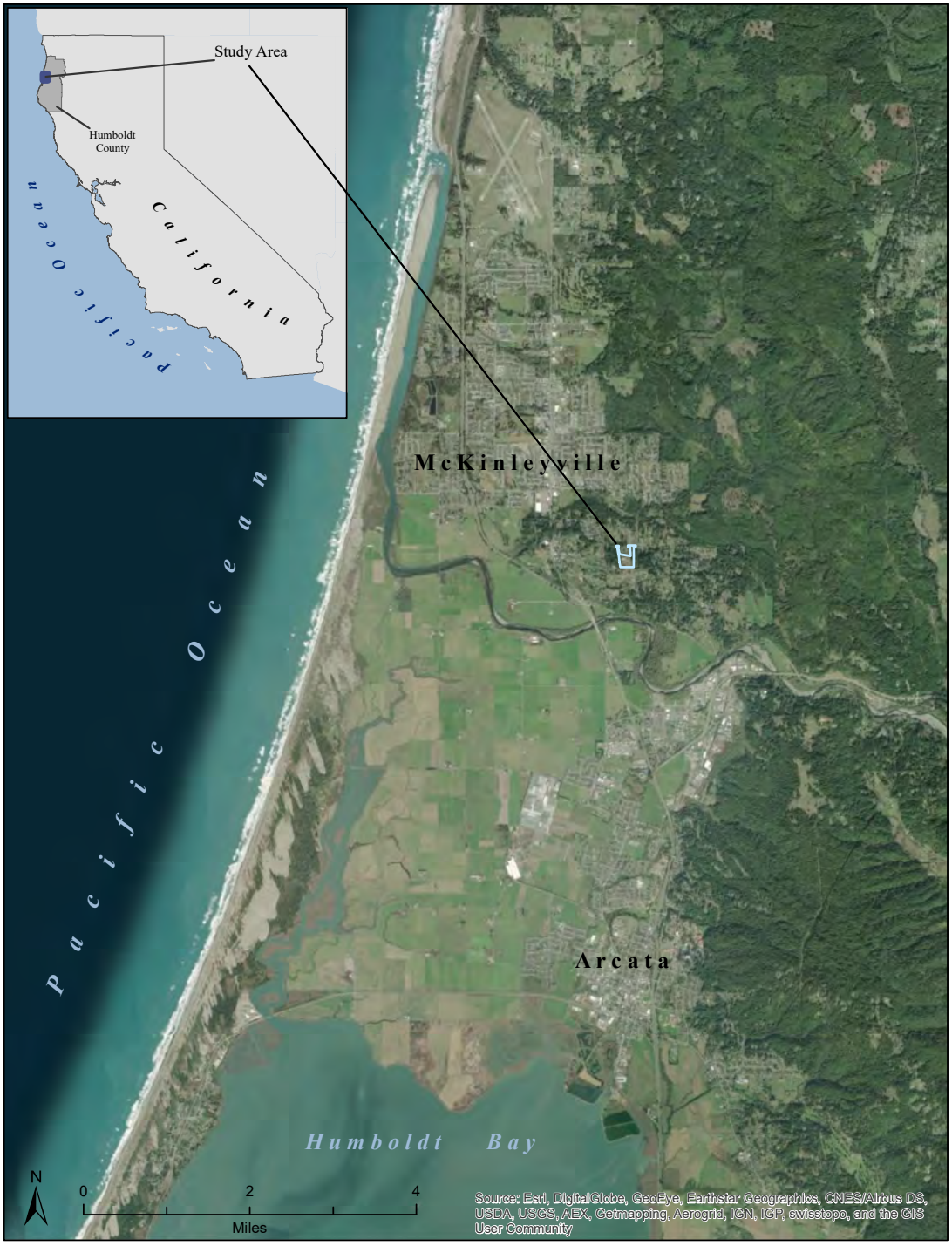

Figure 1. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Vicinity.

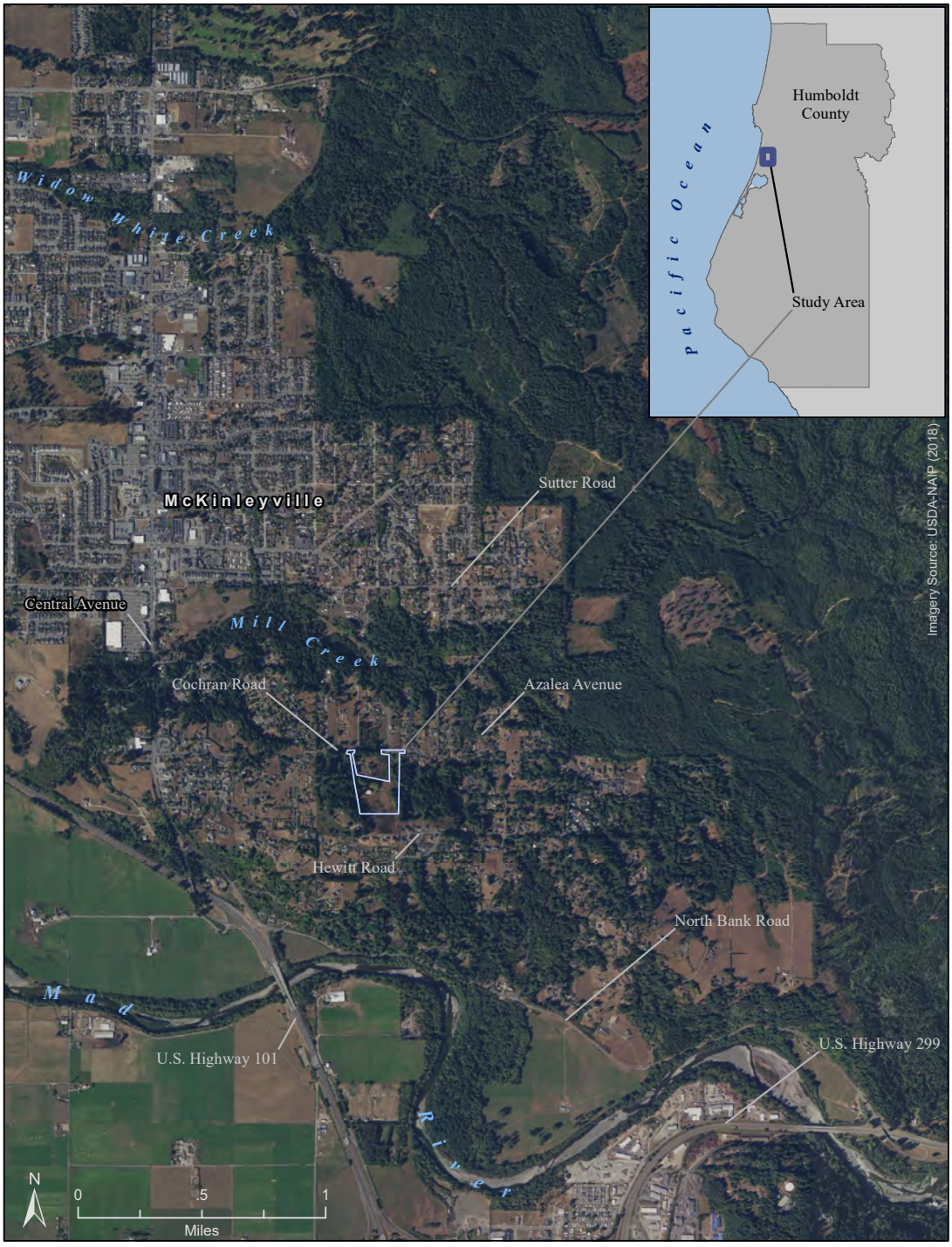

Figure 2. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Area.

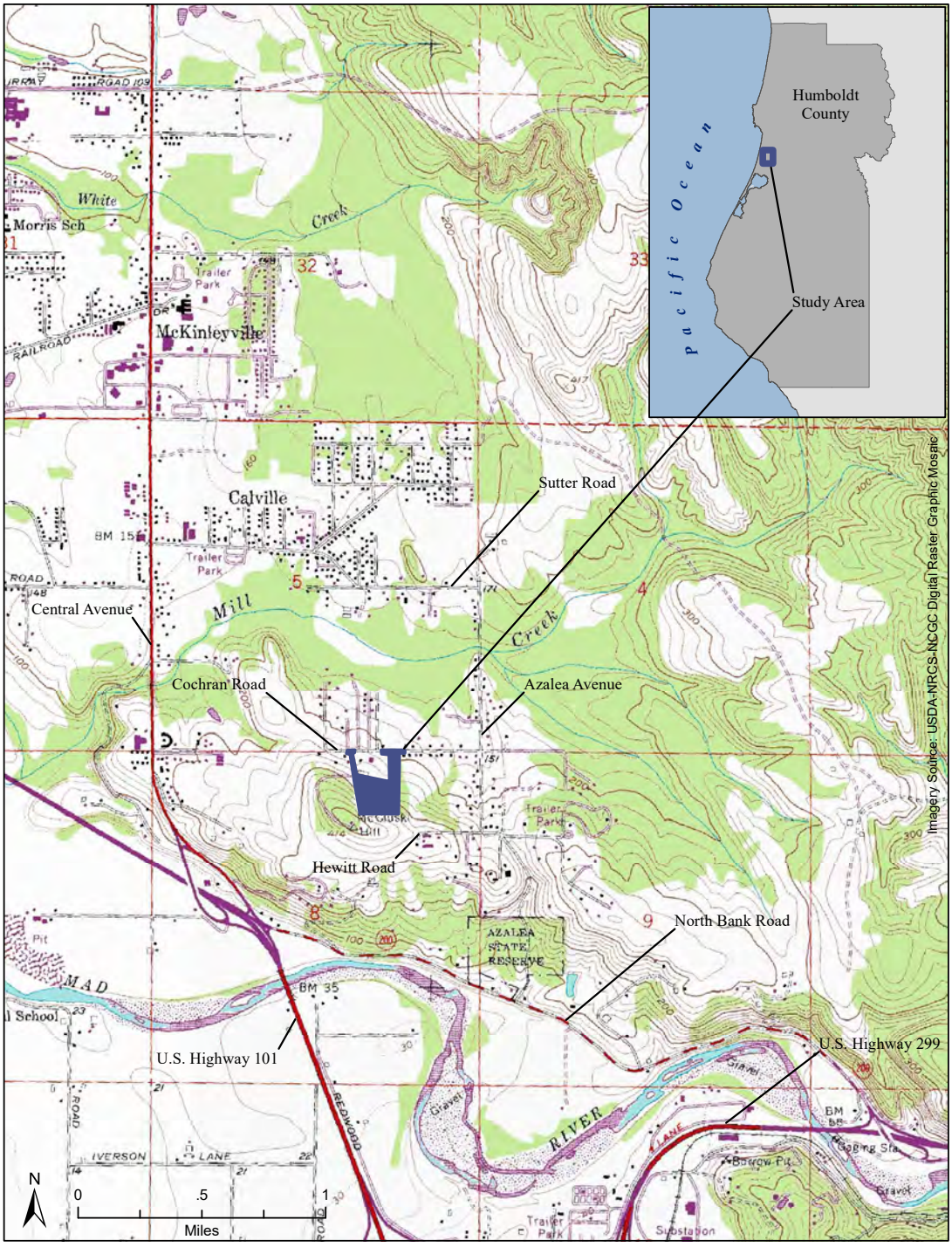

Figure 3. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Area.

the two parcels of interest total 15 acres in size (13.09 and 1.91 acres*, respectively), the project area currently being proposed would only consist of the northern 8.94 acres of APN 509-021-045, all 1.91 acres of APN 509-021-046, and a combined 0.67 acres of contiguous portions of Cochran Road, resulting in a cumulative total project area of 11.52 acres (Appendix A, Figure 1).

Current design plans (30% Submittal, Kennedy Jenks 2021) for the new reservoir reference the onsite construction of a circular prestressed concrete tank that would be ~142 feet (~43 m) in diameter, with a total height of ~52 feet (~16 m). The new tank would be backfilled around its full circumference to an approximate depth of 18 feet (~5.5 m) to resist sliding forces associated with potential earthquake events. Access to, and around, the new reservoir for routine maintenance would require construction of a 17-foot- (~5 m)-wide paved road, which would originate from the already-developed surface associated with the existing storage tanks, and that would also include a 3-foot- (1 m)-wide concrete swale (resulting in a 20-foot- [~6 m]-wide paved surface) around the new reservoir's circumference. Cut slopes on the uphill side of the proposed reservoir are described as being no steeper than 1.5H:1V and fill slopes on the downhill side of the proposed reservoir would be constructed no steeper than 2H:1V.

Addition of the new reservoir would also necessitate the replacement and relocation of the existing overflow drain pipeline with a new 16-inch (~40.5 cm) pipeline, which, once installed would serve both new and existing reservoirs at the water storage site. The new overflow drain pipeline would be routed to the northeast to direct discharges slightly upslope of the existing storm drain system on the south side of Cochran Road between Landis and Quail Run Courts. Installation of the new pipeline would incorporate both buried sections as well as above-grade sections to minimize impacts to the environmentally sensitive habitats identified in the northeast project area extension (addressed herein).

Upon completion, the new reservoir would be connected to MCSD's existing telemetry system to monitor and control water levels and existing onsite utilities would provide electricity to power a small mixer installed inside the reservoir to help maintain water quality by reducing water age.

2.0 Regulatory Context

Partial funding for the proposed project was secured through a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant, which is being administered by the grant recipient, California Office of Emergency Services (CAL-OES), to facilitate MCSD's seismic resiliency upgrade. In addition to being subject to analysis as required by the California Environmental Quality

*Humboldt County Planning and Building Department (2021) reports the parcel size of APN 509-021-045 as 13.09 "GIS" acres" (5.3 ha), and the assessed lot size as 12.67 acres (5.13 ha). No such area discrepancy was reported for APN 509-021-046.

Act (CEQA), the federal origin of at least some of the project funding also necessitates that the project proposal be evaluated independently through the National Environmental Protection Act (NEPA) review process as well. Both CEQA and NEPA require an analysis of potential project impacts to associated biological resources and our efforts inform both parallel environmental review processes.

Generally, a combination of federal, state, and local agencies have regulatory authority over proposed actions that may affect biological resources. A brief summary of relevant statutes, laws, regulations, and policies applicable to the biological resources potentially affected by the proposed project follows. The regulatory context specific to wetlands and other waters is addressed elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021), being prepared concurrently.

2.1 Federal Regulatory Context

2.1.1 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental impacts of proposed actions or projects which are carried out, financed, or approved (in whole or in part) by federal agencies. NEPA implementation is overseen by the President's Council on Environmental Quality (CEQ) and involves the development of an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI), both of which include consideration of biological resources such as special status species.

2.1.2 Federal Endangered Species Act (FESA)

2.1.2.1 Threatened and Endangered Species

The Federal Endangered Species Act (FESA) protects plant and wildlife species that are endangered or threatened with extinction. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) are responsible for administering the FESA and determining whether certain taxa should be designated as Endangered, Threatened or Candidate species. Endangered species are in danger of becoming extinct throughout all or a significant portion of its range, whereas Threatened species are at significant risk of becoming Endangered in the foreseeable future. Candidate species have not yet been formally designated as either of the former, but are regarded as candidates for listing. Plants are protected under FESA only if "take[†]" occurs on federal lands or as a result of federal actions.

[†] Section 9 of the FESA prohibits the take of listed fish and wildlife, where take is defined as "...harass, harm [including adverse modification or degradation of Critical Habitat], pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct..." (16 USC 1531; 50 CFR 17.3). This prohibition also applies to "incidental take," which is defined as take that is "incidental to but not the intended purpose of an otherwise lawful activity" 16 U.S.C. § 1539(a)(1)(B).

Under Section 7 of the FESA, consultation with the USFWS is required if actions, including permit approvals or funding, could adversely affect an Endangered species or its Critical Habitat. Formal consultations determine whether a proposed action(s) is likely to jeopardize the continued existence of a listed species or destroy or adversely modify its designated Critical Habitat.

2.1.2.2 Critical Habitat

Some federally-listed species also have designated (and protected) Critical Habitats. Critical Habitat refers to specific geographical areas with physical and biological features essential to the conservation of a federally-listed species.

2.1.2.3 Species of Concern

Other species not listed as Threatened, Endangered, or Candidate species, yet which are declining and/or are otherwise in need of conservation are designated as "Species of Concern."

2.1.3 Migratory Bird Treaty Act (MBTA) (USC §§ 703–711)

The Migratory Bird Treaty Act (MBTA) of 1918 protects all migratory birds, including active nests and eggs against take, including "incidental take." Birds protected under the MTBA include all native waterfowl, shorebirds, hawks, eagles, owls, doves, common songbirds such as, ravens, crows, swifts, martins, swallows, and others, including their body parts (feathers, plumes etc.), active nests, and eggs. A complete list of protected species can be found at 50 CFR 10.13.

2.1.4 Bald and Golden Eagle Protection Act (BGEPA) (USC § 668)

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 specifically protects Bald Eagle (*Haliaeetus leucocephalus*) and Golden Eagle (*Aquila chrysaetos*) and their nests from take or trade in parts of either species.

2.2 California State Regulatory Context

2.2.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires state and local agencies to review proposed projects to identify potential significant project-related environmental impacts and to avoid or mitigate any such impacts, where they may occur. CEQA recognizes a "project" as an activity undertaken by public agency, or a private activity requiring discretionary approval, which may cause either a direct change in the environment or a foreseeable indirect change in the environment. In the absence of a qualifying exemption, the CEQA review process usually results in the development of a Negative Declaration (ND), a Mitigated-Negative Declaration (MND), or an Environmental Impact Report (EIR).

CEQA Section 15380 provides relevant definitions and clarifies which organisms require consideration as part of the CEQA environmental review process. These include species, subspecies, or varieties of plants and animals, which qualify as being "endangered" or "rare." Endangered species' "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of

habitat, change in habitat, overexploitation, predation, competition, disease, or other factors."

Rare species are at risk of becoming endangered under worsening environmental conditions throughout all or a significant portion of their range, and/or likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be listed as Threatened under the federal Endangered Species Act. Species are presumed endangered, rare, or threatened in the context of CEQA if so listed under the Federal and/or California state endangered species acts (FESA and/or CESA, respectively). Section 15380(d) also provides for consideration of species not already designated as endangered, rare, or threatened if they otherwise qualify as described herein.

CEQA Sections 15380, 15125, and 15126 also provide for consideration of California "Sensitive Natural Communities" within the environmental review process. California sensitive natural communities are those described vegetation communities (i.e., vegetation Alliances and/or Associations [CNPS 2020b, 2021]), for which the California Department of Fish and Wildlife's Vegetation Classification and Mapping Program (VegCAMP) and the California Native Plant Society (CNPS) have assigned a State rarity rank of 1-3 (CDFW 2020a; see also Appendix F), using NatureServe's "Heritage Methodology" (NatureServe 2020). This is the same system used to assign global and state rarity ranks to individual species, and allows for a more empirical method of providing a reliable, consistent, and transparent evaluation of the level of risk of extinction of a given taxon or ecosystem.

2.2.2 California Endangered Species Act (CESA)

The California Endangered Species Act (CESA) protects plant and wildlife species that are endangered or threatened with extinction as well, however under this Act, the California Department of Fish and Wildlife (CDFW) is responsible for determining whether certain taxa should be designated as Endangered, Threatened or Candidate species and administering the CESA. Title 14, California Code of Regulations (Section 670.2 and 670.5) lists Threatened or Endangered animals in California.

2.2.3 California Special Status Designation

The California Department of Fish and Wildlife (CDFW) maintains lists of "Special" animals and plants. "Special status" applies to "species, subspecies, Distinct Population Segments (DPS), or Evolutionarily Significant Units (ESU) where at least one of the following conditions applies:

- Officially listed or proposed listing under the state or federal Endangered Species Acts (CESA/FESA);
- Taxa considered by CDFW to be a Species of Special Concern (SSC);
- Taxa which meet the criteria for listing, even if not included on any list, as described in Section 15380 of the CEQA guidelines;

- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened by extirpation.
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa strongly associated with habitats that are declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, native grasslands, old-growth forests, desert aquatic systems, valley shrubland habitats, etc.);
- Taxa designated as special status, sensitive or declining species by state or federal agencies, or a non-governmental organization and determined to by the CNDDB to be rare, restricted, declining or threatened across their range in California."

Among these California special status species are Fully Protected Species, Species of Special Concern, Watch List Species, and plants protected under the Native Plant Protection Act.

2.2.3.1 California "Fully Protected Species"

California Fish and Game Code designates certain animal species as "Fully Protected" under Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). Fully Protected species are species that are rare or face possible extinction, but are not listed as Threatened or Endangered and may not be taken or possessed at any time.

2.2.3.2 California "Species of Special Concern"

California Species of Special Concern are known to have declining populations, have limited ranges, or are otherwise vulnerable to extinction. This status is intended by CDFW to prevent the eventual listing of such species as Threatened or Endangered by implementing pre-emptive conservation measures.

2.2.3.3 California "Watch List" Species

Watch Listed species are monitored by the California Department of Fish and Wildlife to determine if increased protective status designation becomes warranted. Species on CDFWs "Watch List" are:

- "not on the current Special Concern list but were on previous lists and they have not been state listed under CESA;
- were previously state or federally listed and now are on neither list; or
- are on the list of 'Fully Protected' species."

2.2.3.4 California Native Plant Protection Act (NPPA)

The Native Plant Protection Act (NPPA) prohibits the taking, possession, or sale of any plant with the state designation of rare, threatened or endangered as defined by the California Department of Fish and Wildlife (CDFW). CDFW administers the NPPA using the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2020a) generally considers plants with the Rare Plant Ranks of 1A, 1B, 2A, 2B, 3 and 4.

2.2.4 California Fish and Game Code Nesting Birds Protections

California Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 specifically protects raptors (birds in the orders Falconiformes and Strigiformes) from take, possession, or destruction. Section 3513 makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

3.0 Historical Context and Existing Conditions

3.1 Historical Context

The proposed project site occurs within the traditional territory of the Wiyot people (Wiyot Tribe 2021), which was first populated by settlers of European descent in the mid-1800's. The location is on the south side of Mill Creek, just south of "Calville," a sub-community of McKinleyville, which was settled by employees of the California Barrel Company in the late 19th-century (Historical Sites Society of Arcata 2021). Since that time the primary anthropogenic influences in the immediate vicinity of the proposed project area are assumed to have consisted of timber harvest and livestock grazing. Incremental subdivision and residential development of the surrounding landscape in the latter part of the 20th-century have resulted in the larger of the two parcels of interest becoming one of the few remaining undeveloped parcels greater than two acres (0.81 ha) in size.

3.2 Current Environmental Conditions

3.2.1 Regional Geographic and Ecological Context

For purposes of natural resource evaluation, it can be helpful to consider the relationship between the location of a project and the surrounding geographical and ecological context, and various classification systems have been developed to facilitate such an exercise. One such landscape-defined regionalization, classification, and mapping system has been developed by a subgroup of the USDA Forest Service's Ecological Classification and Mapping Task Team (ECOMAP), which stratifies the Earth into "progressively smaller areas of increasingly uniform ecological potentials" (Bailey 1994). That analysis identifies the current proposed project area as being part of the "Humboldt Bay Flats and Terraces Subsection" within the following hierarchical organizational system:

Humid Temperate Domain
Mediterranean Division
Mixed Forest and Redwood Forest Province
California Coastal Steppe
Northern California Coast Section
Humboldt Bay Flats and Terraces Subsection

An alternative, floristically-defined geographical classification system presented in *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012) identifies the site as being part of the "North Coast" subregion within the greater "Northwestern California" floristic region.

3.2.2 Proposed Project Area Site Conditions

The proposed project area itself ranges in elevation between ~60–120 meters (~200–400 feet) (AMSL) and is located within a rural neighborhood on the north-facing slope of McCluski Hill, approximately 4 kilometers (~2.5 miles) inland from the Pacific Ocean (Figure 1). McCluski Hill is part of a west-northwestward-projecting lobe of a dissected coastal terrace that lies between the Mad River floodplain and associated diked-former-tidelands that comprise the "Arcata Bottoms" to the south, and Mill Creek, a Class 1 tributary of the Mad River, to the north (Figures 1–3). Being situated on the north slope of this elevated landform, the entirety of the project area lies within the Mill Creek watershed. The site is also located along a primary approach path for the Arcata-Eureka (nonhub primary commercial service) airport, ~5 kilometers (~3 miles) to the northwest, and is subject to frequent low-flying air traffic overhead (Figure 1).

The shape and orientation of the combined parcels of interest form a rectangular trapezoid that extends north from Hewitt Road along the southern boundary at the top of McCluski Hill, downslope to an elevation where the grade transitions from ~19% to ~11% along the northern flank of the hillside. Slightly downslope of the approximate location of this topographic transition, two narrow parallel extensions along the combined parcels' east and west boundaries continue from the main bulk of the project area, north to Cochran Road. These two parallel extensions partially encompass a distinct and unrelated, "inset" adjacent parcel (APN 509-021-040), which separates the majority of the project area's northern boundary from Cochran Road by ~110–130 meters (~360–430 feet).

The proposed project area includes the entirety of APN 509-021-046, most of the northern portion of APN 509-021-045 and contiguous portions of Cochran Road, but current design plans indicate that the southern limit of the proposed project area would stop ~97 meters (~320 feet) north of the latter parcel's southern boundary (Planwest Partners, Inc. pers. comm.) (Appendix A, Figure 1). Virtually all of the northwestern extension of the project area consists of the paved segment of the gated private driveway, Hilltop Lane, which is the primary means of access to both the existing and proposed water storage infrastructure.

3.2.2.1 Soils

Soils within the immediate vicinity of the project area are, for the most part, deep and well-drained fine–coarse loams derived from recent marine sediments, sometimes overlain to a limited extent with eolian and/or colluvial sediments (NRCS 2020). Discrete regions of poorly-drained hydric soils also occur within mesic drainages and along the slope toe where the water table can sometimes be relatively shallow. The primary corresponding soil map unit within the proposed project area is the Lepoil-Espa-Candymountain Complex (15 to 50 percent slopes) though a small inclusion of Arcata and Candymountain soils (2 to

9 percent slopes) is also mapped as occurring in the extreme northeastern project area extension adjacent to Cochran Road (NRCS 2020).

3.2.2.2 Hydrology

Precipitation appears (based on surface observations) to percolate readily into the well-drained substrates throughout the majority of the proposed project area with two notable exceptions. These occur along the toe of the slope in the north-central and northeastern portions of the project area where the water table is shallow enough to reach the surface and produce overland flow. Surface flow associated with the former feature located in the north-central region of the proposed project area becomes intermittent during the driest months of the year, whereas surface flow associated with the northeastern portion of the project area appears to be perennial even during periods of below-normal precipitation.

Upslope (offsite) mesic habitats to the east of the parcels of interest also contribute additional variable hydrologic input to the latter system at the approximate location where the northeastern branch diverges from the main body of the project area. Here, the seasonally flooded–saturated soils support increasingly hydrophytic vegetation. Some amount of anthropogenic hydrologic input from the overflow drain pipe for the existing water tanks, which daylights in this area also likely contributes to this system, though the lack of obvious evidence of scouring and/or overland flow at the drainpipe outfall indicates that such contribution is probably rare, insubstantial, or both.

Following the slope of the terrain, surface and subsurface flow drains north and north-northeasterly before eventually being collected into the existing stormwater infrastructure at Cochran Road between the intersections with Landis and Quail Run Courts. The latter engineered system eventually empties to Mill Creek, ~600 linear meters (~2,000 linear feet) downstream from this point of collection.

3.2.2.3 Vegetation (See also Appendix A, Figure 1)

Plant communities occurring within the proposed project area are described below and are presented in an order following the general hydrological gradient at the site: from upland vegetation to plant communities dominated by wetland species.

<u>“Common Velvet Grass - Sweet Vernal Grass Meadows”
(*Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance)</u>

Much of the proposed project area consists of grazed non-native grassland habitat that is consistent with plant community membership rules for the *Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance (“Common Velvet Grass - Sweet Vernal Grass Meadows”) as defined in the California Native Plant Society’s (CNPS) *A Manual of California Vegetation* (CNPS 2021), though the relative dominance of those two grass species varies across the site. Other than a few isolated *Baccharis pilularis* (“coyote brush”) shrubs, herbaceous plants present in this habitat include alien species such as *Linum bienne* (“flax”), *Leontodon saxatilis* (“hawkbit”), *Leucanthemum vulgare* (“ox-eye daisy”),

Raphanus raphanistrum (“jointed charlock”), etc., with occasional small patches of native *Iris douglasiana* (“Douglas Iris”) adjacent to forest edges.

“Coastal Brambles”
(*Rubus* [*parviflorus*, *spectabilis*, *ursinus*] Shrubland Alliance)
Grassland habitats at the site variously intergrade with stands of native *Rubus ursinus* (“California blackberry”)-dominated “Coastal Brambles” (i.e., the *Rubus* [*parviflorus*, *spectabilis*, *ursinus*] Shrubland Alliance as defined in CNPS [2021]). Portions of this vegetation community exhibit evidence of plant community succession where the dense vegetation provides some protection for establishing native shrubs (e.g., *Ribes menziesii* var. *menziesii*, “canyon gooseberry;” *Rosa nutkana* var. *nutkana*, “Nootka rose;” and *Baccharis pilularis*, “coyote brush”) and tree saplings (i.e.; *Alnus rubra*, “red alder;” *Frangula purshiana*, “cascara;” *Picea sitchensis*, “Sitka spruce;” *Abies grandis*, “grand fir;” and *Pseudotsuga menziesii* var. *menziesii*, “Douglas-fir;”) from browsing herbivores. Occasional naturalized *Pinus radiata* (“Monterey pine”) saplings are also establishing within, and adjacent to, these Coastal Bramble habitats.

On-going disturbance from domesticated livestock present at the site (i.e., cattle, goats, and pigs) is evident throughout these two vegetation communities. The relatively flat narrow strip between the existing water tanks and the recessed northern project area boundary is particularly disturbed, as this is the location where water and shelter are provided, and where regular feeding and loafing occurs. Grazing-related disturbances in this location primarily consist of barren and compacted soil that is sparsely vegetated by close-cropped and stunted ruderal herbaceous vegetation typical of similar such agricultural areas in the region. Associated plant species include the aforementioned members of the *Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance as well as *Agrostis stolonifera* (“creeping bent”), *Aira caryophyllea* (“silver hair grass”), *Bromus hordeaceus* (“soft chess”), *Festuca perennis* (“ryegrass”), *Raphanus raphanistrum* (“jointed charlock”), *Hypochaeris radicata* (“hairy cat’s-ear”), *Trifolium* spp. (“clover”), *Rumex* spp. (various “docks”), *Cirsium vulgare* (“bull thistle”), *Silybum marianum* (“milk thistle”), and others.

Many of these non-native plants are recognized to have the potential to adversely affect native vegetation and significantly impair important ecological processes and have been variously classified as “invasive” and/or “noxious” (Appendix G). *Rubus armeniacus* (“Himalayan blackberry”), another noteworthy invasive plant occurring at the site is becoming established in some of the aforementioned Coastal Bramble patches and along forested edges.

“Sitka Spruce Forest and Woodland”
(*Picea sitchensis* Forest and Woodland Alliance)
Forested habitats cover the majority of adjacent parcels along both eastern and western boundaries of the project area, and a small lobe of developing early successional forest is emerging from within the “Coastal bramble” habitat described previously, just inside the southwestern boundary. Slightly north of that

location, a narrow strip of *Alnus rubra* Forest Alliance ("Red Alder Forest") extends east into the project area from the gated access entrance at Hilltop Lane, for ~120 meters (~400 feet) along the constructed hillslope below the existing water storage tanks on APN 509-021-046. This young forest of somewhat regularly-spaced trees was likely replanted to help conceal the existing water tanks from the adjacent neighborhood following construction. In this area, there is no shrub layer in the understory (except along the fence line) and the close-cropped herbaceous vegetation is actively grazed by domesticated goats. Mature, and in some instances, senescent planted and/or naturalized *Pinus radiata* ("Monterey pine") trees also occur near the existing water tanks on APN 509-021-046 as well as along Hilltop Lane and the contiguous section of Cochran Road.

The forested habitat along the eastern project area boundary represents a somewhat disjunct portion of the larger, adjacent patch of coniferous forest to the east of the project area, though the conifers also interdigitate with small inclusions of Red Alder Forest along the eastern boundary. Here, the forested edge extends ~30–50 meters (~40–165 feet) into the project area and descends northward from near Hewitt Road at the top of McCluski Hill, down along an easterly-facing slope before reaching the lower and more gradual terrain draining the mesic habitats along the northeastern flank of this elevated landform. Much of the project area's northeastern branch is forested.

This predominantly *Picea sitchensis* ("Sitka spruce")-dominated forest community is consistent with the membership rules for the *Picea sitchensis* Forest and Woodland ("Sitka Spruce Forest and Woodland") Alliance as defined in *A Manual of California Vegetation* (CNPS 2021) and includes other mixed coniferous (*Abies grandis*, "grand fir" and *Sequoia sempervirens*, "coast redwood") and broad-leaved deciduous (*Alnus rubra*, "red alder" and *Frangula purshiana*, "cascara") tree components. In the understory of this forested habitat, dominant shrubs include *Rubus spectabilis* ("salmonberry"), *Ribes sanguineum* var. glutinosum ("red-flowering currant"), *Vaccinium ovatum* ("evergreen huckleberry"), *Vaccinium parvifolium* ("red huckleberry"), and *Sambucus racemosa* var. *racemosa* ("red elderberry"). The most prevalent herbaceous plants in this habitat include *Oxalis oregana* ("redwood sorrel"), *Lysimachia latifolia* ("Pacific starflower"), *Maianthemum dilatatum* ("false Solomon's seal"), *Claytonia sibirica* ("candy flower"), *Asarum caudatum* ("wild ginger"), *Prosartes smithii* ("Smith's fairy bells"), *Oenanthe sarmentosa* ("water parsley"), *Polystichum munitum* ("sword fern"), *Dryopteris expansa* ("wood fern"), *Blechnum spicant* ("deer fern"), *Carex obnupta* ("slough sedge"), and *Carex* c.f. *leptopoda* ("slender-footed sedge"). Four localized occurrences of invasive plants are also establishing within these forested habitats: *Delairea odorata* ("cape ivy"), *Hedera helix* ("English ivy"), *Ilex aquifolium* ("English holly"), and *Cotoneaster franchetii* ("Franchet's Cotoneaster").

Evidence of legacy and contemporary anthropogenic disturbance is apparent throughout this forested habitat and wind has downed at least two shallow-rooted

mature *Picea sitchensis* (“Sitka spruce”) trees along the leading northern edge of the forest in recent history. Given the age (i.e., 84 years, based on trunk-cross-sectional tree-ring analysis) of one windthrown tree with a diameter-at-breast-height (DBH) of ~75 cm (~ 30 inches) at the time of the treefall event, the estimated age of this forest stand is ~125–150 years old.

The overall stand structural characteristics associated with this habitat most closely reflect an incipient example of the “biomass accumulation/competitive exclusion stage” in the updated model of forest structural development proposed by Franklin et al. (2002). This developmental stage primarily consists of rapid growth and accumulation of biomass, tree crown structural differentiation, competitive exclusion of both less vigorous individual trees and other organisms, and self-pruning of lower canopy branches and foliage. A few larger individuals among the cohort established at the site do currently present with increasingly mature dimensional characteristics (e.g., DBH >> 100 cm [~40 inches], height ≈ 45 m [~150 feet], etc.), however the canopy structure of this stand is still lacking abundant complexity.

“Slough Sedge Swards” and “Small-fruited Bulrush Marsh”
(*Carex obnupta* and *Scirpus microcarpus* Herbaceous Alliances)
Approximately half-way along the northeastern branch of the project area, the mesic Sitka spruce forest gives way to herbaceous and mixed herb–shrub vegetation of two distinct types. Following the dominant drainage path emerging from the forested wetland habitat, a mosaic of *Carex obnupta* (“slough sedge”)- and *Scirpus microcarpus* (“small-fruited bulrush”)-dominated plant communities extend north along the eastern half of the northeastern branch of the project area to Cochran Road (and the associated stormwater infrastructure).

This herbaceous wetland vegetation is initially representative of “Slough Sedge Swards” (*Carex obnupta* Herbaceous Alliance) before transitioning into what is more appropriately classified as “Small-fruited Bulrush Marsh” (*Scirpus microcarpus* Herbaceous Alliance). In addition to the aforementioned dominant plants associated with these habitats, other commonly co-occurring species throughout include native obligate and facultative hydrophytes such as *Oenanthe sarmentosa* (“water parsley”), *Nasturtium officinale* (“water cress”), *Athyrium felix-femina* var. *cyclosorum* (“lady fern”), *Juncus* spp. (various “rushes”), *Veronica americana* (“American brooklime”), *Stachys mexicana* (“Mexican hedge nettle”), *Erythranthe guttata* (“seep monkeyflower”), and *Epilobium ciliatum* ssp. *watsonii* (“Watson’s willowherb”), as well as the alien *Ranunculus repens* (“creeping buttercup”). Isolated individual trees established nearby include *Salix lasiandra* spp. *lasiandra* (“Pacific willow”), *Salix lasiolepis* (“arroyo willow”), *Alnus rubra* (“red alder”), *Picea sitchensis* (“Sitka spruce”), and *Sequoia sempervirens* (“coast redwood”).

The remaining western half of the northeastern project area extension is slightly higher in elevation and more well-drained. In this area, additional patches of *Rubus ursinus* (“California blackberry”)- and *Rosa nutkana* (“Nootka rose”)-

dominated Coastal Brambles are established along the transitional soil moisture gradient. These brambles variously give way to an upland strip of *Holcus lanatus* – *Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance, which extends along the western edge of this branch of the project area before eventually reaching Cochran Road.

"Water Foxtail Meadows"
(*Alopecurus geniculatus* Provisional Herbaceous Alliance)
One other distinct vegetation community present at the site is associated with a discrete palustrine emergent wetland feature located within the main bulk of the project area, just south of the point where the two northern extensions diverge. This feature lies approximately 30 meters (~100 feet) east of the existing water tanks on APN 509-021-046 and ~60 meters (~200 feet) south of the main northern boundary of the project area where the water table surfaces near the slope transition.

The associated vegetation in this discrete area is sparse but consists of the following native herbaceous wetland plants: *Isolepis cernua* ("low bulrush"), *Alopecurus geniculatus* ("water foxtail"), *Juncus bufonius* ("toad rush"), and *Juncus effusus* ssp. *pacificus* ("Pacific rush"), as well as two alien grasses: *Glyceria declinata* ("low manna grass") and *Holcus lanatus* ("velvet grass"). Also growing nearby (i.e., < 10 m [~30 feet] away) are the native *Rubus ursinus* ("California blackberry") and young *Alnus rubra* ("red alder"). This aquatic feature drains further downslope before crossing offsite onto the adjacent unrelated parcel (APN 509-021-040) for ~60 meters (~200 feet) before becoming superficially undiscernible at a *Salix lasiolepis* ("arroyo willow") thicket just outside the northeastern branch of the project area. It is conceivable that during years with abundant precipitation, this wetland feature conveys surface and/or subsurface flow to the palustrine wetland habitats within the northeastern project area extension previously described herein.

4.0 Methods

Methodologies and adopted conventions used in the performance of this biological resource assessment are described below. Our assessment consisted of six primary tasks:

1. Review of scientific literature and natural resource database occurrence records, as well as consultation with resource experts to assess the breadth of special status and other protected biological resources that could potentially be affected by the proposed project;
2. Refinement of information resulting from the aforementioned task to narrow the focus to only those resources having reasonable potential to occur within the immediate vicinity of the proposed project area (including offsite species occurring nearby, which could potentially be affected by the proposed project);
3. Performance of field reconnaissance to:

a. identify any wetland or other Sensitive Natural Communities present within the proposed project area;
b. assess the potential suitability of habitat and environmental conditions at the site to support relevant protected biological resources and determine the need for additional botanical or other species-specific field surveys;

4. Performance of floristically-appropriate special status botanical surveys
5. Evaluate the potential for project-related impacts to all special status organisms and other sensitive biological resources found to be present at the site and/or that were determined to have a high potential to occur within the vicinity of the proposed project;
6. Recommend mitigation measures to avoid or minimize potential adverse impacts to relevant sensitive biological resources.

4.1 Preliminary Research and Field Reconnaissance

Preliminary investigations included queries of species and California Sensitive Natural Community occurrence records for the "Arcata North" and 8 surrounding 7.5-minute U.S. Geological Survey (USGS) quadrangles (Arcata South, Blue Lake, Crannell, Eureka, Korbel, Panther Creek, Trinidad, and Tyee City) in the following databases: the U.S. Fish and Wildlife Service's (USFWS) *Information for Planning and Consultation* (IPaC) (USFWS 2020); California Department of Fish and Wildlife's (CDFW) *Natural Diversity Database* (CNDDB 2020); the CalFlora database (CalFlora 2020); the California Native Plant Society's (CNPS) *Online Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2020a); and CNPS's *Manual of California Vegetation Online* (CNPS 2020b) among others. The resulting comprehensive list of special status species and California Sensitive Natural Communities that could potentially be affected by the proposed project was subsequently refined to omit those species for which no suitable habitat occurs within the immediate vicinity of the proposed project area. Observations made during our field reconnaissance site visit conducted on June 30, 2020, further informed this process.

Refined lists of species and Sensitive Natural Communities addressed herein because they were determined to have reasonable potential to occur within the study area or could potentially be affected by the proposed project, and corresponding lists of species evaluated but omitted from further consideration in this effort are provided in Appendices B and C. Appendix B presents the described information in such a way as to facilitate evaluation through the federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) review processes. Appendix C presents the same information, but is organized to facilitate evaluation through the California Environmental Quality Act (CEQA) review process. A more detailed list of all federal- and/or state-protected species considered to have a reasonable potential to occur within the immediate vicinity of the proposed project is provided in Appendix D. This latter list includes descriptions of known habitat characteristics and relevant occurrence record information, as well as a coarse determination of the likelihood for potential occurrence at the site for each (Table 1).

Table 1. Criteria for Evaluation of "Potential for Occurrence" (See also Appendix D).

Present. The species is known to occur within the immediate vicinity of the study area based on direct observations during fieldwork, recent historical occurrence records, and/or other similar information.

High Potential. The species has a high probability of occurring within the study area. Habitat characteristics associated with the species' occurrence are present within the immediate vicinity of the study area, and most of the habitat at or adjacent to the site is considered suitable. Local occurrence records exist.

Moderate Potential. The species has a moderate probability of being found within the study area. Habitat characteristics associated with the species' occurrence are present; however, some of the habitat at or adjacent to the site is unsuitable. Local occurrence records may exist.

Low Potential. The species has a low probability of being found in the study area. Some habitat characteristics associated with the species' occurrence are present; however, the majority of habitat at and adjacent to the site is unsuitable. Local occurrence records may or may not exist. If the former, such records could be historical.

As a result of both our preliminary research and field reconnaissance site visit, we determined that suitable habitat for federal and/or California state special status botanical species does occur within the project area and floristically-appropriate botanical surveys were warranted. Based on published (CalFlora 2020; CNPS 2020a; Jepson Flora Project 2020) blooming periods for species identified as having reasonable potential to occur, two distinct floristically-appropriate survey periods (i.e., April–May and June–August) were determined necessary to adequately address the breadth of special status botanical species potentially present.

4.2 Focused Field Surveys

Field surveys for special status botanical species were conducted throughout the proposed project area during the period July 26–27, 2020 and on April 22, 2021; and were consistent with methodologies detailed in the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (2000); the California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018a); and CNPS' Revised *CNPS Botanical Survey Guidelines* (CNPS 2001). The former seasonal period was determined to be floristically appropriate for all but four (4) earlier-blooming species, which were subsequently addressed in a botanical survey conducted during the following spring season on April 22, 2021. A complete list of botanical species encountered during our botanical surveys is provided in Appendix F.

No focused or species-specific fish or wildlife surveys were conducted as part of this effort, however, the entire project area was assessed throughout our fieldwork with consideration for the potential suitability of habitat at the site for

special status fish and wildlife species. A list of all wildlife species detected incidentally during our fieldwork is provided in Appendix G.

All fieldwork was performed by J.B. Lovelace and Associate's Principal Environmental Scientist, J. Brett Lovelace. Natural-resource-related geographic field data were collected using Environmental Systems Research Institute's (ESRI) ArcGIS Collector (v.20.2.4) mobile application installed on an iOS device referencing a Bad Elf Flex™ Global Navigation Satellite System (GNSS) receiver capable of sub-meter accuracy. All such data were subsequently uploaded and orthorectified using a combination of ESRI's web application, ArcGIS Online, and ArcMap (ESRI 2015) geographic information system (GIS) desktop software with the most recent available satellite imagery (National Agriculture Imagery Program [NAIP] 2018; Google Earth 2020) to produce relevant figures depicting our findings (Appendix A).

Taxonomic nomenclature for vascular plants presented in this effort is consistent with *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012), or the *Jepson eFlora* (Jepson Flora Project 2021) where updated taxonomic changes may have occurred subsequent to publishing of the former resource. Both sources were also used to classify encountered plant species as either native or alien. "Native" plants are defined as "occurring naturally in an area, as neither a direct nor indirect consequence of human activity;" whereas "alien" species are "not native; introduced purposely or accidentally into an area" (Baldwin et al. 2012).

Some alien species may be further classified as being "invasive" where they have a demonstrated ability to threaten "wildlands" by displacing and/or hybridizing with native species and/or are likely to "alter biological communities, or alter ecosystem processes" (California Invasive Plant Council [Cal-IPC] 2021). Various entities evaluate the degree of risk posed by alien vegetation to native ecosystems at different geographical scales and assign invasive status ranks and/or classifications to prioritize management efforts to reduce and/or eradicate species that pose the greatest perceived threat.

Given that the response of some species may vary with geography and under different environmental conditions, invasive status rankings for a given species are not always consistent across the spectrum of classification systems. For the purposes of this biological resource assessment, alien vegetation is considered to be "invasive" if a species under consideration is assigned a "high" invasive rank by the California Invasive Plant Council (Cal-IPC 2021), is considered a "high priority" invasive species in the Humboldt County Weed Management Area (WMA) (2010), is listed as a "noxious weed" by the California Department of Food and Agriculture (CDFA 2021) and/or the U.S. Department of Agriculture (USDA 2021), or otherwise warrants concern based on known or perceived potential to adversely alter biological communities or associated ecosystem processes.

Classification and nomenclature of natural [vegetation] communities follows the modern systematic vegetation classification system of “alliances” and “associations” as presented originally in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009), and subsequent updates provided in *Manual of California Vegetation Online* (CNPS 2020b; 2021). Taxonomic treatment of other biota is consistent with: the Moss eFlora (Wilson 2020) for mosses, *Guide to Oregon Liverworts* (Wagner 2014) for liverworts, *Macrolichens of the Pacific Northwest, Second Edition* (McCune & Geiser 2009) for lichens; the 61st Supplement of the American Ornithological Society’s *Check-list of North American Birds* (Chesser et al. 2020) for avian species; *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding, Eighth Addition* (Moriarty 2017) for amphibian and reptile species; *Revised Checklist of North American Mammals North of Mexico* (Bradley et al. 2014) for mammals; and nomenclature used by the Xerces Society for Invertebrate Conservation (Xerces Society 2021) for invertebrate species.

5.0 Results

In consideration of the parallel environmental review processes being applied to the proposed project, we attempt herein to present the results of our biological resource assessment such that they may be readily evaluated independently, through the respective lenses of either the federal National Environmental Policy Act (NEPA) and/or federal Endangered Species Act (ESA), or the California Environmental Quality Act (CEQA). It should be recognized that there is substantial overlap in the consideration of some sensitive biological resources between these two regulatory environments. Salient findings subject to federal regulatory jurisdiction are presented first. Thereafter, we present our findings within the broader context requiring consideration under CEQA.

Lists of special status species considered and addressed in detail in this effort, as well as those considered but dismissed due to a lack of presence of suitable habitat within the vicinity of the proposed project area are provided in Appendices B and C, organized relative to these two jurisdictional arenas: federal or California state (respectively). A single, more detailed list of those species determined to have reasonable potential to occur within the proposed project area (or nearby species occurring offsite, which could potentially be affected by the proposed project), and which includes an assessment of the likelihood of occurrence at the site, is provided in Appendix D. Finally, Appendices F and G list all species detected during our fieldwork.

5.1 Federally-Regulated Special Status Species, Critical Habitats, Migratory Birds, and Wetlands and Waters of the U.S.

5.1.1 Listed Species under the Federal Endangered Species Act (FESA)

5.1.1.1 Botanical Species

Of the 69 state and/or federal special status botanical species identified for consideration during our initial research for the proposed project, only three (3) were designated as Threatened, Endangered, and/or Candidate species under the Federal Endangered Species Act of 1974 (Table 2; Appendix B). Only one of these, *Lilium occidentale* ("western lily") is considered to have any reasonable potential to occur within the project area. The other two are restricted to coastal dune habitats, which do not occur at the site, and were, therefore, omitted from further consideration in this effort (Appendix B).

***Lilium occidentale* ("Western Lily")**

Neither *Lilium occidentale* ("western lily") nor any other federally-recognized special status botanical species were encountered during our floristically-appropriate botanical surveys.

Table 2. Federal ESA-Listed Botanical Species Identified for Consideration.

Species	Federal ESA Designation
Vascular Plants	
Erysimum menziesii ("Menzies' wallflower")	Endangered
Layia carnosa ("beach Layia")	Endangered
***Lilium occidentale* ("western lily")**	**Endangered**

Bold text indicates species with reasonable potential to occur within the proposed project area

5.1.1.2 Fish and Wildlife

Of the 83 state and/or federal special status fish and wildlife species identified for consideration during our initial research for the proposed project, only 15 were designated as Threatened, Endangered, and/or Candidate species under the Federal Endangered Species Act of 1974 (Table 3; Appendix B). Only two of these, Marbled Murrelet (*Brachyramphus marmoratus*) and Northern Spotted Owl (*Strix occidentalis caurina*), were considered to have possible reasonable potential to occur within the project area. The other 13 consist of nine fish, one sea turtle, and three bird species, all of which are known to occupy habitat types not present within the immediate vicinity of the project area such as marine environments and perennial streams lacking barriers to anadromy, coastal dune and strand habitats, tidally-influenced wetlands, and riparian forests with abundant willow (*Salix* spp.) and poplar (*Populus* spp.) (or other tree species which do not occur in the floristic region under consideration). Given the lack of suitable habitat within the project area for these latter 13 species, they were subsequently omitted from further consideration in this effort (Appendix B).

Table 3. Federal ESA-Listed fish and Wildlife Species Identified for Consideration.

Species	Federal ESA Designation
Fish	
Acipenser medirostris (Green Sturgeon) Southern DPS	Threatened
Eucyclogobius newberryi (Tidewater Goby)	Endangered
Oncorhynchus kisutch (Coho Salmon) Pop. 2 S. Oregon / N. California ESU	Threatened
Oncorhynchus kisutch (Coho Salmon) Pop. 4 Central California Coast ESU	Endangered
Oncorhynchus mykiss irideus (Steelhead) Pop. 16 N. California DPS	Threatened
Oncorhynchus tshawytscha (Chinook Salmon) Pop. 17 California Coastal ESU	Threatened
Oncorhynchus tshawytscha (Chinook Salmon) Pop. 30 Upper Klamath/Trinity Rivers ESU	Candidate
Spirinchus thaleichthys (Longfin Smelt) Southern DPS	Candidate
Thaleichthys pacificus (Eulachon)	Threatened
Reptiles	
Chelonia mydas (Green Sea Turtle)	Threatened
Birds	
***Brachyramphus marmoratus* (Marbled Murrelet)**	**Threatened**
Charadrius alexandrinus nivosus (Western Snowy Plover)	Threatened
Coccyzus americanus occidentalis (Yellow-billed Cuckoo)	Threatened
Rallus obsoletus obsoletus (California Ridgway's Rail)	Endangered
***Strix occidentalis caurina* (Northern Spotted Owl)**	**Threatened**

Bold text indicates species with reasonable potential to occur within the proposed project area

Marbled Murrelet

Although the maturing coniferous forest within and adjacent to the project site includes a few larger individual trees, the disjunct and small patch-size combined with the lack of well-developed forest stand structural complexity, scarcity of establishing epiphyte assemblages, and virtual lack of canopy litter accumulations or arboreal histosol development, collectively render this habitat unsuitable for use by breeding Marbled Murrelets at present. The confirmed presence of breeding Red-tailed Hawk and Great Horned Owl in the immediate vicinity during our 2020 fieldwork likely presents predatory pressures in this area and therefore even further diminishes any potential suitability of this habitat for use by breeding Marbled Murrelets. Correspondence with Green Diamond Resource Company wildlife biologist staff (Early & Lucchesi pers. comm.) indicates that no surveys for Marbled Murrelet have occurred within nearby industrial timberlands under their ownership in the vicinity of the project area due to the lack of potentially suitable habitat in the area. The three nearest CNDDB records of “occupancy” for this species are from 13 (n = 1) and 19 (n = 2) miles distant near Iaqua Buttes and the headwaters of Freshwater Creek (1983), and Tall Trees Grove along Redwood Creek (1975, 1988), respectively.

Northern Spotted Owl
Similar patch-size and habitat connectivity limitations, as well as stand-structure developmental insufficiencies associated with the conifer forest at the project site are believed to render this forest stand unsuitable as nesting habitat for Northern Spotted Owl. In addition to the aforementioned characteristics, the absence of larger snags, tree cavities, and downed coarse woody debris indicate significant limitations in the availability of potential refugia for nesting, roosting, and thermoregulation, as well as limited habitat for prey species. The confirmed presence of breeding Red-tailed Hawk and Great Horned Owl in the immediate vicinity during our 2020 fieldwork likely presents competitive and potential predatory pressures in this area as well and further diminishes any potential suitability of this habitat for Northern Spotted Owl.

The nearest known positive detection record for Northern Spotted Owl is on Green Diamond Resource Company timberlands, ~2 miles to the northeast in the vicinity of the upper headwaters of Mill and Lindsay Creeks (CNDDB 2020). Correspondence with Green Diamond wildlife biologist staff (Early & Lucchesi pers. comm.) indicates that this location is currently considered “unoccupied” and that the site is surveyed ≥ 3 times annually, with no detections having occurred during the 6-year period 2015–2020. Early & Lucchesi (pers. comm.) also further confirmed that no Northern Spotted Owls were detected in conjunction with two nearby timber harvest plans (THPs), also located in the Lindsay Creek watershed. Those THPs had 13 and 18 survey stations (respectively) and each was surveyed 6 times annually between March–May over the 6-year period from 2015–2020.

It is remotely conceivable that the maturing coniferous forest within and adjacent to the project site could provide some limited foraging habitat for an occasional far-ranging Northern Spotted Owl. However unlikely, even should such an event occur, the temporary diurnal activities associated with the proposed construction would not overlap (temporally or otherwise) with the nocturnal foraging of an unlikely, hypothetical far-ranging individual in the maturing forested habitats at the site.

5.1.2 Critical Habitats
No Critical Habitats occur within the vicinity of the project area.

5.1.3 Bald and Golden Eagles
One adult Bald Eagle was observed flying over the project area at altitude during our fieldwork. This single individual was promptly harassed by a Red-tailed Hawk but continued along its original trajectory, traveling to the south. This individual had no apparent interest in, or association with, the project area at that time. Correspondence with Green Diamond wildlife biologist staff (Early & Lucchesi pers. comm.) indicates that no nests of either species are known from timberlands under their ownership in the vicinity of the project area.

5.1.4 Other Federally-Regulated Special Status Species

Other botanical and wildlife species resulting from our initial research, which are not afforded protection under the Federal Endangered Species Act (1974), yet which are otherwise recognized by federal agencies (i.e., USFWS, USFS, BLM) as "Sensitive" and/or "Birds of Conservation Concern" and worthy of consideration in the review of proposed actions such as the current project were also addressed as part of this biological resource assessment. These "other federal" species are listed in Appendix B, and those considered to have a reasonable potential to occur within the project area are addressed in greater detail in Appendix E.

Two such "other" federal special status species were incidentally detected at the site during our fieldwork: White-tailed Kite (*Elanus leucurus*) and an undetermined species of the *Selasphorus* hummingbird genus (i.e., either Allen's Hummingbird [*Selasphorus sasin*] or Rufous Hummingbird [*S. rufus*]). While the former was only observed as a "fly-over" detection and did not exhibit any apparent interest in, or association with, the proposed project area, the latter hummingbird could potentially be nesting at the site.

5.1.5 Migratory Birds

Forest, shrub, bramble, and grassland habitats throughout the project area all provide suitable breeding habitat for migratory bird species, as do individual trees, snags, shrubs, and even anthropogenic structures. Some hypothetical examples of the latter include sheltered eaves, overhangs, ledges, cavities in utility poles, and constructed "cavities" associated with sheds, outbuildings, utility boxes, and other existing infrastructure. Evidence of at least five (5) active bird nests protected under the Federal Migratory Bird Treaty Act (MBTA) was observed incidentally within the project area during our fieldwork (Table 4; Appendix A, Figure 2).

Table. 4. Incidental Nesting Bird Observations.

Species/Observations	Location
Buteo jamaicensis (Red-tailed Hawk) Human-stimulated agitation; inter-specific territorial defense (with *Haliaeetus leucocephalus*, Bald Eagle), site-fidelity, obs. June, July, August 2020	Sitka spruce forest, northeastern project area
Bubo virginianus (Great-horned Owl) Roosting juveniles (n = 2), obs. 7/26/20	Large coast redwood on east-facing slope w/in Sitka spruce forest (eastern project area
Contopus sordidulus (Western Wood-Pewee) Human-stimulated agitation; conspecific territorial defense, site-fidelity of a pair, vociferous male, obs. 7/26/20	Arroyo willow (*Salix lasiolepis*) thicket, northeastern project area
Empidonax difficilis (Pacific-slope Flycatcher) Nests with eggs (n = 1) and with nestlings (n = 1), human-stimulated agitation, obs. 7/26/20	Tipped-up root masses of windthrown Sitka spruce, northeastern project area
Zonotrichia leucophrys (White-crowned Sparrow) Nest-provisioning, human-stimulated agitation, obs. 6/30/20	Grassland-bramble edge, southern project area

Other incidental evidence of nesting bird activity was also observed during our work as well. In addition to the territorial singing of male songbirds, other evidence of active avian nesting throughout the site included nest-provisioning behavior of multiple species, and small (~1–2-inch, diameter) circular cavities in at least two red alder (*Alnus rubra*) snags (Appendix A, Figure 2).

5.1.6 Wetlands and Waters of the U.S.

Both forested and emergent freshwater wetland habitats were identified at the site. These wetland habitats have been generally characterized previously herein within the context of their associated plant communities (Section 3.2.2.2), which are depicted in Appendix A (Figure 1). A more thorough treatment of the methods and findings pertaining to the identification and delineation of these wetland habitats is addressed elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021), being prepared concurrently.

5.2 State Special Status Species, Species Protected under the California Fish and Game Code (CFGC), Sensitive Natural Communities, and Wetlands and Waters of the State

5.2.1 State Special Status Species

5.2.1.1 Botanical Species

Sixty-nine (69) special status botanical species were identified for consideration pursuant to CEQA Section 15380 during our initial research for the proposed project (Appendix C). Of these, 47 are considered to have reasonable potential to occur within the project area (Table 5; Appendix C). The remaining 22 were omitted from further consideration in this effort based on the lack of suitable habitat being present within the project area (Appendix C). Of those 47 species considered to have reasonable potential to occur, 10 were determined to have a high potential (Table 5), including one state- and federally-listed Endangered plant: *Lilium occidentale* (“western lily”).

Results from our special status botanical surveys yielded the single rare plant species, *Ribes laxiflorum* (“trailing black currant”) (Appendix A, Figure 2). *Ribes laxiflorum* is a perennial deciduous shrub with a California Rare Plant Rank of 4.3, indicating that the species is “uncommon in California” with “limited distribution,” and that the degree and immediacy of threats to known occurrences is considered to be low (CNPS 2021). *Ribes laxiflorum* is not currently listed as a federal or state Threatened, Endangered, or Candidate species, and while the species’ Global Rank (“5?”) reflects that it is considered to be “secure” globally, the State Rank (“3”) indicates that it is “vulnerable” in California. The *R. laxiflorum* occurrence identified within the proposed project area consisted of six individuals growing at the buttressed base of a large Sitka spruce tree within the maturing Sitka Spruce Forest and Woodland habitat near the location where the northeast branch of the project area extends north from the main bulk of the proposed project area (Appendix A, Figure 2).

No other federal- or state-listed plants, nor any other state or federal special status botanical species were found to occur within the project area during our floristically-appropriate botanical surveys.

Table 5. Special Status Botanical Species with Reasonable Potential to Occur within the Proposed Project Area.

Species	FESA*	CESA†	CRPR‡	GRank§	SRank§	Potential for Occurrence L	M	H
Vascular Plants								
Angelica lucida ("sea-watch")	None	None	4.2	G5	S3		X	
Calamagrostis bolanderi ("Bolander's reed grass")	None	None	4.2	G4	S4			
Cardamine angulata ("seaside bittercress")	None	None	2B.2	G4G5	S3		X	
Carex arcta ("northern clustered sedge")	None	None	2B.2	G5	S1		X	
Carex buxbaumii ("Buxbaum's sedge")	None	None	4.2	G5	S3		X	
Carex leptalea ("bristle-stalked sedge")	None	None	2B.2	G5	S1		X	
Carex lyngbyei ("Lyngbye's sedge")	None	None	2B.2	G5	S3	X		
Carex praticola ("northern meadow sedge")	None	None	2B.2	G5	S2	X		
Carex viridula ssp. *viridula* ("green yellow sedge")	None	None	2B.3	G5T5	S2	X		
Castilleja mendocinensis ("Mendocino Coast paintbrush")	None	None	1B.2	G2	S2	X		
Chrysosplenium glechomifolium ("Pacific golden saxifrage")	None	None	4.3	G5?	S3			X
Coptis laciniata ("Oregon goldthread")	None	None	4.2	G4?	S3?	X		
Empetrum nigrum ("black crowberry")	None	None	2B.2	G5	S1?	X		
Erythronium revolutum ("coast fawn lily")	None	None	2B.2	G4G5	S3	X		
Gilia capitata ssp. *pacifica* ("Pacific gilia")	None	None	1B.2	G5T3	S2	X		
Hemizonia congesta ssp. *tracyi* ("Tracy's tarplant")	None	None	4.3	G5T4	S4	X		
Hosackia gracilis ("harlequin lotus")	None	None	4.2	G3G4	S3		X	
Iliamna latibracteata ("California globe mallow")	None	None	1B.2	G2G3	S2	X		
Juncus nevadensis var. *inventus* ("Sierra rush")	None	None	2B.2	G5T3T4	S1	X		
Lathyrus palustris ("marsh pea")	None	None	2B.2	G5	S2		X	
Lilium kelloggii ("Kellogg's lily")	None	None	4.3	G3	S3			X
Lilium occidentale ("western lily")	Endangered	Endangered	1B.1	G1	S1			X
Listera cordata ("heart-leaved twayblade")	None	None	4.2	G5	S4			X
Lycopodiella inundata ("inundated bog club-moss")	None	None	2B.2	G5	S1?		X	
Lycopodium clavatum ("running-pine")	None	None	4.1	G5	S3			X
Lycopus uniflorus ("northern bugleweed")	None	None	4.3	G5	S4	X		
Mitellastra caulescens ("leafy-stemmed mitrewort")	None	None	4.2	G5	S4		X	
Monotropa uniflora ("ghost-pipe")	None	None	2B.2	G5	S2		X	
Montia howellii ("Howell's montia")	None	None	2B.2	G3G4	S2			X
Oenothera wolfii ("Wolf's evening-primrose")	None	None	1B.1	G2	S1	X		
Packera bolanderi var. *bolanderi* ("seacoast ragwort")	None	None	2B.2	G4T4	S2S3	X		
Piperia candida ("white-flowered rein orchid")	None	None	1B.2	G3	S3		X	
Pityopus californicus ("California pinefoot")	None	None	4.2	G4G5	S4		X	
Pleuropogon refractus ("nodding semaphore grass")	None	None	4.2	G4	S4			X
***Ribes laxiflorum* ("trailing black currant")**	**None**	**None**	**4.3**	**G5?**	**S3**			**X**
Sidalcea malachroides ("maple-leaved checkerbloom")	None	None	4.2	G3	S3			X
Sidalcea malviflora ssp. *patula* ("Siskiyou checkerbloom")	None	None	1B.2	G5T2	S2		X	
Sidalcea oregana ssp. *eximia* ("coast checkerbloom")	None	None	1B.2	G5T1	S1		X	
Silene scouleri ssp. *scouleri* ("Scouler's catchfly")	None	None	2B.2	G5T4T5	S2S3	X		
Tiarella trifoliata var. *trifoliata* ("trifoliate laceflower")	None	None	3.2	G5T5	S2S3	X		
Viola palustris ("alpine marsh violet")	None	None	2B.2	G5	S1S2	X		
Nonvascular Botanical Species								
"Bryophytes" ("Mosses," "Liverworts," and "Hornworts")								
Fissidens pauperculus ("minute pocket moss")	None	None	1B.2	G3?	S2			X
Trichodon cylindricus ("cylindrical Trichodon")	None	None	2B.2	G4	S2	X		
Lichens								
Bryoria pseudocapillaris ("false gray horsehair lichen")	None	None	3.2	G3	S2	X		
Bryoria spiralifera ("twisted horsehair lichen")	None	None	1B.1	G3	S1S2	X		
Dolichousnea longissima (= *Usnea longissima*) ("Methuselah's beard lichen")	None	None	4.2	G4	S4	X		
Ramalina thrausta ("angel's hair lichen")	None	None	2B.1	G5	S2?	X		

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Native Plant Society's (CNPS) California Rare Plant Rank (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Bold text indicates species encountered within the proposed project area during our 2020-2021 fieldwork.

5.2.1.2 Fish and Wildlife

Eighty-three (83) special status fish and wildlife species were identified for consideration pursuant to CEQA Section 15380 during our initial research for the proposed project (Appendix C). Of these, 39 are considered to have reasonable potential to occur at the site and one fish species, (resident) Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*), is known to inhabit Mill Creek (CNDDB 2020), which receives discharges from with the stormwater system that drains the proposed project area (Table 6). The remaining 43 species were omitted from further consideration in this effort based on the lack of suitable habitat being present within the immediate vicinity of the project area (Appendix C). Of those 40 species considered to have reasonable potential to be affected by the proposed project, 13 were determined to have a high potential for occurrence (Table 6).

While no focused fish or wildlife surveys were performed as part of this effort, seven (7) special status wildlife species were incidentally detected at the site during our fieldwork (Table 7; Appendix A, Figure 2).

Northern Red-legged Frogs (*Rana aurora*)

Two (2) Northern Red-legged Frogs (*Rana aurora*) were encountered in the project area during our April 2021 fieldwork (Appendix A, Figure 2). One adult was observed in the Slough Sedge Sward habitat in the northeastern project area extension and the second adult was encountered in the grazed Common Velvet Grass–Sweet Vernal Grass Meadow habitat along the eastern project area boundary.

Special Status Birds

Four (4) (i.e., Bald Eagle, *Haliaeetus leucocephalus*; White-tailed Kite, *Elanus leucurus*; Vaux's Swift, *Chaetura vauxi*; and a *Selasphorus* hummingbird, *Selasphorus* spp.) of the five (5) special status bird species detections during our fieldwork consisted of brief overflights of the site (Table 7).

Of those four, one hummingbird of the genus *Selasphorus* was observed, but due to the brief observation it was not possible to identify the individual at the species level. Based on the published range and distribution information for members of that genus, it is reasonable to assume that the observation was of either Allen's Hummingbird (*Selasphorus sasin*) (most likely) or Rufous Hummingbird (*Selasphorus rufus*).

The fifth special status bird species detection was of Black-capped Chickadee (*Poecile atricapillus*). Multiple individuals were observed foraging in forested habitats at the site and at least one singing male was heard during our fieldwork. Small (~2.5–5 cm [~1–2-inch], diameter) circular tree cavities observed in Red Alder (*Alnus rubra*) snags along the eastern project area boundary (Appendix A, Figure 2) provide suitable nesting habitat for Black-capped Chickadee (Ehrlich et al. 1988; etc.), and it is possible that such observed tree cavities are utilized by this species for breeding.

Table 6. Special Status Fish and Wildlife Species with Reasonable Potential to Occur within the Immediate Vicinity of the Proposed Project Area.

Species	FESA*	CESA†	CDFW‡	GRank§	SRank§	Potential for Occurrence L	M	H
Fish								
Oncorhynchus clarkii clarkii (Resident Coastal Cutthroat Trout)	None	None	SSC	G5T4	S3			X
Insects								
Bombus caliginosus (Obscure Bumble Bee)	None	None		G4?	S1S2	X		
Bombus occidentalis (Western Bumble Bee)	None	Candidate Endangered		G2G3	S1		X	
Amphibians								
Rana aurora (Northern Red-legged Frog)	None	None	SSC	G4	S3			X
Rana boylii (Foothill Yellow-legged Frog) (Northwest/North Coast Clade)	None	None	SSC	G5	S1	X		
Rhyacotriton variegatus (Southern Torrent Salamander)	None	None	SSC	G3G4	S2S3	X		
Reptiles								
Emys marmorata (Western Pond Turtle)	None	None	SSC	G3G4	S3	X		
Birds								
Accipiter cooperi (Cooper's Hawk)	None	None	WL	G5	S4			X
Accipiter striatus (Sharp-shinned Hawk)	None	None	WL	G5	S4			X
Ardea alba (Great Egret)	None	None		G5	S4	X		
Ardea herodias fannini (Great Blue Heron)	None	None		G5	S4	X		
Asio flammeus (Short-eared Owl)	None	None	SSC	G5	S3	X		
Brachyramphus marmoratus (Marbled Murrelet)	Threatened	Endangered		G3	S2	X		
Chaetura vauxi (Vaux's Swift)	None	None	SSC	G5	S2S3			X
Circus hudsonius (Northern Harrier)	None	None	SSC	G5	S3	X		
Contopus cooperi (Olive-sided Flycatcher)	None	None	SSC	G4	S3			X
Egretta thula (Snowy Egret)	None	None		G5	S4	X		
Elanus leucurus (White-tailed Kite)	None	None	FP	G5	S3S4			X
Empidonax traillii brewsteri (Willow Flycatcher)	None	Endangered		G5T3T4	S1S2	X		
Falco columbarius Merlin	None	None	WL	G5	S3S4			X
Falco peregrinus anatum (American Peregrine Falcon)	Delisted	Delisted	FP	G4T4	S3S4	X		
Haliaeetus leucocephalus (Bald Eagle)	None	Endangered	FP	G5	S3		X	
Icteria virens (Yellow-breasted Chat)	None	None	SSC	G5	S3			X
Numenius americanus (Long-billed Curlew)	None	None	WL	G5	S2	X		
Pandion haliaetus (Osprey)	None	None	WL	G4	S4		X	
Passerculus sandwichensis alaudinus (Bryant's Savannah Sparrow)	None	None	SSC	G5T2T3	S2S3	X		
Poecile atricapillus (Back-capped Chickadee)	None	None	WL	G5	S3			X
Progne subis (Purple Martin)	None	None	SSC	G5	S3		X	
Selasphorus rufus (Rufous Hummingbird)	None	None		G5	S1S2		X	
Selasphorus sasin (Allen's Hummingbird)	None	None		G5	S4			X
Strix occidentalis caurina (Northern Spotted Owl)	Threatened	Threatened		G3G4T3	S2	X		
Toxostoma redivivum (California Thrasher)	None	None		G5	SNR	X		
Mammals								
Aplodontia rufa humboldtiana (Humboldt Mountain Beaver)	None	None		G5TNR	SNR			X
Arborimus albipes (White-footed Vole)	None	None	SSC	G3G4	S2		X	
Arborimus pomo (Sonoma Tree Vole)	None	None	SSC	G3	S3		X	
Corynorhinus townsendii (Townsend's Big-eared Bat)	None	None	SSC	G4	S2		X	
Erethizon dorsatum (North American Porcupine)	None	None		G5	S3	X		
Lasiurus cinereus (Hoary Bat)	None	None		G3G4	S4			X
Myotis evotis (Long-eared Myotis)	None	None		G5	S3	X		
Pekania pennanti (Fisher) – NCSO DPS	None	None	SSC	G5	S2S3	X		

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Department of Fish and Wildlife (CDFW) Special Status Designation (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Table 7. Special Status Wildlife Species Incidentally Detected Within the Proposed Project Area.

Species	FESA*	CESA†	CDFW‡	GRank§	SRank§	Detection Type
Amphibians						
Rana aurora (Northern Red-legged Frog)	None	None	SSC	G4	S3	Adults (n=2)
Birds						
Chaetura vauxi (Vaux's Swift)	None	None	SSC	G5	S2S3	Fly-over
Elanus leucurus (White-tailed Kite)	None	None	FP	G5	S3S4	Fly-over
Haliaeetus leucocephalus (Bald Eagle)	None	Endangered	FP	G5	S3	Fly-over
Poecile atricapillus (Back-capped Chickadee)	None	None	WL	G5	S3	Singing/ foraging
Selasphorus sp. (unidentified *Selasphorus* Hummingbird)	None	None				Fly-over
Mammals						
Aplodontia rufa humboldtiana (Humboldt Mountain Beaver)	None	None		G5TNR	SNR	Burrows

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Department of Fish and Wildlife (CDFW) Special Status Designation (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Humboldt Mountain Beaver (*Aplodontia rufa humboldtiana*)

Also included among those seven special status species, is Humboldt Mountain Beaver (*Aplodontia rufa humboldtiana*). This primitive fossorial rodent has been reported from the nearby Azalea Park State Reserve (CNDDB 2020) and sufficient evidence (i.e., slope aspect and soil, vegetation, and burrow dimensional characteristics) was observed within the project area during our fieldwork to infer the presence of this animal at the site (Appendix A, Figure 2). Although this member of the most primitive extant genus of rodents currently lacks state or federal protective status, in light of its disjunct and limited occurrence in California, its specific habitat requirements, and vulnerability to similar threats and constraints facing the closely-related (and federally Endangered) subspecies, Point Arena Mountain Beaver (*A. rufa nigra*), the California Department of Fish and Wildlife monitors actions affecting the Humboldt Mountain Beaver and its consideration within the context of the proposed project is warranted.

5.2.2 Other Biological Resources Protected Under California Fish & Game Code

As previously described herein (Section 5.1.5), forest, shrub, bramble, and grassland habitats throughout the project area all provide suitable breeding habitat for migratory bird species, as do individual trees, snags, shrubs, and anthropogenic structures (e.g., sheltered eaves, overhangs, ledges, cavities in utility poles, and constructed "cavities" associated with sheds, outbuildings, utility boxes, etc.).

Evidence of at least five (5) active bird nests protected under the California Fish and Game Code (§§ 2000, 3503, 3503.5, 3800, 3513) was observed incidentally within the project area during our fieldwork (Table 4, reproduced below; Appendix A, Figure 2). Other observed examples of active nesting bird behavior included the territorial singing of male songbirds, nest-provisioning by multiple species, and the aforementioned tree cavities in at least two red alder (*Alnus rubra*) snags along the eastern edge of the project area (Appendix A, Figure 2).

Table 4. Incidental Nesting Bird Observations. (Reproduced here for ease of reference.)

Species/Observations	Location
Buteo jamaicensis (Red-tailed Hawk) Human-stimulated agitation; inter-specific territorial defense (with *Haliaeetus leucocephalus*, Bald Eagle), site-fidelity, obs. June, July, August 2020	Sitka spruce forest, northeastern project area
Bubo virginianus (Great-horned Owl) Roosting juveniles (n = 2), obs. 7/26/20	Large coast redwood on east-facing slope w/in Sitka spruce forest (eastern project area
Contopus sordidulus (Western Wood-Pewee) Human-stimulated agitation; conspecific territorial defense, site-fidelity of a pair, vociferous male, obs. 7/26/20	Arroyo willow (*Salix lasiolepis*) thicket, northeastern project area
Empidonax difficilis (Pacific-slope Flycatcher) Nests with eggs (n = 1) and with nestlings (n = 1), human-stimulated agitation, obs. 7/26/20	Tipped-up root masses of windthrown Sitka spruce, northeastern project area
Zonotrichia leucophrys (White-crowned Sparrow) Nest-provisioning, human-stimulated agitation, obs. 6/30/20	Grassland-bramble edge, southern project area

* Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

5.2.3 Sensitive Natural Communities

Forty-four (44) Sensitive Natural Communities were identified for consideration pursuant to CEQA Section 15380 during our initial research for the proposed project. Of those 44 communities, six (6) were considered to have reasonable potential to occur (Appendix C) at the site. During our fieldwork, four (4) Sensitive Natural Communities were identified within the project area (Table 8; Appendix D). Each has been characterized previously herein (Section 3.2.2.2) and the distribution and extent of each are depicted in Appendix A (Figure 1).

Table 8. Sensitive Natural Communities Present within the Proposed Project Area

Community	GRank* SRank
Forested Communities	
Picea sitchensis Forest and Woodland Alliance Sitka Spruce Forest and Woodland	G5 S2
Shrub Communities	
Rubus (*parviflorus, spectabilis, ursinus*) Shrubland Alliance Coastal Brambles	G4 S3
Herbaceous Communities	
Carex obnupta Herbaceous Alliance Slough Sedge Swards	G4 S3
Scirpus microcarpus Herbaceous Alliance Small-Fruited Bulrush Marsh	G4 S2

Three of the Sensitive Natural Communities identified within the project area (i.e., "Sitka Spruce Forest and Woodland" [*Picea sitchensis* Forest and Woodland Alliance], "Slough Sedge Swards" [*Carex obnupta* Herbaceous Alliance], and "Small-fruited Bulrush Marsh" [*Scirpus microcarpus* Herbaceous Alliance"]) are associated with the freshwater wetland systems that occur in the northeastern project area extension. However, considering that the presence of some hydrophytic vegetation does not always coincide with the presence of other

wetland attributes (i.e., wetland hydrology and hydric soils) used to delineate wetland habitats (USACE 1984, 2010), these three vegetation communities are addressed within the context of this biological resource assessment analysis on their own, vegetation-community-conservation-merits, independent of any wetland association. As previously stated herein, wetland habitats associated with the proposed project area are treated elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021), being prepared concurrently.

The remaining Sensitive Natural Community identified within the project area is, however, currently undergoing revisions (Keeler-Wolf & Boul pers. comm.). Under the current membership rules for "Coastal Brambles" (*Rubus* [*parviflorus*, *spectabilis*, *ursinus*] Shrubland Alliance) (CNPS 202b, 2021), a dominance of either of the three indicated *Rubus* species in a shrubland habitat, either individually or collectively, defines this vegetation alliance. Such an inclusive definition is broadly applicable to extensive areas of shrubland vegetation throughout northern California and beyond.

Rubus ursinus ("California blackberry"), the dominant plant comprising the Coastal Bramble patches with the proposed project area is a fairly widespread, early-successional, facultative shrub species, commonly found along forest edges and gaps within the north coast region. In recognition of the distinct ecological role and wider geographic range of this species, a revised alliance description planned for publication in 2021 (Keeler-Wolf & Boul pers. comm.; CNPS 2021), will split *R. ursinus* out from the *Rubus* (*parviflorus*, *spectabilis*, *ursinus*) Shrubland Alliance, and instead, place it in a distinct vegetation alliance: the *Gaultheria shallon – Rubus* [*ursinus*] Alliance (Table 9). Simultaneously, the reduced (Heritage) state rarity rank assigned to this new alliance (i.e., G4, S4) will result in it not qualifying as a California Sensitive Natural Community. In light of this imminent revision, we conclude that the *Rubus ursinus*-dominated coastal bramble habitats at the site should not be treated as a Sensitive Natural Community.

Table 9. Revised Vegetation Alliance Assignment for *Rubus ursinus*- ("California blackberry")-Dominated Shrublands and Associated Membership Rules.

***Gaultheria shallon – Rubus* (*ursinus*) Alliance**
Gaultheria shallon, *Rubus parviflorus*, or *R. ursinus* dominant or occur with comparable cover (Belsher 1999)
Gaultheria shallon, *Rubus parviflorus*, or *R. ursinus* dominant in the shrub canopy (Buck-Diaz et al. 2020, 2021)
Gaultheria shallon or *R. ursinus* dominant in the shrub canopy (Klein et al. 2015)

5.2.4 Wetlands and Waters of the State

Both forested and emergent freshwater wetland habitats were identified at the site. These wetland habitats have been generally characterized previously herein within the context of their associated plant communities (Section 3.2.2.2), which are depicted in Appendix A (Figure 1). A more thorough treatment of the methods

and findings pertaining to the identification and delineation of these wetland habitats is addressed elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace and Associates 2021), being prepared concurrently.

6.0 Potential Impacts to Sensitive Biological Resources and Mitigation Recommendations

Potential impacts to sensitive biological resources resulting from implementation of the proposed project are addressed below. Accompanying these assessments are corresponding mitigation measures to avoid and/or minimize potential impacts identified. In closing we provide a summarized recommended approach with the goal of outlining a progression of project implementation that would be least likely to adversely affect special status and/or other protected wildlife species, and which would likely result in the fewest possible biological resource-related constraints for the proposed project under present circumstances. Potential project-related impacts to Wetlands, Waters of the U.S., and Waters of the State are addressed elsewhere in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021), being prepared concurrently.

One primary mitigation measure pertinent to the proposed project, as a whole, is that of worker awareness and training. Worker awareness and training is of fundamental importance to the efficacy of any mitigation effort. Such training should be a requirement of project and construction personnel with reasonable likelihood of encountering sensitive biological resources prior to participation in order to provide education about relevant sensitive biological resources and ensure that respective mitigation protocols are applied should personnel encounter such a resource within the action area. Direction to avoid any designated “no entry” special treatment zones (Appendix A, Figure 3) should be included in such training.

6.1 Federally-Protected Biological Resources

6.1.1 Listed Species under the Federal Endangered Species Act (FESA)

6.1.1.1 Botanical Species

***Lilium occidentale* (“Western Lily”)**

The single federally-listed botanical species considered to have reasonable potential to occur within the proposed project area, *Lilium occidentale* (“western lily”) was not encountered at the site during floristically-appropriate field surveys performed for this species. Therefore, no project-related impacts to this species are expected.

6.1.1.2 Fish and Wildlife Species

Marbled Murrelet and Northern Spotted Owl
Considering the lack of suitable breeding habitat for Marbled Murrelet or Northern Spotted Owl within the immediate vicinity of the project area; the consistent lack of detections of the latter species reported (Early and Lucchesi pers. comm.) from nearby industrial timberland stands despite being actively surveyed for the past 5+ years; and no planned removal, alteration, or significant encroachment into forested habitat at the site; no project-related impacts are expected to either species.

On the basis of the aforementioned conclusion, no species-specific protocol surveys for either species are considered warranted at this time. In the highly unlikely event that either species is detected within the project area during pre-disturbance breeding bird surveys (see below) and/or any other project-related activities, work should cease and consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife should be initiated immediately.

6.1.2 Other Federally-Protected Special Status Species

Mitigation measures provided in the following sections are considered sufficient to reduce and/or avoid potential project-related impacts to species potentially occurring within the project area (Table 6), which have been designated as "Sensitive" by the U.S. Forest Service or Bureau of Land Management, "Birds of Conservation Concern" by the U.S. Fish and Wildlife Service, and/or which are nesting migratory birds protected under the Migratory Bird Treaty Act (MTBA).

6.2 California State-Protected Biological Resources

6.2.1 Botanical Resources

6.2.1.1 Special Status Botanical Species

The single special status botanical species occurring at the site, *Ribes laxiflorum* ("trailing black currant"), is restricted to a discrete location near the buttressed base of a large Sitka spruce (*Picea sitchensis*) tree, well within the Sitka Spruce Forest and Woodland habitat at the eastern edge of the proposed project area (approximately 12 meters [~40 feet] inside of the forest edge). Considering that this rare species occurs within the surrounding Sitka Spruce Forest and Woodland habitat, itself a California Sensitive Natural Community for which protective mitigation recommendations are provided herein (Section 6.2.1.2, below), anticipated potential project-related impacts to this rare plant occurrence are limited to construction activities associated with the removal of the existing overflow drain pipeline. The outfall of the existing drain pipeline daylights just inside the edge of the associated Sitka Spruce and Woodland habitat, approximately 15 meters (~50 feet) from the *R. laxiflorum* occurrence.

To avoid potential project-related impacts to this rare plant occurrence, a qualified biologist should be present onsite during any project-related activities in

the vicinity of the occurrence to monitor construction activities and ensure that the rare species is not disturbed.

In order to promote the future potential for the establishment and recovery of this and other rare botanical species in general, disturbances to native vegetation and associated habitats should be minimized to the extent feasible during project implementation. Efforts should also be made to reduce the potential for the introduction of invasive vegetation into the project area as a result of the proposed project. Thorough cleaning of construction equipment prior to mobilization and demobilization, as well as timely restoration and revegetation of disturbed areas with native and regionally-appropriate seed and planting stock will help in this regard.

6.2.1.2 California Sensitive Natural Communities

In advance of any clearing and grubbing and/or other construction-related disturbance within the proposed project area, the contiguous perimeter of California Sensitive Natural Communities identified at the site (Table 8; Appendix A, Figure 1) should be clearly staked and flagged by a qualified biologist as a "no entry" special treatment zone (Appendix A, Figure 3) to prevent project-related impacts to these protected habitats. As described previously herein (Section 5.2.3), *Rubus ursinus* ("California blackberry")-dominated Coastal Bramble habitat is not included as a sensitive natural community within the context of the proposed project, and therefore should not need such identification and restriction. However, this vegetation community does provide suitable nesting habitat for breeding birds and should be treated accordingly (refer to Section 6.2.2.4, below).

The majority of ground-disturbing activities associated with proposed construction will be limited to existing developed areas and a combination of grazed Velvet Grass – Sweet Vernal Grass Meadow and Coastal Bramble vegetation alliances, however, limited impacts to Water Foxtail Meadow and Sitka Spruce Forest and Woodland habitats are also anticipated. Adverse impacts to Slough Sedge Sward and Small-fruited Bulrush Marsh communities are not expected, though these latter habitats may ultimately benefit from discharges associated with periodic reservoir maintenance activities.

Wherever project-related activities have the potential to disturb Water Foxtail Meadow, Sitka Spruce Forest and Woodland, Slough Sedge Sward, and/or Small-fruited Bulrush Marsh California Sensitive Natural Communities, a qualified biologist should be present onsite during the performance of any such activities to monitor construction activities and ensure that potential project-related impacts to these sensitive habitats and the associated identified rare plant occurrence (described in Section 6.2.1.1, previously herein) are avoided.

Anticipated impacts to the Sitka Spruce Forest and Woodland habitats are limited to those associated with the removal of the existing overflow drain pipeline and construction of the proposed new overflow drain pipeline in the northeast project

area extension. The existing overflow drain pipeline lies within a combination of grazed upland Velvet Grass – Sweet Vernal Grass Meadow and Coastal Bramble habitats, with the exception of the final ~6 meters (~20 feet), which extend into the Sitka Spruce Forest and Woodland habitat. Removal of the shallow existing overflow drain pipeline will require encroachment into the Sitka Spruce Forest and Woodland habitat along the final ~6 meters (~20 feet) section. To facilitate removal of the existing overflow drain pipeline, temporary removal of protective staking and flagging established along the perimeter of this California Sensitive Natural Community should be limited to the minimum area necessary to facilitate completion of this project task. Immediately following task completion, staking and flagging should be replaced to re-establish the protective "no entry" special treatment zone.

Consistent with mitigation measures recommended for open trenching through wetland habitats provided in the associated *Final Wetland Delineation Report, McKinleyville Community Services District 4.5 MG Water Reservoir Project* (J.B. Lovelace & Associates 2021) being prepared concurrently, where limited open trenching occurs within the Sitka Spruce Forest and Woodland habitat to remove the existing overflow drain pipeline, the top 15.25–30.5 cm (~6–12 inches) of excavated material (i.e., "topsoil") containing seeds, rhizomes, roots, and other vegetative propagules and organic material should be stockpiled separately from deeper material and kept moist for subsequent proportional replacement in the surface horizon during backfilling operations. Such handling will aid in rapid revegetation of disturbed substrate and maintain pre-construction soil texture and drainage properties. This surface layer should be replaced at the earliest opportunity and should not be compacted or otherwise handled in such a way as to discourage the restoration of pre-project vegetation and/or surface drainage characteristics. This surface layer material may need to be filled to approximately 2.5–5 cm (~1–2 inches) above grade to allow for natural backfill settling to finished grade level.

Backfill should include only native material excavated from the trench, though suitable native borrow material generated onsite during excavation of the new reservoir footprint may also be used here to compensate for any material deficit resulting from removal of the existing pipeline. As specified herein, the upper 15.25–30.5 cm (~6–12 inches) of backfill material should consist of surface material as described previously. Any sidecast spoils material generated during this project task should only be broadcast to a thickness that does not exceed one-inch (2.54 cm). Any spoils material that cannot be appropriately broadcast onsite should only be disposed of at permitted and/or otherwise approved locations.

To address anticipated impacts associated with construction of the proposed new overflow drain pipeline, current design plans available at the time of this writing (i.e., 30% Submittal, Kennedy Jenks 2021) have been developed to incorporate mitigation measures designed to minimize project-related disturbance to this forested California Sensitive Natural Community.

Original design plans for the new overflow drain pipeline considered open-trench construction methods along a proposed alignment considered to be most economical and that provided the best fall path. This original proposed approach would have resulted in substantial disturbance to the shallow root system of as many as 10 maturing Sitka spruce trees and would also have impacted Slough Sedge Sward and Small-fruited Bulrush Marsh Sensitive Natural Communities (i.e., additional freshwater wetland habitat areas) present in this location as well.

To minimize disturbance to these California Sensitive Natural Communities, the proposed new overflow pipeline alignment has been revised to construct the pipeline closer to the western boundary of the northeastern project area extension, thereby minimizing the extent of encroachment into the Sitka Spruce Forest and Woodland habitat and avoiding adverse impacts to the Slough Sedge Sward and Small-fruited Bulrush emergent wetland communities more centrally located within this portion of the project area. Similarly, revised construction methods still utilize the less expensive open-trenching methods initially, but then transition to an above-grade section prior to intersecting with the root zone of maturing Sitka Spruce trees, thereby minimizing and/or avoiding damage to these individuals and preventing premature project-related mortality and potential failure. The reduced and remaining impacts to the Sitka Spruce Forest and Woodland habitat resulting from construction of this pipeline are expected to be limited to the temporary disturbance during construction and the more permanent installation of ~17 (42” [length] x 48” [width] x 30” [depth]) supportive reinforced concrete footings placed every 15–20 feet along the ~260-foot length of the above-grade section.

The new overflow drain pipeline outfall is currently designed (30% Submittal, Kennedy Jenks 2021) as a concrete headwall of comparable dimensions to the pipeline support footings and would be placed in the upland strip of Velvet Grass–Sweet Vernal Grass Meadow vegetation along the northwestern edge of the northeast project area extension. Here, the outfall shall include some appropriate means of flow velocity dissipation (e.g., rock, etc.) to prevent scouring and/or erosion, and discharges are expected to both infiltrate and sheetflow overland through existing vegetation for approximately 15 meters (~50 feet) prior to reaching the adjacent palustrine emergent wetland habitat (Slough-Sedge Swards and Small-fruited Bulrush Marsh), and ultimately, the associated stormwater drain system on the south side of Cochran Road, ~40 linear meters (~130 feet) further north of the upland-wetland boundary.

The total combined volume of future discharges from the new overflow drain pipeline is expected to increase relative to current levels, proportionate to the increase in system storage capacity. However, existing measures already implemented as part of contemporary periodic reservoir maintenance activities are expected to ensure that the characteristics of individual future discharges are consistent with those already occurring as part of the current maintenance regime and such discharges will continue to comply with provisions set forth in the *Statewide NPDES General Permit for Drinking Water Discharges to Waters*

of the US, Order WQ 2014-0194-DWQ, General Order No. CAG140001 (SWRCB 2014).

Such existing measures include the drawing down of individual reservoirs prior to being serviced to minimize water waste and discharge volume, as well as ensuring that District staff are present on-site during such maintenance operations to monitor and regulate flow rates and velocities to avoid any scouring, erosion, and/or other adverse effects to affected biological resources. The periodicity and chemical composition of future overflow drain pipeline discharges are also anticipated to be consistent with current operations. As a result, the Slough Sedge Sward and Small-fruited Bulrush California Sensitive Natural Communities are not expected to be adversely impacted by future reservoir maintenance-related discharges, and may potentially even benefit from the increased cumulative volume of future discharges.

6.2.2 Fish and Wildlife Resources

Appropriate mitigation of potential project-related impacts to special status fish and wildlife species varies depending upon the species being affected and the nature of the impact. In most cases, project-related impacts can be mitigated by a combination of seasonal restrictions on construction activities, pre-construction biological field surveys, and/or during-construction biological monitoring of project activities. Treatment of anticipated potential impacts and corresponding recommended mitigation measures for special status fish and wildlife species determined to have reasonable potential to occur within the proposed project area (or that otherwise could be affected by the proposed project) follows. Treatments are arranged according to taxonomic group.

6.2.2.1 Insects

Potential project-related impacts to either (California state Candidate Endangered) *Bombus occidentalis* (“Western Bumble Bee”) or *Bombus caliginosus* (“Obscure Bumble Bee”) would depend on the presence of either species at the site, the timing and nature of project-related disturbances, and the methods and success of post-construction revegetation efforts. Initiation of excavation and ground disturbance activities in early spring is optimal for this group of predominantly ground-nesting insects. Such timing has the greatest potential to minimize mortality and/or disturbance to (underground) hibernating queen bumble bees and establishes a disturbance regime which, if maintained, can discourage any attempts of queen bumble bees to initiate new colonies within the impact area. This window is, however, narrow, and varies from year-to-year.

Historic local observations of Western Bumble Bee queen emergence range from mid-March to mid-April (Mesler pers. comm.), though this period can vary based on annual variations in climate and weather conditions. Pre-disturbance surveys for emergent queen bumble bees during this seasonal period are recommended as they have the potential to provide an accurate assessment as to the presence

of either of these species at the site, and consequently, the need for seasonal considerations relative to the optimal timing of the initiation of construction.

Post-construction restoration and revegetation efforts should consider replanting locally-appropriate native forage plant species known to be frequented by bumble bees such as *Rubus spectabilis* ("salmonberry"), *Rubus parviflorus* ("thimbleberry"), *Grindelia stricta* var. *platyphylla* ("gum plant"), *Lupinus affinis* ("fleshy Lupine"), *Lupinus nanus* ("sky Lupine"), *Lupinus variicolor* ("varied Lupine"), *Ceanothus thyrsiflorus* var. *thyrsiflorus* ("blueblossom"), *Rhododendron columbianum* (Labrador tea), *Rhododendron macrophyllum* (California Rhododendron), Vaccinium ovatum ("evergreen huckleberry") *Keckiella corymbosa* ("red beardtongue"), etc.

6.2.2.2 Fish

Although no perennial streams capable of supporting fish species occur within the proposed project area, discharges associated with periodic reservoir maintenance activities described previously herein (Section 6.2.1.2, above) do have the potential to affect the aquatic environment in nearby Mill Creek, in the immediate downstream vicinity of the discharge point of the stormwater system that drains the proposed project area. Approximately one mile (~1.6 km) downstream of this stormwater discharge point, between Central Avenue and Turner Road, Mill Creek Falls presents a "total natural barrier" to anadromous fish species (CDFW 2021), and resident Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*) is the only special status fish species known to occur upstream of Mill Creek Falls, in the stream reach potentially affected by reservoir maintenance activities (CNDDB 2020; etc.).

Any potential influence of reservoir maintenance-related discharges is anticipated to be localized to the immediate downstream vicinity of the stormwater discharge point and is expected to attenuate to the point of being negligible within a short distance from the point of discharge. Any such influence is unlikely to adversely impact the aquatic environment in the vicinity of Mill Creek Falls and/or further downstream.

Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*)

Discharges associated with periodic reservoir maintenance activities described previously herein (Section 6.2.1.2, above) do have the potential to impact resident Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*), which are known to occur in nearby Mill Creek, downstream of the proposed project area (CNDDB 2021, etc.). Future reservoir maintenance-related discharges are, however, expected to be short in duration and small in magnitude, and consistent with those already occurring as part of the current maintenance regime, which are carried out in compliance with provisions set forth in the *Statewide NPDES General Permit for Drinking Water Discharges to Waters of the US, Order WQ 2014-0194-DWQ, General Order No. CAG140001* (SWRCB 2014) to protect water quality.

Although the combined volume of future reservoir maintenance-related discharges is expected to increase relative to current levels (proportionate to the increase in system storage capacity), existing measures already implemented as part of contemporary periodic reservoir maintenance activities are expected to ensure that the characteristics of individual future discharges are consistent with those already occurring as part of the current maintenance regime. Existing measures include the drawing down of reservoirs prior to being serviced to minimize the volume of individual discharges, and on-site monitoring and regulation of flow rates and velocities by District staff to ensure that maintenance operations avoid any scouring, erosion, and/or other adverse effects to water quality and/or dependent aquatic biota and associated habitat. Allowing discharges to infiltrate and sheetflow overland through existing vegetation between the overflow drain pipeline outfall and the stormwater drain inlet should further reduce discharge velocities, thereby minimizing the potential for mobilization and transport of fine sediments while also providing for volatilization of residual dissolved chlorine typically associated with domestic water treatment processes.

To further reduce the potential for adverse impacts to resident Coastal Cutthroat Trout in Mill Creek, reservoir-related discharges should be limited to the seasonal periods and/or extended precipitation events where any reservoir-related artificial increase in streamflow would be negligible relative to ambient natural flows to minimize the potential for fish stranding and/or inducing migratory movements or other behavioral changes. The optimal seasonal period for such reservoir maintenance-related discharges is November 15–April 15. Periodic reservoir maintenance-related discharges should not occur during the period from May–June to avoid the potential for impacting resident Coastal Cutthroat Trout in Mill Creek during their breeding season.

6.2.2.3 Amphibians

Southern Torrent Salamander (*Rhyacotriton variegatus*)

Potential project-related impacts are not anticipated for Southern Torrent Salamander (*Rhyacotriton variegatus*) given that construction activities will not occur within any portion of the forested habitats within the project area where this species would be likely to occur.

Northern Red-legged Frog (*Rana aurora*)

Although suitable breeding habitat for this species does not occur within the project area, as evidenced by our 2021 field observations, adult and/or juvenile Northern Red-legged Frogs can be expected to utilize the vegetated habitat with saturated soils immediately below the proposed location for the new reservoir; mesic habitats throughout the Sitka Spruce Forest and Woodland, Slough Sedge Swards, and Small-fruited Bulrush marsh; and even drier vegetated habitats elsewhere within the project area for foraging, cover, and/or dispersal.

We recommend pre-construction surveys by a qualified biologist immediately prior to the initiation of vegetation removal and/or ground disturbance. Such

surveys should occur the same day impacts begin (at minimum), working in advance of ground disturbing equipment. An additional survey the day prior to initiation of ground disturbance should also be considered to minimize frog-relocation delays to construction activities. In consultation with the California Department of Fish and Wildlife, should any Northern Red-legged Frogs be encountered, those individuals should be relocated to appropriate suitable habitat elsewhere onsite, well beyond the action area.

In the event that Northern Red-legged Frog is encountered in abundance within the action area and initial survey and relocation efforts are determined by a qualified biologist to be insufficient to adequately mitigate project-related impacts to this species, the presence of a biological monitor may be necessary for on-going relocation efforts for this protected species. Construction activities should also avoid the creation of temporary ponds and/or other impoundments that could attract breeding frogs into the action area during construction.

Foothill Yellow-legged Frog (*Rana boylii*)
Suitable breeding habitat for Foothill Yellow-legged Frog (*Rana boylii*) does not occur within the project area. Although unlikely, there is some potential for adult and/or juvenile Foothill Yellow-legged Frogs to utilize the vegetated habitat with saturated soils immediately below the proposed location for the new reservoir, and even drier vegetated habitats within the project area for foraging and/or cover.

The pre-construction surveys by a qualified biologist recommended previously for Northern Red-legged Frog should adequately address the potential occurrence of Foothill Yellow-legged Frog within the action area as well. Should any Foothill Yellow-legged Frogs be encountered during such surveys, such individuals should be relocated to appropriate suitable habitat elsewhere onsite, well beyond the action area and in consultation with the California Department of Fish and Wildlife. In the unexpected event that Foothill Yellow-legged Frog is encountered in abundance within the action area and initial survey and relocation efforts are determined by a qualified biologist to be insufficient to adequately mitigate project-related impacts to this species, the presence of a biological monitor may be necessary for on-going relocation efforts for this protected species.

6.*2.2.4 Reptiles*
Western Pond Turtle (*Emys marmorata*)
Typical basking and foraging habitat for Western Pond Turtle (*Emys marmorata*) does not occur within the project area and given the frequency and extent of coastal fog experienced at the site, it is unlikely that this species occurs here. However, there is some chance that this species could choose to breed in the transitional and/or upland habitats at the site between March–August.

In the unlikely event that nests, eggs, young, and/or adult Western Pond Turtle are encountered within the project area, a qualified biologist should assess the occurrence and, if the occurrence consists of adult or juvenile turtles, such

individuals should be relocated to appropriate suitable habitat elsewhere onsite, well beyond the action area and in consultation with the California Department of Fish and Wildlife. In the event of a discovery of a Western Pond Turtle nest, an appropriately-sized, "no-entry" special treatment area buffer should be created around the nest by a qualified biologist and be clearly marked in the field to prevent entry into the buffer. Consultation should be initiated with the California Department of Fish and Wildlife to identify appropriate measures to facilitate the continuation of project implementation while protecting the nest until hatching has occurred and juvenile turtles can be safely relocated to nearby suitable habitat. Construction activities should also avoid the creation of temporary ponds and/or other impoundments that could attract turtles into the action area.

6.2.2.5 Birds

As discussed previously herein (Section 5.1.1.2), no suitable breeding habitat for Marbled Murrelet (*Brachyramphus marmoratus*) or Northern Spotted Owl (*Strix occidentalis caurina*) occurs within the immediate vicinity of the project area. On that basis, in combination with the lack of detections of the latter species reported (Early and Lucchesi pers. comm.) from nearby industrial timberland stands despite being actively surveyed for the past 5+ years; and no planned removal, alteration, or significant encroachment into forested habitats at the site; no project-related impacts are expected to either species.

Temporary construction-related activities within the action area do, however, have the potential to result in direct and/or indirect impacts to other special status birds, raptors and other nesting birds protected under the California Fish and Game Code (§§ 2000, 2050 *et seq*., 3503, 3503.5, 3511, 3513, and 3800), and/or other migratory nesting birds also protected under the federal Migratory Bird Treaty Act (MTBA). Direct impacts would most likely occur through removal of nesting habitat during the course of pre-construction clearing and grubbing of grassland and/or shrub/bramble plant communities, as well as the limbing or removal of individual trees. Disturbance of such nesting habitat during the bird nesting season has the potential to result in the take[*] of eggs, nestlings, dependent fledglings, and/or attendant adults.

Considering the construction design and methods proposed at the time of this writing, unmitigated direct impacts could result in take of a variety of nesting resident and migratory bird species, as well as the following special status birds:

- Yellow-breasted Chat (*Icteria virens*)
- Black-capped Chickadee (*Poecile atricapillus*)
- Rufous Hummingbird (*Selasphorus rufus*)
- Allen's Hummingbird (*Selasphorus sasin*)

[*] "Take" is defined in the California Fish and Game Code §86 as "to hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill" and also applies to actions incidental to, but not the intended purpose of, an otherwise lawful activity (i.e., "incidental take).

No removal of forested nesting bird habitat is anticipated to occur during the implementation of the proposed project; therefore, no risk of take resulting from direct impacts to forested breeding habitat is expected for the remaining special status birds considered to have reasonable potential to occur at the site (Table 7), including:

- Cooper's Hawk (*Accipiter cooperii*)
- Sharp-shinned Hawk (*Accipiter striatus*)
- Vaux's Swift (*Chaetura vauxi*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- White-tailed Kite (*Elanus leucurus*)
- Willow Flycatcher (*Empidonax traillii brewsteri*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Osprey (*Pandion haliaetus*)
- Purple Martin (*Progne subis*)

Indirect impacts can also result in take of nesting birds, primarily manifest through project-related disturbances such as construction noise, equipment-related impact and/or vibration, proximity to humans, attraction of nest predators to the construction site through inappropriate waste management and disposal, and/or other disturbances incidental to the temporary increase in human presence and activity during construction and restoration. Should such disturbances be of sufficient contrast relative to baseline conditions in the absence of project-related activities, they could result in project-related nest failure and take by way of nest abandonment, starvation and/or inhibited development due to the inability of adults to adequately feed young undisturbed, and/or attraction of nest predators and consequent nest predation.

Considering the construction methods and design proposed at the time of this writing, and given the greater effect range of indirect, disturbance-related impacts, implementation of the proposed project could result in take of a broader diversity of nesting birds across a wider area, if not otherwise mitigated for. This wider group of potentially-affected species could include special status birds, raptors and other nesting birds protected under the California Fish and Game Code, and/or other migratory nesting birds mentioned previously herein as being unlikely to be at risk of direct project-related impacts (should they be present in the vicinity during construction). Among this broader group of potentially-affected species, two raptors confirmed to be nesting in the project area vicinity during our 2020 fieldwork (i.e., Red-tailed Hawk, *Buteo jamaicensis* and Great Horned Owl, *Bubo virginianus*) are quite likely to be affected by project-related disturbance given the proximity of the proposed construction area to their nesting habitat (i.e., adjacent Sitka Spruce Forest and Woodland habitat to the east of the proposed construction area), and given their increased sensitivity to anthropogenic disturbance.

The reduction in habitat for terrestrial and/or fossorial prey species (e.g.; Botta's Pocket Gopher, *Thomomys bottae*; California Vole, *Microtus californicus*; Shrew Mole, *Neurotrichus gibbsii*; Deer Mouse, *Peromyscus maniculatus*; etc.) is another potential indirect impact from the proposed project. Construction of the proposed reservoir will reduce such habitat within the project area by ~15%, though additional similar habitat also extends throughout APN 509-021-045, beyond the extent of the proposed project area boundary, and the identified reduction is not thought likely to independently result in the decline of local raptor populations.

Options to mitigate for potential direct and indirect project-related impacts to protected avian resources include seasonal restrictions on construction activities, pre-construction biological field surveys, during-construction biological monitoring of project activities, or some combination thereof. Impacts to nesting birds may be avoided by limiting construction activities to the period outside of the breeding/nesting season. This season varies depending upon the species being considered and can, as a whole, shift slightly from year-to-year based on interannual climatic variation and weather patterns. In consideration of such variation, the period from February–August is generally accepted as bracketing the breeding bird season for the region (though it is not uncommon for second and third clutch attempts, or delayed nest initiation due to prior disturbance or nest failure, to push some nesting efforts further into September).

Should such seasonal operating restrictions prove infeasible, pre-disturbance surveys for nesting birds should be conducted prior to the start of vegetation- and/or ground-disturbance activities. Nesting bird surveys should focus on the footprint of the action area, and include a 100-foot radius around its perimeter (where breeding habitat exists) to account for nearby nests that could be adversely impacted by project-related disturbances. Given the potentially short time period between arrival on breeding grounds and nest building for some bird species, suitable nesting habitat should be resurveyed each time a period of five (or more) days has elapsed without disturbance proportionate to that of on-going construction.

If, through such pre-disturbance surveys, active bird nesting is confirmed within the survey area, species-appropriate "no entry" buffers should be clearly staked and flagged in the field around nesting territories by a qualified biologist. The size of such protective buffers should be developed in consultation with the California Department of Fish and Wildlife and should take into account the nature and intensity of the offending disturbance to ensure they are appropriately sized in order to prevent nest failure. Project activities that would potentially cause nest failure should not occur within established "no entry" buffers until the end of the breeding/nesting period for the species, or until a qualified biologist either determines that the breeding effort has failed or the young have fledged. In cases where such focused surveys are performed, a qualified biologist may be able to provide a more precise breeding and corresponding seasonal restriction period for the species being considered (for that specific year).

In some instances, it may also be possible for construction activities to continue within reasonable proximity to an active bird nest while said nest is concurrently being monitored by a qualified biologist who is able to observe nesting behavior in response to the construction-related disturbance. It should be emphasized, however, that the disturbance tolerance thresholds of nesting birds vary by species, individual, and the stage of the nesting effort being affected. Such measures should only be engaged with approval from relevant regulatory agencies having jurisdiction over the species of interest.

6.2.2.6 Mammals

Given that proposed construction activities will not involve removal, alteration, and/or significant encroachment into forested habitats within the project area, potential project-related direct impacts are not anticipated for any of the special status mammal species identified as having reasonable potential to occur within the project area (Table 7), with the possible exception of Humboldt Mountain Beaver (*Aplodontia rufa humboldtiana*).

The distribution of observed evidence of this latter species' presence at the site indicates that these burrowing animals are restricted to the mesic forested habitat along the eastern and northeastern edges of the project area (Appendix A, Figure 2). This primitive rodent species has a highly simplified renal structure which prevents them from being able to effectively concentrate urine, resulting in a significant need for hydration to be able to adequately replace water lost through copious excretion. Indeed, they have been found to consume 33% of their body mass in water, and excrete a comparable amount of urine, on a daily basis (Nungesser and Pfeiffer 1965 *in* USFWS 1998). In light of this moisture-dependency, they are not expected to occur within the more exposed and relatively xeric portion of the action area where the majority of construction activities are proposed. One exception is the construction of the above-grade portion of the overflow drain pipeline in the northeast project area extension.

In this latter location there is some potential for interaction between construction activities and Humboldt Mountain Beaver during pipeline installation. Given that there will be no trench excavation in this location, direct take of Humboldt Mountain Beaver is unlikely, though there is some chance that it could occur during construction of the concrete pipeline supports.

To minimize the potential for direct take of this species, we recommend pre-construction surveys by a qualified biologist immediately prior to the initiation of vegetation removal and/or ground disturbance in this area in order to identify the current location of Humboldt Mountain Beaver burrows and ensure that installation of the pipeline and/or supportive footings do not result in take of this species. If evidence of this species is found within proximity to the construction activities, an appropriately-sized "no-entry" special treatment zone buffer should be clearly staked and flagged in the field by a qualified biologist and the presence of a biological monitor should be considered during construction.

In the unexpected event that Humboldt Mountain Beaver are encountered during construction, those individuals should be relocated by a qualified biologist to appropriate suitable habitat elsewhere onsite, well beyond the action area. Such actions should only occur in consultation with the California Department of Fish and Wildlife. Should this species be encountered in abundance within the action area, and initial survey and relocation efforts are determined to be insufficient to adequately mitigate project-related impacts to this species, a biological monitor should be present for on-going relocation efforts for the duration of construction in affected areas.

There is some potential for noise- and/or vibration-related disturbance to this species, though significant vibration is not expected to be produced from the revised pipeline installation methods already planned for this section of the overflow drain pipeline to minimize impacts to the surrounding Sitka Spruce Forest and Woodland habitat. Any temporary indirect disturbances to Humboldt Mountain Beaver resulting from installation of the above-grade pipeline are not considered to be significantly detrimental to this species. Similarly, such indirect (disturbance-related) impacts to other potentially-occurring special status mammals inhabiting forested habitats in the immediate vicinity of the project area (Table 7) are considered to present little–no risk of take.

6.3 Recommended Approach

In closing, we provide a summarized recommended approach to project implementation that would be least likely to adversely affect special status and/or other protected wildlife species, and which would likely result in the fewest possible biological resource-related constraints for the proposed project under present circumstances.

Clearly stake and flag any “no-entry” Special Treatment Zones (e.g., California Sensitive Natural Communities, special status botanical occurrences, identified nesting bird areas, etc.) in advance of construction-related disturbance to prevent encroachment into such areas (Appendix A, Figure 3). All flagging and staking should be removed upon conclusion of final restoration activities or earlier if determined appropriate by a qualified biologist.

If at all possible, project implementation should occur during the period between September–January, outside of the nesting season for birds. If such a schedule is infeasible, we recommend the following general approach in order to have the least likelihood of adversely affecting special status and/or other protected wildlife species, and the fewest biological constraints for the proposed project.

Initiate vegetation maintenance/removal (only where necessary) prior to the onset of the breeding bird season (i.e., prior to February) and maintain an on-going disturbance regime (e.g., regular, periodic mowing [on a weekly basis], etc.) until construction begins to minimize the likelihood for nesting bird constraints.

Between mid-March to mid-April, conduct a survey for Western Bumble Bee prior to any excavation and/or grading during the period to assess for the presence of this California state Candidate Endangered species at the site. If this species is not detected, no seasonal constraints specific to this insect are warranted. If Western Bumble Bee is detected at the site, ground excavation and/or grading should commence during the period between when it can be determined that the majority of queen Western Bumble Bee emergence has occurred and the majority of new colony initiation has not yet begun.

Perform pre-construction nesting bird surveys of suitable nesting habitat within five days prior to the commencement of construction-related disturbance to identify any nesting birds that might be impacted by the project. If any are identified, address as described previously herein (Section 6.2.2.4). Where nesting habitat is not removed or otherwise maintained in a condition unsuitable for nesting, and a period without construction-comparable-disturbance exceeding five days occurs, additional nesting bird surveys should be repeated prior to re-initiation of construction disturbance.

One day in advance of initial clearing and grubbing, conduct surveys for Northern Red-legged Frog and relocate to suitable habitat onsite, well away from the action area (and in consultation with the Department of Fish and Wildlife). On the day of, and immediately prior to, commencement of ground disturbance, conduct a follow-up survey in advance of equipment to identify and relocate any additional Northern Red-legged Frog that might still be present, and further assess the need for additional such surveys and/or the on-going presence of a biological monitor.

In advance of construction of the above-grade overflow drain pipeline in the Sitka Spruce Forest and Woodland habitat, perform pre-disturbance surveys for Humboldt Mountain Beaver. If evidence of Humboldt Mountain Beaver is identified, address as described previously herein (Section 6.2.2.5).

In those construction areas where vegetation removal and maintenance are contraindicated (e.g., Sitka Spruce Forest and Woodland habitat, etc.) pre-disturbance nesting bird, Northern Red-legged Frog, and/or Humboldt Mountain Beaver surveys can be timed to most appropriately coincide with project activities scheduled near such areas.

Consult with a qualified biologist and relevant regulatory agencies if any state- and/or federally-listed Threatened, Endangered, or Candidate species; or any other special status species is encountered during pre-construction surveys to identify appropriate additional mitigation measures.

Should any state- and/or federally-listed Threatened, Endangered, or Candidate species; or any other special status species be encountered within the action area during project implementation, a qualified biologist should be consulted to

evaluate the need for additional mitigation measures and consultation with relevant regulatory agencies should be initiated.

Following completion of construction, the scheduling and timing of future reservoir maintenance-related discharges should observe seasonal periods affecting resident Coastal Cutthroat Trout in Mill Creek. Specifically, discharges should be limited to the seasonal period from November 15–April 15 to minimize the potential for fish stranding and/or inducing migratory movements or other behavioral changes. Periodic reservoir maintenance-related discharges should not occur during the period from May–June to avoid the potential for impacting resident Coastal Cutthroat Trout in Mill Creek during the breeding season for that species.

7.0 References and Literature Cited

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Appendices

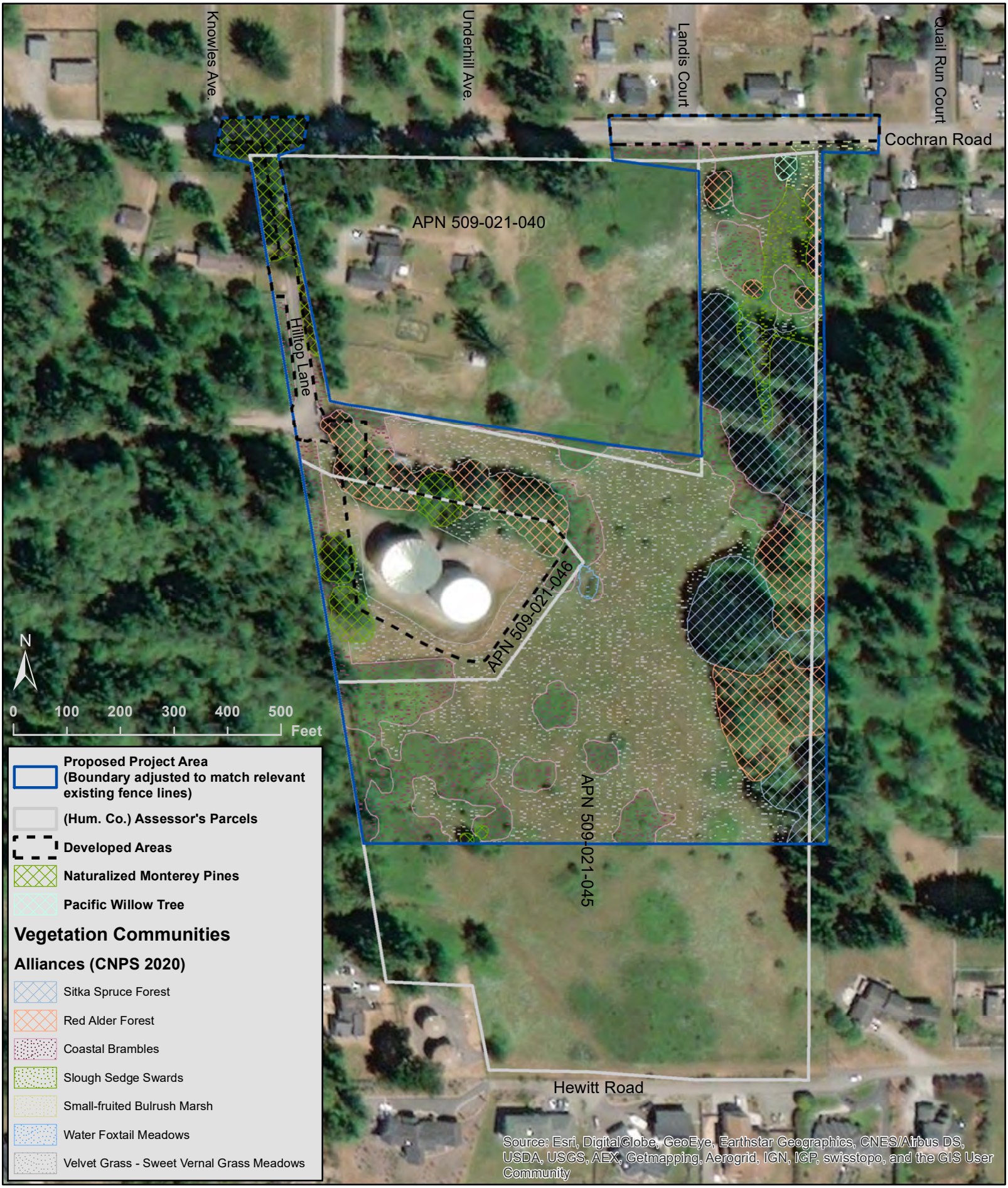
Appendix A. Project Figures

Figure 1. Distribution of Vegetation Communities within the Proposed Project Area

Figure 2. Special Status Species & Other Incidental Sensitive Biological Resource Detections

Figure 3. Sensitive Biological Resource Special Treatment Zones

Appendix A, Figure 1. Distribution of Vegetation Communities within the Proposed Project Area.



McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Distribution of Vegetation Communities within the Proposed Project Area

(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

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Appendix A, Figure 2. Special Status Species & Other Incidental Sensitive Biological Resource Detections.

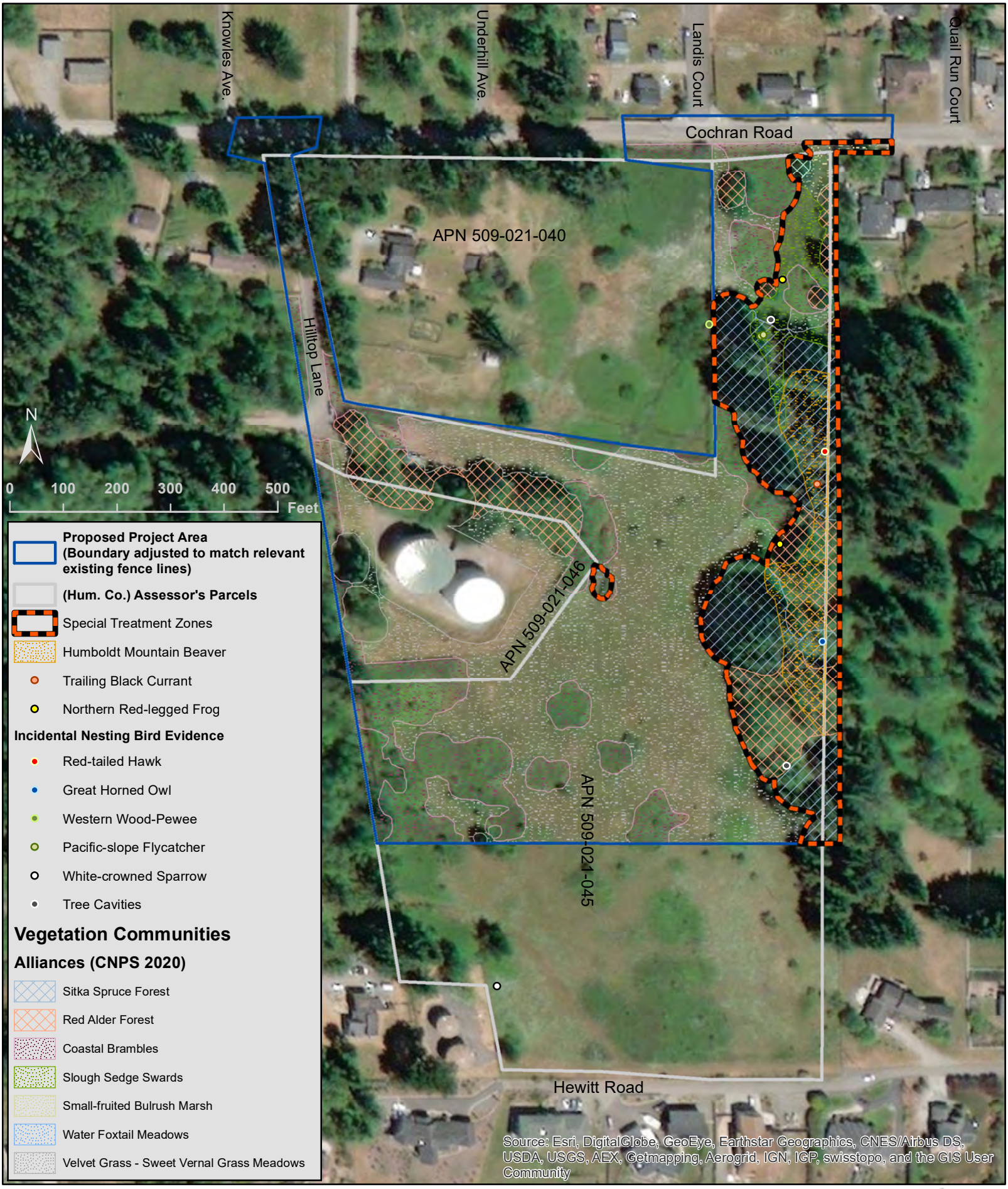
McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Special Status Species & Other Incidental Sensitive Biological Resource Detections

(Natural resources that may or may not exist beyond the proposed project area are not depicted here.)

J.B. LOVELACE & ASSOCIATES

Appendix A, Figure 3. Sensitive Biological Resource Special Treatment Zones.



McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Sensitive Biological Resource Special Treatment Zones

(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

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Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

The following lists were compiled from the results of queries of species occurrence records for the Arcata North, Arcata South, Blue Lake, Crannell, Eureka, Korbel, Panther Creek, Trinidad, and Tyee City 7.5-minute U.S. Geological Survey (USGS) quadrangles in the following databases: the U.S. Fish and Wildlife Service's Information for Planning and Consultation (USFWS 2020); California Department of Fish and Wildlife's Natural Diversity Database (CNDDB 2020); the CalFlora database (CalFlora 2020); and the California Native Plant Society's Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2020a).

These lists address all federally-protected species resulting from the aforementioned queries and indicate which of these were addressed in detail in this effort and which were omitted from further consideration due to a lack of suitable habitat for respective species being present within the proposed project area. Species with federal Endangered Species Act (ESA) designation are presented first, followed by federally-recognized special status species with other conservation status designations (e.g., BLM and/or USFS "Sensitive," etc.). Subsequently, species are arranged phylogenetically, first according to taxonomic group, then by alphabetically, by species. Species recognized to have reasonable potential to occur within the study area are addressed in greater detail in Appendix D.

ESA-Listed Species Addressed in Detail Herein

Botanical Species	FESA*	CESA†	CRPR‡	GRank§ SRank
Vascular Plants				
Lilium occidentale ("western lily")	Endangered	Endangered	1B.1	G1 S1

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Native Plant Society's (CNPS) California Rare Plant Rank (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

ESA-Listed Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Otherƒ
Birds						
Brachyramphus marmoratus Marbled Murrelet (Nesting)	Threatened	None	Endangered		G3 S2	NABCI: RWL IUCN: EN
Strix occidentalis caurina Northern Spotted Owl	Threatened	None	Threatened		G3G4T3 S2	NABCI: YWL IUCN: NT

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)
‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)
§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)
# Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)
ƒ International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), etc. Designations (Refer to Appendix E)

Other Federal Special Status Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Otherƒ
Fish						
Oncorhynchus clarkii clarkii (Resident) Coast Cutthroat Trout	None	USFS: S	None	Species of Special Concern	G5T4 S3	AFS: VU
Insects						
Bombus occidentalis Western Bumble Bee	None	USFS: S	Candidate-Endangered		G2G3 S1	
Amphibians						
Rana aurora Northern Red-legged Frog	None	USFS: S	None	Species of Special Concern	G4 S3	IUCN: LC
Reptiles						
Emys marmorata Western Pond Turtle	None	BLM: S USFS: S	None	Species of Special Concern	G3G4 S3	IUCN: VU
Birds						
Contopus cooperi Olive-sided Flycatcher (Nesting)	None	USFWS: BCC	None	Species of Special Concern	G4 S3	NABCI: YWL IUCN: NT
Elanus leucurus White-tailed Kite (Nesting)	None	BLM: S	None	Fully Protected	G5 S3S4	IUCN: LC

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

Other Federal Special Status Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other*f*
Birds (Continued)						
Empidonax traillii Willow Flycatcher (Nesting)	None	USFWS: BCC USFS: S	Endangered		G5 S1S2	IUCN: LC
Falco peregrinus anatum American Peregrine Falcon (Nesting)	Delisted	USFWS: BCC	Delisted	Fully Protected	G4T4 S3S4	
Haliaeetus leucocephalus Bald Eagle (Nesting & wintering)	Delisted	USFWS: BCC USFS: S BLM: S BGEPA	Endangered	Fully Protected	G5 S3	IUCN: LC
Selasphorus rufus Rufous Hummingbird (Nesting)	None	USFWS: BCC	None		G5 S1S2	NABCI: YWL IUCN: LC
Selasphorus sasin Allen's Hummingbird (Nesting)	None	USFWS: BCC	None		G5 S4	
Toxostoma redivivum California Thrasher	None	USFWS: BCC	None		G5 SNR	
Mammals						
Corynorhinus townsendii Townsend's Big-eared Bat	None	USFS: S BLM: S	None	Species of Special Concern	G4 S2	WBWG: H IUCN: LC
Myotis evotis Long-eared Myotis	None	BLM: S	None		G5 S3	WBWG: M IUCN: LC
Pekania pennanti Fisher – NCSO DPS	None	USFS: S BLM: S	None	Species of Special Concern	G5 S2S3	

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)

† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)

‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)

§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)

Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

f International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), etc. Designations (Refer to Appendix E)

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

ESA-Listed Species Considered but Omitted from Further Analysis

Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank[f]	Rationale
Vascular Plants						
Erysimum menziesii ("Menzies' wallflower")	Endangered	Endangered	1B.1	G1	S1	No habitat present (coastal dunes)
Layia carnosa ("beach Layia")	Endangered	Endangered	1B.1	G2	S2	No habitat present (coastal dunes)

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Native Plant Society's (CNPS) California Rare Plant Rank (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

ESA-Listed Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]	Rationale
Fish							
Acipenser medirostris Green Sturgeon Southern DPS	Threatened	USFS: S	None	Species of Special Concern	G3 S2	AFS: VU IUCN: NT	No habitat present (Anadromous rivers and Perennial Streams)
Eucyclogobius newberryi Tidewater Goby	Endangered	None	None	Species of Special Concern	G3 S3	AFS: EN IUCN: VU	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus kisutch P. 2 Coho Salmon S. Oregon / N. California ESU	Threatened	USFS: S	Threatened		G5T2Q S2	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus kisutch Pop. 4 Coho Salmon Central California Coast ESU	Endangered	None	Endangered		G5T2T3Q S2	AFS: EN	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus mykiss irideus P. 16 Steelhead N. California DPS	Threatened	None	None		G5T2T3Q S2S3	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus tshawytscha P. 17 Chinook Salmon California Coastal ESU	Threatened	None	None		G5T2Q S2	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus tshawytscha P. 30 Chinook Salmon Upper Klamath/Trinity Rivers ESU	Candidate	USFS: S	Candidate (Endangered)	Species of Special Concern	G5T3Q S1S2		No habitat present (Anadromous rivers and Perennial Streams)
Spirinchus thaleichthys Longfin Smelt Southern DPS	Candidate	None	Threatened		G5 S1		No habitat present (Anadromous rivers and Perennial Streams)

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

ESA-Listed Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other*f*	Rationale
Fish (Continued)							
Thaleichthys pacificus Eulachon	Threatened	None	None		G5 S2		No habitat present (Anadromous rivers and Perennial Streams)
Amphibians							
Plethodon elongatus *Del Norte Salamander*	None	USFS: S	None	Watch List	G4 S3	IUCN: NT	No habitat present (talus/outcrops)
Reptiles							
Chelonia mydas Green Sea Turtle	Threatened	None	None		G3 S4	IUCN: EN	No habitat present (Marine)
Birds							
Charadrius alexandrinus nivosus Western Snowy Plover (Nesting)	Threatened	USFWS: BCC	None	Species of Special Concern	G3T3 S2	NABCI: RWL	No habitat present (coastal dunes)
Coccyzus americanus occidentalis Yellow-billed Cuckoo (Nesting)	Threatened	USFWS: BCC USFS: S BLM: S	Endangered		G5T2T3 S1	NABCI: RWL IUCN: VU	No habitat present (Extensive *Salix*/ *Populus*)
Numenius americanus *Long-billed Curlew* *(Nesting)*	None	USFWS: BCC	None	Watch List	G5 S2	NABCI: YWL IUCN: LC	
Rallus obsoletus obsoletus California Ridgway's Rail	Endangered	None	Endangered	Fully Protected	G3T1 S1	NABCI: RWL	No habitat present (tidally-inundated marshes)

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)

† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)

‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)

§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)

Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

f International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), American Fisheries Society (AFS), etc. Designations (Refer to Appendix E)

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

Other Federal Special Status Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]	Rationale
Mollusks							
Anodonta californiensis California floater	None	USFS: S	None		G3Q S2?		No habitat present (Lakes and Streams)
Fish							
Entosphenus tridentatus Pacific Lamprey	None	BLM: S USFS: S	None	Species of Special Concern	G4 S4	AFS: VU	No habitat present (Rivers and Streams)
Lampetra richardsoni Western Brook Lamprey	None	USFS: S	None	Species of Special Concern	G4G5 S3S4		No habitat present (Rivers and Streams)
Amphibians							
Ascaphus truei Pacific Tailed-Frog	None	None	None	Species of Special Concern	G4 S3S4	IUCN: LC	No habitat present (Rocky Perennial Streams)
Rana boylii Foothill Yellow-legged Frog	None	BLM: S USFS: S	Endangered (Exc. NW/NC)	Species of Special Concern	G3 S3	IUCN: NT	No habitat present (Inland Streams, etc.)
Rhyacotriton variegatus Southern Torrent Salamander	None	USFS: S	None	Species of Special Concern	G3G4 S2S3	IUCN: LC	No habitat present (Rocky Perennial Streams/Springs)
Birds							
Aechmophorus clarkia Clark's Grebe	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Arenaria melanocephala Black Turnstone	None	USFWS: BCC	None		G5 SNR		No habitat present (rocky coastal)
Calidris pusilla Semipalmated Sandpiper	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Charadrius montanus Mountain Plover (Wintering)	None	USFWS: BCC BLM: S	None	Species of Special Concern	G3 S2S3	NABCI: RWL IUCN: NT	No habitat present (out of geo. range)
Coturnicops noveboracensis Yellow Rail	None	USFWS: BCC USFS: S	None	Species of Special Concern	G4 S1S2	IUCN: LC NABCI: RWL	No habitat present (freshwater marshlands)
Gavia stellate Red-throated Loon	None	USFWS: BCC	None		G5 SNR		No habitat present (near-coast)
Haematopus bachmani Black Oystercatcher	None	USFWS: BCC	None		G5 SNR		No habitat present (rocky coastal)
Hydrobates furcatus Fork-tailed Storm-Petrel (Nesting Colony)	None	BLM: S	None	Species of Special Concern	G5 S1	IUCN: LC	No habitat present (pelagic)
Limnodromus griseus Short-billed Dowicher	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)

Appendix B — Species Subject to Federal National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) Review

Other Federal Special Status Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other*f*	Rationale
Birds (Continued)							
Limosa fedoa Marbled Godwit	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Numenius phaeopus Whimbrel	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Pelecanus occidentalis californicus California Brown Pelican (Nesting Colony, Communal Roosts)	Delisted	BLM: S USFS: S	Delisted	Fully Protected	G4T3T4 S3		No habitat present (near-coast)
Ptychoramphus aleuticus Cassin's Auklet (Nesting Colony)	None	USFWS: BCC	None	Species of Special Concern	G4 S2S4	IUCN: LC	No habitat present (marine)
Riparia riparia Bank Swallow (Nesting)	None	BLM: S	Threatened		G5 S2	IUCN: LC	No habitat present (steep exposed banks)
Tringa flavipes Lesser Yellowlegs	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Tringa semipalmata Willet	None	USFWS: BCC	None		G5 SNR		No habitat present (coastal/estuarine)
Mammals							
Eumetopias jubatus Steller (=Northern) Sea-lion	Delisted	None	None	Species of Special Concern	G3 S2	IUCN: EN	No habitat present (marine)

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)

† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)

‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)

§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)

Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

f International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), American Fisheries Society (AFS), etc. Designations (Refer to Appendix E)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

The following lists were compiled from the results of queries of species and habitat occurrence records for the Arcata North, Arcata South, Blue Lake, Crannell, Eureka, Korbel, Panther Creek, Trinidad, and Tyee City 7.5-minute U.S. Geological Survey (USGS) quadrangles in the following databases: the U.S. Fish and Wildlife Service's Information for Planning and Consultation (USFWS 2020); California Department of Fish and Wildlife's Natural Diversity Database (CNDDB 2020); the CalFlora database (CalFlora 2020); and the California Native Plant Society's Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2020a). Sensitive Natural Communities were also queried using *A Manual of California Vegetation, Online Edition* (CNPS 2020b).

The following lists address all species resulting from the aforementioned queries that require consideration as per CEQA § 15380 *et. seq*. As in Appendix B, these two lists indicate which species were addressed in detail in our effort and which were omitted from further consideration due to a lack of suitable habitat for respective species being present within the proposed project area. Species are arranged phylogenetically, first according to taxonomic group, then by alphabetically, by species. Species recognized to have reasonable potential to occur within the study area are addressed in greater detail in Appendix D.

Species Addressed in Detail Herein

Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank§
Vascular Plants					
Angelica lucida ("sea-watch")	None	None	4.2	G5	S3
Calamagrostis bolanderi ("Bolander's reed grass")	None	None	4.2	G4	S4
Cardamine angulata ("seaside bittercress")	None	None	2B.2	G4G5	S3
Carex arcta ("northern clustered sedge")	None	None	2B.2	G5	S1
Carex buxbaumii ("Buxbaum's sedge")	None	None	4.2	G5	S3
Carex leptalea ("bristle-stalked sedge")	None	None	2B.2	G5	S1
Carex lyngbyei ("Lyngbye's sedge")	None	None	2B.2	G5	S3
Carex praticola ("northern meadow sedge")	None	None	2B.2	G5	S2
Carex viridula ssp. *viridula* ("green yellow sedge")	None	None	2B.3	G5T5	S2
Castilleja mendocinensis ("Mendocino Coast paintbrush")	None	None	1B.2	G2	S2

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank§
Vascular Plants (Continued)					
Chrysosplenium glechomifolium (“Pacific golden saxifrage”)	None	None	4.3	G5?	S3
Coptis laciniata (“Oregon goldthread”)	None	None	4.2	G4?	S3?
Empetrum nigrum (“black crowberry”)	None	None	2B.2	G5	S1?
Erythronium revolutum (“coast fawn lily”)	None	None	2B.2	G4G5	S3
Gilia capitata ssp. *pacifica* (“Pacific gilia”)	None	None	1B.2	G5T3	S2
Hemizonia congesta ssp. *tracyi* (“Tracy's tarplant”)	None	None	4.3	G5T4	S4
Hosackia gracilis (“harlequin lotus”)	None	None	4.2	G3G4	S3
Iliamna latibracteata (“California globe mallow”)	None	None	1B.2	G2G3	S2
Juncus nevadensis var. *inventus* (“Sierra rush”)	None	None	2B.2	G5T3T4	S1
Lathyrus palustris (“marsh pea”)	None	None	2B.2	G5	S2
Lilium kelloggii (“Kellogg's lily”)	None	None	4.3	G3	S3
Lilium occidentale (“western lily”)	Endangered	Endangered	1B.1	G1	S1
Listera cordata (“heart-leaved twayblade”)	None	None	4.2	G5	S4
Lycopodiella inundata (“inundated bog club-moss”)	None	None	2B.2	G5	S1?
Lycopodium clavatum (“running-pine”)	None	None	4.1	G5	S3
Lycopus uniflorus (“northern bugleweed”)	None	None	4.3	G5	S4
Mitellastra caulescens (“leafy-stemmed mitrewort”)	None	None	4.2	G5	S4
Monotropa uniflora (“ghost-pipe”)	None	None	2B.2	G5	S2
Montia howellii (“Howell's montia”)	None	None	2B.2	G3G4	S2

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank§
Vascular Plants (Continued)					
Oenothera wolfii ("Wolf's evening-primrose")	None	None	1B.1	G2	S1
Packera bolanderi var. *bolanderi* ("seacoast ragwort")	None	None	2B.2	G4T4	S2S3
Piperia candida ("white-flowered rein orchid")	None	None	1B.2	G3	S3
Pityopus californicus ("California pinefoot")	None	None	4.2	G4G5	S4
Pleuropogon refractus ("nodding semaphore grass")	None	None	4.2	G4	S4
Ribes laxiflorum ("trailing black currant")	None	None	4.3	G5?	S3
Sidalcea malachroides ("maple-leaved checkerbloom")	None	None	4.2	G3	S3
Sidalcea malviflora ssp. *patula* ("Siskiyou checkerbloom")	None	None	1B.2	G5T2	S2
Sidalcea oregana ssp. *eximia* ("coast checkerbloom")	None	None	1B.2	G5T1	S1
Silene scouleri ssp. *scouleri* ("Scouler's catchfly")	None	None	2B.2	G5T4T5	S2S3
Tiarella trifoliata var. *trifoliata* ("trifoliate laceflower")	None	None	3.2	G5T5	S2S3
Viola palustris ("alpine marsh violet")	None	None	2B.2	G5	S1S2
Nonvascular Botanical Species "Bryophytes" ("Mosses," "Liverworts," and/or "Hornworts")					
Fissidens pauperculus ("minute pocket moss")	None	None	1B.2	G3?	S2
Trichodon cylindricus ("cylindrical Trichodon")	None	None	2B.2	G4	S2
Lichens					
Bryoria pseudocapillaris ("false gray horsehair lichen")	None	None	3.2	G3	S2
Bryoria spiralifera ("twisted horsehair lichen")	None	None	1B.1	G3	S1S2
Dolichousnea longissima (= *Usnea longissima*) ("Methuselah's beard lichen")	None	None	4.2	G4	S4

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank§
Nonvascular Botanical Species					
Lichens (Continued)					
Ramalina thrausta ("angel's hair lichen")	None	None	2B.1	G5	S2?

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Native Plant Society's (CNPS) California Rare Plant Rank (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]
Fish						
Oncorhynchus clarkii clarkii (Resident) Coast Cutthroat Trout	None	USFS: S	None	Species of Special Concern	G5T4 S3	IUCN: VU AFS: VU
Insects						
Bombus caliginosus Obscure Bumble Bee	None		None		G4? S1S2	IUCN: VU
Bombus occidentalis Western Bumble Bee	None	USFS: S	Candidate (Endangered)		G2G3 S1	
Amphibians						
Rana aurora Northern Red-legged Frog	None	USFS: S	None	Species of Special Concern	G4 S3	IUCN: LC
Rana boylii Foothill Yellow-legged Frog	None	BLM: S USFS: S	Endangered (Exc. NW/NC)	Species of Special Concern	G3 S3	IUCN: NT
Rhyacotriton variegatus Southern Torrent Salamander	None	USFS: S	None	Species of Special Concern	G3G4 S2S3	IUCN: LC
Reptiles						
Emys marmorata Western Pond Turtle	None	BLM: S USFS: S	None	Species of Special Concern	G3G4 S3	IUCN: VU
Birds						
Accipiter cooperii Cooper's Hawk (Nesting)	None	None	None	Watch List	G5 S4	IUCN: LC
Accipiter striatus Sharp-shinned Hawk (Nesting)	None	None	None	Watch List	G5 S4	IUCN: LC
Ardea alba Great Egret (Nesting colonies)	None	None	None		G5 S4	IUCN: LC
Ardea herodias fannini Great Blue Heron (Nesting colonies)	None	None	None		G5 S4	IUCN: LC
Asio flammeus Short-eared Owl (Nesting)	None	None	None	Species of Special Concern	G5 S3	IUCN: LC
Brachyramphus marmoratus Marbled Murrelet (Nesting)	Threatened	None	Endangered		G3 S2	NABCI: RWL IUCN: EN
Chaetura vauxi Vaux's Swift (Nesting)	None	None	None	Species of Special Concern	G5 S2S3	IUCN: LC

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]
Birds (Continued)						
Circus hudsonius Northern Harrier (Nesting)	None		None	Species of Special Concern	G5 S3	IUCN: LC
Contopus cooperi Olive-sided Flycatcher (Nesting)	None	USFWS: BCC	None	Species of Special Concern	G4 S3	NABCI: YWL IUCN: NT
Egretta thula Snowy Egret (Nesting colonies)	None	None	None		G5 S4	IUCN: LC
Elanus leucurus White-tailed Kite (Nesting)	None	BLM: S	None	Fully Protected	G5 S3S4	IUCN: LC
Empidonax traillii brewsteri Willow Flycatcher (Nesting)	None	USFWS: BCC USFS: S	Endangered		G5T3T4 S1S2	IUCN: LC
Falco columbarius Merlin (Wintering)	None	None	None	Watch List	G5 S3S4	IUCN: LC
Falco peregrinus anatum American Peregrine Falcon (Nesting)	Delisted	USFWS: BCC	Delisted	Fully Protected	G4T4 S3S4	
Haliaeetus leucocephalus Bald Eagle (Nesting & wintering)	Delisted	USFWS: BCC USFS: S BLM: S BGEPA	Endangered	Fully Protected	G5 S3	IUCN: LC
Icteria virens Yellow-breasted Chat (Nesting)	None	None	None	Species of Special Concern	G5 S3	IUCN: LC
Numenius americanus Long-billed Curlew (Nesting)	None	USFWS: BCC	None	Watch List	G5 S2	NABCI: YWL IUCN: LC
Pandion haliaetus Osprey (Nesting)	None	None	None	Watch List	G4 S4	IUCN: LC
Passerculus sandwichensis alaudinus Bryant's Savannah Sparrow	None	None	None	Species of Special Concern	G5T2T3 S2S3	
Poecile atricapillus Back-capped Chickadee	None	None	None	Watch List	G5 S3	IUCN: LC

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Addressed in Detail Herein

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other*f*
Birds (Continued)						
Progne subis Purple Martin (Nesting)	None	None	None	Species of Special Concern	G5 S3	IUCN: LC
Selasphorus rufus Rufous Hummingbird (Nesting)	None	USFWS: BCC	None		G5 S1S2	NABCI: YWL IUCN: LC
Selasphorus sasin Allen's Hummingbird (Nesting)	None	USFWS: BCC	None		G5 S4	
Strix occidentalis caurina Northern Spotted Owl	Threatened	None	Threatened		G3G4T3 S2	NABCI: YWL IUCN: NT
Toxostoma redivivum California Thrasher	None	USFWS: BCC	None		G5 SNR	
Mammals						
Aplodontia rufa humboldtiana Humboldt Mountain Beaver	None	None	None		G5TNR SNR	
Arborimus albipes White-footed Vole	None	None	None	Species of Special Concern	G3G4 S2	IUCN: LC
Arborimus pomo Sonoma Tree Vole	None	None	None	Species of Special Concern	G3 S3	IUCN: NT
Corynorhinus townsendii Townsend's Big-eared Bat	None	USFS: S BLM: S	None	Species of Special Concern	G4 S2	WBWG: H IUCN: LC
Erethizon dorsatum North American Porcupine	None	None	None		G5 S3	IUCN: LC
Lasiurus cinereus Hoary Bat	None	None	None		G3G4 S4	WBWG: M IUCN: LC
Myotis evotis Long-eared Myotis	None	BLM: S	None		G5 S3	WBWG: M IUCN: LC
Pekania pennanti Fisher – NCSO DPS	None	USFS: S BLM: S	None	Species of Special Concern	G5 S2S3	

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)

† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)

‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)

§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)

Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

f International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), etc. Designations (Refer to Appendix E)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank¶	Rationale
Vascular Plants						
Astragalus pycnostachyus var. *pycnostachyus* (“coastal marsh milk-vetch”)	None	None	1B.2	G2T2	S2	Known habitat not present (coastal dunes)
Astragalus rattanii var. *rattanii* (“Rattan's milk-vetch”)	None	None	4.3	G4T4	S4	Known habitat not present (montane forest)
Carex lenticularis var. *limnophila* (“lagoon sedge”)	None	None	2B.2	G5T5	S1	Known habitat not present (Elev. range: 0-6 m).
Castilleja ambigua var. *humboldtiensis* (“Humboldt Bay owl's-clover”)	None	None	1B.2	G4T2	S2	Known habitat not present (coastal salt marsh)
Castilleja litoralis (“Oregon coast paintbrush”)	None	None	2B.2	G3	S3	Known habitat not present (coastal salt marsh)
Chloropyron maritimum ssp. *palustre* (“Point Reyes bird's-beak”)	None	None	1B.2	G4?T2	S2	Known habitat not present (coastal salt marsh)
Collinsia corymbosa (“round-headed Chinese-houses”)	None	None	1B.2	G1	S1	Known habitat not present (coastal dunes)
Epilobium septentrionale (“Humboldt County fuchsia”)	None	None	4.3	G4	S4	Known habitat not present (sandy or rocky sites)
Erigeron bloomeri var. *nudatus* (“Waldo daisy”)	None	None	2B.3	G5T4	S3	Known habitat not present (Elev. range: 600-2300 m)
Erysimum menziesii (“Menzies’ wallflower”)	Endangered	Endangered	1B.1	G1	S1	Known habitat not present (coastal dunes)
Erythronium oregonum (“giant fawn lily”)	None	None	2B.2	G4G5	S2	Known habitat not present (montane forest)
Gilia millefoliata (“dark-eyed Gilia”)	None	None	1B.2	G2	S2	Known habitat not present (coastal dunes)
Glehnia littoralis ssp. *leiocarpa* (“American Glehnia”)	None	None	4.2	G5T5	S2S3	Known habitat not present (coastal dunes)
Hesperevax sparsiflora var. *brevifolia* (“short-leaved Evax”)	None	None	1B.2	G4T3	S2	Known habitat not present (coastal dunes)
Lasthenia californica ssp. *macrantha* (“perennial goldfields”)	None	None	1B.2	G3T2	S2	Known habitat not present (coastal bluffs)
Lathyrus glandulosus (“sticky pea”)	None	None	4.3	G3	S3	Known habitat not present (montane forest)
Lathyrus japonicus (“seaside pea”)	None	None	2B.1	G5	S2	Known habitat not present (coastal dunes)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Botanical Species	FESA*	CESA†	CRPR‡	GRank§	SRank§	Rationale
Vascular Plants (Continued)						
Layia carnosa ("beach Layia")	Endangered	Endangered	1B.1	G2	S2	Known habitat not present (coastal dunes)
Polemonium carneum ("Oregon Polemonium")	None	None	2B.2	G3G4	S2	Known habitat not present (montane forest)
Romanzoffia tracyi ("Tracy's Romanzoffia")	None	None	2B.3	G4	S2	Known habitat not present (coastal bluffs)
Spergularia canadensis var. *occidentalis* ("western sand-spurrey")	None	None	2B.1	G5T4	S1	Known habitat not present (coastal salt marsh)
Nonvascular Botanical Species						
"Bryophytes" ("Mosses," "Liverworts," and/or "Hornworts")						
Discelium nudum ("naked flag moss")	None	None	2B.2	G4G5	S1	Known habitat not present (coastal bluffs)

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)
† California Endangered Species Act (1973) Designation (Refer to Appendix E)
‡ California Native Plant Society's (CNPS) California Rare Plant Rank (Refer to Appendix E)
§ Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]	Rationale
Mollusks							
Anodonta californiensis California floater	None	USFS: S	None	None	G3Q S2?		No habitat present (Lakes and Streams)
Margaritifera falcata western pearlshell	None	None	None	None	G4G5 S1S2		No habitat present (Lakes and Streams)
Insects							
Cicindela hirticollis gravida sandy beach tiger beetle	None	None		None	G5T2 S2		No habitat present (sandy sites)
Fish							
Acipenser medirostris Green Sturgeon Southern DPS	Threatened	USFS: S	None	Species of Special Concern	G3 S2	AFS: VU IUCN: NT	No habitat present (Anadromous rivers and Perennial Streams)
Entosphenus tridentatus Pacific Lamprey	None	BLM: S USFS: S	None	Species of Special Concern	G4 S4	AFS: VU	No habitat present (Anadromous rivers and Perennial Streams)
Eucyclogobius newberryi Tidewater Goby	Endangered	None	None	Species of Special Concern	G3 S3	AFS: EN IUCN: VU	No habitat present (Anadromous rivers and Perennial Streams)
Lampetra richardsoni Western Brook Lamprey	None	USFS: S	None	Species of Special Concern	G4G5 S3S4		No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus kisutch P. 2 Coho Salmon S. Oregon / N. California ESU	Threatened	USFS: S	Threatened	None	G5T2Q S2	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus kisutch Pop. 4 Coho Salmon Central California Coast ESU	Endangered	None	Endangered	None	G5T2T3Q S2	AFS: EN	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus mykiss irideus P. 16 Steelhead N. California DPS	Threatened	None	None	None	G5T2T3Q S2S3	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus mykiss irideus P. 36 Summer-run Steelhead Trout	None	None	Candidate (Endangered)	Species of Special Concern	G5T4Q S2		No habitat present (Anadromous rivers and Perennial Streams)
Oncorhynchus tshawytscha P. 17 Chinook Salmon California Coastal ESU	Threatened	None	None	None	G5T2Q S2	AFS: TH	No habitat present (Anadromous rivers and Perennial Streams)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]	Rationale
Fish (Continued)							
Oncorhynchus tshawytscha P. 30 Chinook Salmon Upper Klamath/Trinity Rivers ESU	Candidate	USFS: S	Candidate (Endangered)	Species of Special Concern	G5T3Q S1S2		No habitat present (Anadromous rivers and Perennial Streams)
Spirinchus thaleichthys Longfin Smelt Southern DPS	Candidate	None	Threatened	None	G5 S1		No habitat present (Anadromous rivers and Perennial Streams)
Thaleichthys pacificus Eulachon	Threatened	None	None	None	G5 S2		No habitat present (Anadromous rivers and Perennial Streams)
Amphibians							
Ascaphus truei Pacific Tailed-Frog	None	None	None	Species of Special Concern	G4 S3S4	IUCN: LC	No habitat present (Rocky Perennial Streams)
Plethodon elongatus *Del Norte Salamander*	None	USFS: S	None	Watch List	G4 S3	IUCN: NT	
Reptiles							
Chelonia mydas Green Sea Turtle	Threatened	None	None	None	G3 S4	IUCN: EN	No habitat present (Marine)
Birds							
Aechmophorus clarkia Clark's Grebe	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Arenaria melanocephala Black Turnstone	None	USFWS: BCC	None	None	G5 SNR		No habitat present (rocky coastal)
Botaurus lentiginosus American Bittern	None	None	None	None	G5 S3S4	IUCN: LC	No habitat present (riparian/wetland)
Calidris pusilla Semipalmated Sandpiper	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Cerorhinca monocerata Rhinoceros Auklet (Nesting Colony)	None	None	None	Watch List	G5 S3	IUCN: LC	No habitat present (marine)
Charadrius alexandrinus nivosus Western Snowy Plover (Nesting)	Threatened	USFWS: BCC	None	Species of Special Concern	G3T3 S2	NABCI: RWL	No habitat present (coastal dunes)
Charadrius montanus Mountain Plover (Wintering)	None	USFWS: BCC BLM: S	None	Species of Special Concern	G3 S2S3	NABCI: RWL IUCN: NT	No habitat present (out of geo. range)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other[f]	Rationale
Birds (Continued)							
Coccyzus americanus occidentalis yellow-billed Cuckoo (Nesting)	Threatened	USFWS: BCC USFS: S BLM: S	Endangered		G5T2T3 S1	NABCI: RWL IUCN: VU	No habitat present (Extensive *Salix*/*Populus*)
Coturnicops noveboracensis Yellow Rail	None	USFWS: BCC USFS: S	None	Species of Special Concern	G4 S1S2	IUCN: LC NABCI: RWL	No habitat present (freshwater marshlands)
Fratercula cirrhata Tufted Puffin (Nesting Colony)	None	None	None	Species of Special Concern	G5 S1S2	IUCN: LC	No habitat present (marine)
Gavia stellate Red-throated Loon	None	USFWS: BCC	None	None	G5 SNR		No habitat present (near-coast)
Haematopus bachmani Black Oystercatcher	None	USFWS: BCC	None	None	G5 SNR		No habitat present (rocky coastal)
Hydrobates furcatus Fork-tailed Storm-Petrel (Nesting Colony)	None	BLM: S	None	Species of Special Concern	G5 S1	IUCN: LC	No habitat present (pelagic)
Limnodromus griseus Short-billed Dowicher	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Limosa fedoa Marbled Godwit	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Numenius phaeopus Whimbrel	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Nycticorax nycticorax Black-crowned Night Heron (Nesting Colony)	None	None	None	None	G5 S4	IUCN: LC	No habitat present (trees over water)
Pelecanus occidentalis californicus California Brown Pelican (Nesting colony, Communal Roosts)	Delisted	BLM: S USFS: S	Delisted	Fully Protected	G4T3T4 S3		No habitat present (near-coast)
Phalacrocorax auratus Double-crested Cormorant (Nesting Colony)	None	None	None	Watch List	G5 S4	IUCN: LC	No habitat present (lake margins/islets)
Ptychoramphus aleuticus Cassin's Auklet (Nesting Colony)	None	USFWS: BCC	None	Species of Special Concern	G4 S2S4	IUCN: LC	No habitat present (marine)
Rallus obsoletus obsoletus California Ridgway's Rail	Endangered	None	Endangered	Fully Protected	G3T1 S1	NABCI: RWL	No habitat present (tidally-inundated marshes)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Species Considered but Omitted from Further Analysis

Wildlife Species	FESA*	Other† (Federal)	CESA‡	CDFW§	GRank# SRank	Other*f*	Rationale
Birds (Continued)							
Riparia riparia Bank Swallow (Nesting Colony)	None	BLM: S	Threatened		G5 S2	IUCN: LC	No habitat present (steep exposed banks)
Tringa flavipes Lesser Yellowlegs	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Tringa semipalmata Willet	None	USFWS: BCC	None	None	G5 SNR		No habitat present (coastal/estuarine)
Mammals							
Eumetopias jubatus Steller (=Northern) Sea-lion	Delisted	None	None	Species of Special Concern	G3 S2	IUCN: EN	No habitat present (marine)

* Federal Endangered Species Act (1974) Designation (Refer to Appendix E)

† Other Federal Entity (USDI-Department of Fish and Wildlife Service [USFWS], USDI-Bureau of Land Management [BLM], USDA-US Forest Service [USFS], etc.) Designation (Refer to Appendix E)

‡ California Endangered Species Act (1973) Designation (Refer to Appendix E)

§ California Department of Fish and Wildlife's (CDFW) Special Status Rank (Refer to Appendix E)

Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

f International Union for Conservation of Nature (IUCN), North American Bird Conservation Initiative (NABCI), American Fisheries Society (AFS), etc. Designations (Refer to Appendix E)

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Sensitive Natural Communities Considered in Our Analysis

Vegetation Alliance	Primary Lifeform	GRank†	SRank†	Dominant Species Present? (Y/N)
Abies grandis Grand fir forest	Tree	G4	S2.1	Y
Acer macrophyllum Bigleaf maple forest and woodland	Tree	G4	S3	N
Acer negundo Box-elder forest and woodland	Tree	G5	S2.2	N
Aesculus californica California buckeye groves	Tree	G3	S3	N
Arbutus menziesii Madrone forest	Tree	G4	S3.2	N
Fraxinus latifolia Oregon ash groves	Tree	G4	S3.2	N
Hesperocyparis pigmaea Mendocino pygmy cypress woodland	Tree	G1	S1	N
Juglans hindsii and Hybrids Hinds's walnut and related stands	Tree	G1	S1.1	N
Notholithocarpus densiflorus Tanoak forest	Tree	G4	S3.2	N
Picea sitchensis **Sitka spruce forest and woodland**	**Tree**	**G5**	**S2**	**Y**
Pinus contorta ssp. *contorta* Beach pine forest and woodland	Tree	G5	S3	N
Pinus muricata - Pinus radiata Bishop pine - Monterey pine forest and woodland	Tree	G3	S3.2	Y
Populus fremontii - Fraxinus velutina - Salix gooddingii Fremont cottonwood forest and woodland	Tree	G4	S3.2	N
Populus trichocarpa Black cottonwood forest and woodland	Tree	G5	S3	N
Pseudotsuga menziesii - Notholithocarpus densiflorus Douglas fir - tanoak forest and woodland	Tree	G3	S3	Y
Quercus garryana (tree) Oregon white oak woodland and forest	Tree	G4	S3	N
Quercus lobata Valley oak woodland and forest	Tree	G3	S3	N
Quercus parvula var. *shrevei* Shreve oak forests	Tree	G2	S2	N

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Sensitive Natural Communities Considered in Our Analysis

Vegetation Alliance	Primary Lifeform	GRank†	SRank†	Dominant Species Present? (Y/N)
Salix gooddingii - Salix laevigata Goodding's willow - red willow riparian woodland and forest	Tree	G4	S3	N
Salix lucida ssp. lasiandra Shining willow groves	Tree	G4	S3.2	Y
Sequoia sempervirens Redwood forest and woodland	Tree	G3	S3.2	Y
Tsuga heterophylla Western hemlock forest	Tree	G5	S2	N
Umbellularia californica California bay forest and woodland	Tree	G4	S3	N
Alnus viridis Sitka alder thickets	Shrub	G5	S3?	N
Arctostaphylos bakeri Stands of Baker manzanita	Shrub	G1	S1.2	N
Arctostaphylos (canescens, manzanita, stanfordiana) Hoary, common, and Stanford manzanita chaparral	Shrub	G3	S3	N
Arctostaphylos montana Mount Tamalpais manzanita chaparral	Shrub	G2	S2	N
Arctostaphylos (nummularia, sensitiva) Glossy leaf manzanita chaparral	Shrub	G2	S2	N
Ceanothus (oliganthus, tomentosus) Hairy leaf - woolly leaf ceanothus chaparral	Shrub	G3	S3	N
Corylus cornuta var. *californica* Hazelnut scrub	Shrub	G3	S2?	N
Garrya elliptica Coastal silk tassel scrub	Shrub	G3?	S3?	N
Lupinus chamissonis - Ericameria ericoides Silver dune lupine - mock heather scrub	Shrub	G3	S3	N
Morella californica Wax myrtle scrub	Shrub	G3	S3	N
Rhododendron columbianum Western Labrador-tea thickets	Shrub	G4	S2?	N
Rubus (parviflorus, spectabilis, ursinus) **Coastal brambles**	**Shrub**	**G4**	**S3**	**Y**
Salix hookeriana Coastal dune willow thickets	Shrub	G4	S3	N

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Sensitive Natural Communities Considered in Our Analysis

Vegetation Alliance	Primary Lifeform	GRank†	SRank†	Dominant Species Present? (Y/N)
Salix sitchensis Sitka willow thickets	Shrub	G4	S3?	N
Sambucus nigra Blue elderberry stands	Shrub	G3	S3	N
Vaccinium uliginosum Bog blueberry wet meadows	Shrub	G4	S3	N
Vitis arizonica - Vitis girdiana Wild grape shrubland	Shrub	G3	S3	N
Alopecurus geniculatus Water foxtail meadows	Herb	G3?	S3?	N
Argentina egedii Pacific silverweed marshes	Herb	G4	S2	N
Bolboschoenus maritimus Salt marsh bulrush marshes	Herb	G4	S3	N
Bromus carinatus - Elymus glaucus California brome - blue wildrye prairie	Herb	G3	S3	N
Calamagrostis nutkaensis Pacific reed grass meadows	Herb	G4	S2	N
Carex barbarae White-root beds	Herb	G2?	S2?	N
Carex densa Dense sedge marshes	Herb	G2?	S2?	N
Carex nudata Torrent sedge patches	Herb	G3	S3	N
Carex obnupta Slough sedge swards	Herb	G4	S3	Y
Carex (*pansa, praegracilis*) Sand dune sedge swaths	Herb	G4?	S3?	N
Carex serratodens Twotooth sedge seeps	Herb	G3	S3?	N
Danthonia californica California oat grass prairie	Herb	G4	S3	N
Darlingtonia californica California pitcher plant fens	Herb	G4?	S3	N
Equisetum (arvense, variegatum, hyemale) Field horsetail - scouringrush horsetail - variegated scouringrush wet meadow	Herb	GNR	S3	Y

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Sensitive Natural Communities Considered in Our Analysis

Vegetation Alliance	Primary Lifeform	GRank†	SRank†	Dominant Species Present? (Y/N)
Festuca idahoensis Idaho fescue grassland	Herb	G4	S3?	N
Festuca rubra Red fescue grassland	Herb	G4	S3?	N
Frankenia salina Alkali heath marsh	Herb	G4	S3	N
Glyceria occidentalis Northwest manna grass marshes	Herb	G3?	S3?	N
Grindelia (camporum, stricta) Gum plant patches	Herb	G2	S2	N
Heterotheca (oregona, sessiliflora) Goldenaster patches	Herb	G3	S3	N
Hordeum brachyantherum Meadow barley patches	Herb	G2	S2	N
Hydrocotyle (ranunculoides, umbellata) Mats of floating pennywort	Herb	G4	S3?	N
Isoetes (bolanderi, echinospora, howellii, nuttallii, occidentalis) Quillwort beds	Herb	G3	S3?	N
Juncus lescurii Salt rush swales	Herb	G3	S2?	N
Juncus (oxymeris, xiphioides) Iris-leaf rush seeps	Herb	G2?	S2?	N
Leymus cinereus - Leymus triticoides Ashy ryegrass - creeping ryegrass turfs	Herb	G3	S3	N
Nuphar lutea Yellow pond-lily mats	Herb	G5	S3?	N
Oenanthe sarmentosa Water-parsley marsh	Herb	G4	S2?	Y
Ruppia (cirrhosa, maritima) Ditch-grass or widgeon-grass mats	Herb	G4?	S2	N
Schoenoplectus (acutus, californicus) Hardstem and California bulrush marshes	Herb	GNR	S3	N
Schoenoplectus americanus American bulrush marsh	Herb	G5	S3.2	N
Scirpus microcarpus **Small-fruited bulrush marsh**	**Herb**	**G4**	**S2**	**Y**

Appendix C — Species and Sensitive Natural Communities Subject to California Environmental Quality Act (CEQA) Review

Sensitive Natural Communities Considered in Our Analysis

Vegetation Alliance	Primary Lifeform	GRank†	SRank†	Dominant Species Present? (Y/N)
Sparganium (angustifolium) Mats of bur-reed leaves	Herb	G4	S3?	N
Stuckenia (pectinata) - Potamogeton spp. Pondweed mats	Herb	G3	S3?	N
Trifolium variegatum White-tip clover swales	Herb	G3?	S3?	N

* Bold text indicates the presence of such vegetation alliance within the project area.

† Global and State ("Heritage Method") Rarity Rank (Refer to Appendix E)

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Bryoria pseudocapillaris "false gray horsehair lichen"	3.2 S2 G3	Fruticose lichen, generally growing on conifers (*Picea sitchensis*, *Pinus contorta* var. *contorta*, *Pseudotsuga menziesii*, *Abies grandis*, *Tsuga heterophylla*) in the immediate coastal zone. Largest known population in CA is on the Samoa Peninsula.	**Low Potential: Not Detected.** Although some of the tree species this lichen favors do occur within the study area, it is exclusively known from the immediate coastal zone. Although lichen-specific surveys were not conducted as part of this effort, this species was not incidentally detected during our July 2020 botanical surveys.
Bryoria spiralifera "twisted horsehair lichen"	1B.1 S1S2 G3	Inhabits immediate North Coast coniferous and coastal dune forests, usually on conifers. 0-30m. Found from OR south.	**Low Potential: Not Detected.** Potentially suitable trees exist within the study area, however, the study area is not immediately coastal and thus likely does not provide suitable habitat. Although lichen-specific surveys were not conducted as part of this effort, this species was not incidentally detected during our July 2020 botanical surveys.
Cardamine angulata "seaside bittercress"	2B.2 S3 G4G5	Wet areas and streambanks from 5-515m elevation in North Coast coniferous forest and lower montane coniferous forest.	**Moderate Potential: Not Detected.** Potentially suitable habitat exists within the project area within and near the Sitka Spruce Forest and Woodland habitat. Verified records of this species occur in Redwood State and National Parks CalFlora 2020). This species was not encountered during July 2020 botanical surveys.
Carex arcta "northern clustered sedge"	2B.2 S1 G5	Bogs and fens, mesic sites in North Coast coniferous forest; 60-1405m.	**Moderate Potential: Not Detected.** Potentially suitable habitat exists in the palustrine wetland features within and near the Sitka Spruce Forest and Woodland habitat. Historic records occur in the McKinleyville area (CalFlora 2020). This plant species was not observed during July 2020 botanical surveys.
Carex buxbaumii "Buxbaum's sedge"	4.2 S3 G5	Bogs and fens, meadows, seeps, marshes, and swamps. 3-3300m elevation.	**Moderate Potential: Not Detected.** Some suitable habitat exists at the project area in the form of seeps and mesic areas. The closest confirmed observations of this species are at Big Lagoon, Redwood National Park (CNDDB 2020; etc.). This species was not observed during July 2020 botanical surveys.

* Refer to Appendix E.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Carex leptalea "bristle-stalked sedge"	2B.2 S1 G5	Bogs and fens, meadows and seeps, marshes and swamps. Mostly known from bogs and wet meadows, 3-1395m in elevation.	**Moderate Potential: Not Detected.** Some suitable wetland habitat exists within the study area. Confirmed records of this species occur substantially to the north and south of the study area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Carex lyngbyei "Lyngbye's sedge"	2B.2 S3 G5	Marshes and swamps (brackish or freshwater); 0-200m elevation.	**Low Potential: Not Detected.** Although this species can live in brackish or freshwater sites, verified records are almost exclusively in brackish sites in the Humboldt Bay area. This plant was not detected during our July 2020 field work.
Carex praticola "northern meadow sedge"	2B.2 S2 G5	Moist to wet meadows and seeps; 15-3200m elevation.	**Low Potential: Not Detected.** Although potentially suitable habitat exists in mesic features within the study area, verified records of this species occur north of the site in Redwood National Park . Historic records also exist in the southern Humboldt Bay . This species was not detected during July 2020 botanical surveys.
Carex viridula ssp. *viridula* "green yellow sedge"	2B.3 S2 G5T5	Marshes and swamps (freshwater) and North Coast coniferous forests (mesic). 0-1705m elevation.	**Low Potential: Not Detected.** Populations of this species occur at Big Lagoon, Redwood National Park , and are immediately coastal. This plant was not detected during July 2020 field work.
Castilleja mendocinensis "Mendocino coast paintbrush"	1B.2 S2 G2	Coastal bluff scrub, closed-cone coniferous forests, coastal dunes, coastal prairie, coastal scrub. Often on sea bluffs or cliffs in coastal bluff scrub or prairie; 3-70m.	**Low Potential: Not Detected.** Open grassland habitats at the project area are disturbed by grazing and likely not suitable for this species. In Humboldt County, this plant is found exclusively on the immediate coast, and reported populations occur in Patrick's Point and Redwood National and State Parks . This species was not detected during July 2020 botanical surveys.
Chrysosplenium glechomifolium "Pacific golden saxifrage"	4.3 S3 G5?	Streambanks, seeps and sometimes roadsides in riparian forest and North Coast coniferous forest. 10-640m elevation.	**High Potential: Not Detected, Needs Additional Surveys.** Seeps and the Sitka Spruce Forest and Woodland habitat within and adjacent to the project area provide suitable habitat for this species. Recent records of this species exist in similar sites approximately 3 miles to the south, on the opposite side of the Mad River. This species was not detected during our July 2020 botanical surveys, though this period did not coincide with the blooming period (February – June) for the species.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Coptis laciniata "Oregon goldthread"	4.2 S3? G4?	Mesic sites in meadows, seeps, and streambanks within North Coast coniferous forest. 0-1000m elevation.	**Low Potential: Not Detected, Needs Additional Surveys.** While potentially suitable habitat does exist within the study area, this species more commonly occurs at higher elevation sites in Humboldt and Del Norte counties (~500m). This species was not detected during our July 2020 botanical surveys, though this period did not coincide with the blooming period (March – May) for the species.
Empetrum nigrum "black crowberry"	2B.2 S1? G5	Coastal bluff scrub, coastal prairie; 10-200m.	**Low Potential: Not Detected.** Coastal scrub and prairie habitats at the site are marginally-suitable for this species, at best. This species was not detected during July 2020 botanical surveys. While such surveys did not coincide with the published blooming period (April – May) for this species, this distinctive perennial shrub is identifiable year-round.
Erythronium revolutum "coast fawn lily"	2B.2 S3 G4G5	Bogs and fens; mesic sites and streambanks within broadleaved upland forest and north coast coniferous forest, 60-1405m. This northern-Pacific coast species is state listed as sensitive in WA and is on the Oregon state watch list.	**Low Potential: Not Detected.** While some suitable habitat exists within and near the Sitka Spruce Forest and Woodland areas, this species rarely occurs in association with the coastal terrace zone. This species is regularly observed approximately 15 miles inland (iNaturalist 2020). This species was not detected during July 2020 botanical surveys.
Fissidens pauperculus "minute pocket-moss"	USFS-S 1B.2 S2 G3?	North coast coniferous and redwood forests, growing on damp soil in coast areas. Also in dry streambeds and on streambanks, 10-1024m.	**Moderate Potential: Not Detected.** Suitable habitat (saturated soils) exists on the eastern edge of the project area within and near the Sitka Spruce Forest and Woodland habitat. Vouchered specimens are known from similar habitats and elevations along Jolly Giant Creek in the Arcata Community Forest (Norris 85082a) and Prairie Creek Redwoods State Park (Jamieson 173) (Wilson 2020). Although bryophyte-specific surveys were not conducted as part of this effort, this species was not incidentally detected during our July 2020 botanical surveys.
Gilia capitata ssp. *pacifica* "Pacific gilia"	1B.2 S2 G5T3	Coastal bluff scrub, chaparral coastal prairie, valley and foothill grasslands; 5-1345m.	**Low Potential: Not Detected.** Marginal habitat exists for this species in the study area. This species is predominantly coastal in Mendocino County, but in Humboldt County it is generally associated with areas at higher elevation than the study area, and with a greater degree of topographic relief. . This species was not detected during July 2020 botanical surveys.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Hemizonia congesta ssp. *tracyi* "Tracy's tarplant"	4.3 S4 G5T4	Coastal prairie and openings in lower montane and North Coast coniferous forest, sometimes occurs on serpentine soils. 120-1200m elevation.	**Low Potential: Not Detected.** While forest opening and grassland habitats occur in the study area, they are significantly disturbed by grazing. Moreover, this species more commonly found at higher elevation. This species was not detected during July 2020 botanical surveys.
Hosackia gracilis "harlequin lotus"	4.2 S3 G3G4	Occurs in a variety of open and wetland habitats including broadleaved upland forest, coastal bluff scrub, closed-cone coniferous forest, cismonane woodland, coastal prairie, meadows, seeps, marshes, North Coast coniferous forest and valley/foothill grassland. Designated endangered in Canada and primarily threatened by development, grazing and habitat alteration. 0-700m elevation.	**Moderate Potential: Not Detected.** Habitats that may have once been potentially suitable for this species at the project site are now significantly impacted by grazing, a recognized threat to the plant's populations (CNPS 2020). This species was not detected within the study area during July 2020 botanical surveys.
Iliamna latibracteata "California globe mallow"	1B.2 S2 G2G3	Montane chaparral, lower montane coniferous forest, mesic sites in North Coast coniferous forest and streambanks. Often associated with burned areas. 60-2000m elevation.	**Low Potential: Not Detected.** While some suitable habitat exists in the eastern portion of the study area within and near the Sitka Spruce Forest and Woodland habitat, the project area shows no signs of recent burning, and is therefore missing this, often important habitat characteristic. This species was not detected during July 2020 botanical surveys.
Juncus nevadensis var. *inventus* "Sierra rush"	2B.2 S1 G5T3T4	Bogs and fens. Often in sandy sites. 0-10m elevation. Relatively little is known about this species. California Consortium of Herbaria records exist for the Big Lagoon area.	**Low Potential: Not Detected.** Mesic habitats within the project area may provide some habitat for this species, although it is generally found at lower elevations and sites with sandier substrates. California Consortium of Herbaria recordsexist for the Big Lagoon area. This species was not detected during July 2020 botanical surveys.
Lathyrus palustris "marsh pea"	2B.2 S2 G5	Moist coastal areas. Bogs and fens, mesic sites in lower montane coniferous forest, marshes and swamps, North Coast coniferous forest, coastal prairie, and coastal scrub; 2-140m.	**Moderate Potential: Not Detected.** Suitable wetland habitat exists within the project area in and near the Sitka Spruce Forest and Woodland habitat. However, this species is often found in more immediate coastal areas. Historical herbarium specimens exist from around the Humboldt Bay region (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Lilium kelloggii "Kellogg's lily"	4.3 S3 G3	Openings and roadsides in North Coast coniferous forest and lower montane forest, 3-1300m elevation.	**High Potential: Not Detected.** Suitable habitat exists within the project area, particularly in the eastern portion in Sitka Spruce Forest and Woodland habitat. Numerous records of this species exist within 3 miles of the project area but this species was not detected during July 2020 botanical surveys.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Lilium occidentale "western lily"	FE SE 1B.1 S1 G1	Known only from Humboldt and Del Norte Counties, CA and OR. Coastal scrub, freshwater marsh, bogs and fens, coastal bluff scrub, coastal prairie, North Coast coniferous forest. On well-drained, old beach washes overlain with wind-blown alluvium and original topsoil; usually near margins of Sitka spruce; 3-110m.	**High Potential: Not Detected.** Suitable habitat for this species exists widely throughout the site along forest margins and mesic sites within and near the Sitka Spruce Forest and Woodland habitat. As a bulbiferous perennial this species has limited dispersal potential, but is known to occur less than one mile from the project area at Azalea State Reserve (CNDDB 2020). This species was not detected during July 2020 botanical surveys.
Listera cordata "heart-leaved twayblade"	4.2 S4 G5	Bogs, fens, North Coast and lower montane coniferous forest. 5-1370m elevation. Easily overlooked.	**High Potential: Not Detected.** Suitable habitat for this species exists in the study area within and near the Sitka Spruce Forest and Woodland habitat and mesic sites therein. Recent records of this species include the vicinity of Little River near Crannell (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Lycopodiella inundata "inundated bog club-moss"	2B.2 S1? G5	In California, known only from Humboldt and Nevada Counties. Bogs and fens, lower montane coniferous forest (mesic), marshes and swamps. Peat bogs, muddy depressions, and pond margins, 5-915m elevation.	**Moderate Potential: Not Detected.** Some potentially suitable habitat exists within the project area in the form of mesic areas within and near the Sitka Spruce Forest and Woodland habitat. However, the primary locality for this species is at Big Lagoon (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Lycopodium clavatum "running-pine"	4.1 S3 G5	North Coast coniferous forest, lower montane coniferous forest, marshes and swamps. Forest understory, edges, openings, roadsides; mesic sites with partial shade and light. 45-1225m elevation.	**High Potential: Not Detected.** Suitable habitat exists within the project area, within and near the Sitka Spruce Forest and Woodland habitat. Moreover, CNDDB records show occurrences of this species less than one mile east of the project area (CNDDB 2020). This species was not detected during July 2020 special status plant surveys.
Lycopus uniflorus "northern bugleweed"	4.3 S4 G5	Bogs, fens, marshes and swamps, 5-2000m elevation. Uncommon in California, but common elsewhere. Nearest confirmed locality is in the Redwood National Park area.	**Low Potential: Not Detected.** Mesic habitats within the study area may provide some suitable habitat for this species. The nearest confirmed locality is in the Redwood National Park area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Mitellastra caulescens "leafy-stemmed miterwort"	4.2 S4 G5	Broadleaved upland forests, lower montane coniferous forests, meadows and seeps, North Coast coniferous forests. Mesic sites; 5-1700m.	**Moderate Potential: Not Detected.** Suitable habitat conditions exist within the study area within and near the Sitka Spruce Forest and Woodland habitat. Confirmed records of this species exist for the Clam Beach area and the Samoa Peninsula (CalFlora 2020). This species was not detected during July 2020 botanical surveys.

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Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Monotropa uniflora "ghost-pipe"	2B.2 S2 G5	Broadleaved upland forest, North Coast coniferous forest; often under redwoods or western hemlock; 15-855m.	**Moderate Potential: Not Detected.** Some suitable habitat exists within the study area within and near the Sitka Spruce Forest and Woodland habitat. This plant is known to occur in Redwood State and National Parks (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Montia howellii "Howell's montia"	2B.2 S2 G3G4	Rediscovered in California in 1999. Candidate for State Endangered List in OR. Meadows and seeps, North Coast coniferous forests, vernal pools. Vernally mesic sites; often on compacted soil. 10-1215m elevation.	**Moderate Potential: Not Detected, Needs Additional Surveys.** Suitable habitat exists at the site within and near the Sitka Spruce Forest and Woodland habitat. Nearby sites are often in seasonally inundated places with exposed soil, which is of limited extent within the project area. This plant is known from the lower Mad River watershed, including sites in Blue Lake and Korbel (CalFlora; iNaturalist 2020). This species was not detected during our July 2020 botanical surveys, though this period did not coincide with the blooming period (March – May) for the species.
Oenothera wolfii "Wolf's evening-primrose"	1B.1 S1 G2	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forests. Sandy substrates, usually mesic sites; 0-125m.	**Low Potential: Not Detected.** While some marginally suitable coastal prairie-type habitat exists within the study area, verified records of this species tend to be from the immediate coastal zone (<0.5 miles from the ocean) (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Packera bolanderi var. *bolanderi* "seacoast ragwort"	2B.2 S2S3 G4T4	Coastal scrub, North Coast coniferous forest. Sometimes along roadsides. 30-915m.	**Low Potential: Not Detected.** Some potentially suitable habitat exists in the study area within and near the Sitka Spruce Forest and Woodland habitat. This species was not detected during July 2020 botanical surveys.
Piperia candida "white-flowered rein orchid"	1B.2 S3 G3	North Coast coniferous forest, lower montane coniferous forest, broadleaved upland forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops and muskeg. 20-1615m.	**Moderate Potential: Not Detected.** Some suitable habitat exists at the site, within and near the Sitka Spruce Forest and Woodland habitat and more specifically areas with thick forest duff. Verified records of this species exist in quadrangles to the north, south and east of the project area but not immediately in the Humboldt Bay area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Pityopus californicus "California pinefoot"	4.2 S4 G4G5	Mesic sites in broadleaved upland, North Coast coniferous and upper/lower montane forest. 15-2225m elevation.	**Moderate Potential: Not Detected.** Suitable habitat exists at the site within and near the Sitka Spruce Forest and Woodland habitat. Records do exist for the nearby "Arcata North" quadrangle (CNPS 2020) This species was not detected during July 2020 botanical surveys.

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Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Pleuropogon refractus "nodding semaphore grass"	4.2 S4 G4	Mesic sites and along roadsides in lower montane and North Coast coniferous forest, riparian forest, meadows, and seeps. 0-1600m elevation.	**High Potential: Not Detected**. Suitable habitat exists within the study area, including seeps within and near the Sitka Spruce Forest and Woodland habitat. This species is known to occur less than one mile away in Azalea State Reserve. This species was not detected during July 2020 botanical surveys.
Ribes laxiflorum "trailing black currant"	4.3 S3 G5?	Understory and scrub habitats in North Coast coniferous forest, also observed along roadsides. 5-1395m elevation.	**Present.** Suitable habitat for this species exists in the understory within and along the Sitka Spruce Forest and Woodland habitat on the eastern edge of the study area. Historic records exist from Dows Prairie on the north side of McKinleyville and recent records from Redwood State and National Parks (CalFlora; iNaturalist 2020). This species was detected in the Sitka Spruce Forest & Woodland habitat on the eastern edge of the study area during our botanical surveys.
Sidalcea malachroides "maple-leaved checkerbloom"	4.2 S3 G3	Broadleaved upland forest, coastal prairie, coastal scrub, and North Coast coniferous forest. Woodlands and clearings near coast; often in disturbed areas; 4-765m.	**High Potential: Not Detected.** Suitable habitat for this species exists in the study area within and near the Sitka Spruce Forest and Woodland habitat, clearings, and disturbed areas. Occurrences of this species exist approximately 2 miles to the east (CNDDB 2020). This species was not detected during July 2020 botanical surveys.
Sidalcea malviflora ssp. *patula* "Siskiyou checkerbloom"	1B.2 S2 G5T2	Coastal prairie, coastal bluff, scrub, North Coast coniferous forest. Open coastal forest, roadcuts. 15-1255m.	**Moderate Potential: Not Detected.** Some suitable habitat for this species exists within the project area within and near the Sitka Spruce Forest and Woodland habitat. Historical and more recent records of this species are known from the north McKinleyville/Dows Prairie area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Sidalcea oregana ssp. *eximia* "coast checkerbloom"	1B.2 S1 G5T1	Known from approximately 10 occurrences in NW CA. Meadows and seeps, North Coast coniferous forest, and lower montane coniferous forest. Usually near meadows in gravelly soil. 5-1805m.	**Moderate Potential: Not Detected.** Potentially suitable habitat exists within the study area including the Sitka Spruce Forest and Woodland habitat and disturbed grassland ecotypes. Dows Prairie, on the north side of McKinleyville is a notable historic population location (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Silene scouleri ssp. *scouleri* "Scouler's catchfly"	2B.2 S2S3 G5T4T5	Coastal prairie, coastal bluff scrub and valley/foothill grasslands, 0-600m elevation.	**Low Potential: Not Detected.** The coastally-influenced open ecotypes at the project area are significantly disturbed by non-native species and grazing and thus are likely marginal habitat for this species. Furthermore, this species is only known in Humboldt county through historical collections in the Big Lagoon area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.

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Botanical Species	Status*	Habitat Characteristics (CNDDB 2020; CNPS 2020)	Potential for Occurrence
Tiarella trifoliata var. *trifoliata* "trifoliate laceflower"	3.2 G5T5 S2S3	Habitat edges, moist shady slopes and streambanks in lower montane and North Coast coniferous forest. 170-1500m elevation.	**Low Potential: Not Detected.** Some potentially suitable habitat exists within the project area in the form of shady slopes, edges along the Sitka Spruce Forest and Woodland habitat, however, this species is only known from sites further inland from the study area (CalFlora 2020). This species was not detected during July 2020 botanical surveys.
Trichodon cylindricus "cylindrical trichodon"	2B.2 S2 G4	Broadleaved upland forest, upper montane coniferous forest. Moss growing in openings on sandy or clay soils on roadsides, stream banks, trails or in fields. 50-1500m.	**Low Potential: Not Detected.** Although relatively little is known about this species in California, openings within the coniferous-forested habitats at the site may provide potentially suitable habitat for this moss. Nearby records include an occurrence in the "Arcata North" quadrangle (CNPS 2020) and one voucher specimen from near Patrick's Point (Norris 72937) (Wilson 2020). Although bryophyte-specific surveys were not conducted as part of this effort, this species was not incidentally detected during our July 2020 botanical surveys.
Dolichousnea longissima (=*Usnea longissima*) "Methuselah's beard lichen"	4.2 S4 G4	North coast coniferous forest and broadleaved upland forest. Grows in the "redwood zone" on a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay; 45-1465m elevation range in California.	**Low Potential: Not Detected.** Mature trees associated with the coniferous-forested habitats within and along the edges of the project area offer some potentially suitable habitat for this dispersal-limited species. However, this species is not known from the immediate Humboldt Bay area (CalFlora 2020). Although lichen-specific surveys were not conducted as part of this effort, this species was not incidentally detected during our July 2020 botanical surveys.
Viola palustris "alpine marsh violet"	2B.2 S1S2 G5	Swampy, shrubby places in coastal scrub or coastal bogs; 0-15m.	**Low Potential: Not Detected.** Although palustrine emergent and scrub-shrub habitat exists within the project area, the site may be too high in elevation for this species. The nearest confirmed records are from the immediate coast near Big Lagoon (CalFlora 2020). This species was not detected during July 2020 botanical surveys.

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Natural Communities	Status*	Alliance Characteristics (CNPS 2020)	Potential for Occurrence
Abies grandis "Grand fir forest"	S2.1 G4	Grand fir (*Abies grandis*) dominant or co-dominant in the upper canopy, with greater than 60% of total upper tree canopy. Associated species include *Picea sitchensis*, *Pinus muricata, Sequoia sempervirens* and *Tsuga heterophylla*. Proximity to the coast and maritime influences are similar to *Picea sitchensis* stands. However, *A. grandis* stands treated here occupy only upland settings, often on mesic slopes above creeks or river mouths.	**High Potential: Not Detected.** Grand fir and Sitka spruce commonly co-occur in lower elevation, coastally-influenced forest types (CNPS 2020b). While both grand fir and Sitka spruce occur within the study area, the definition of this community type requires a given grand fir stand to be upland in order to qualify (Sawyer et al. 2009). The elevation and coastal influence at the project area therefore disqualify this community type (but see Sitka spruce forest and woodland, below).
Carex obnupta "slough sedge swards"	S3 G4	*Carex obnupta* ("slough sedge") dominant or co-dominant in the herbaceous layer in seasonally flooded herbaceous communities though emergent trees (*Alnus rubra*, "red alder;" *Picea sitchensis*, "Sitka spruce") and shrubs (*Baccharis pilularis*, "coyote brush;" *Morella californica*, "wax myrtle;" *Rubus* ssp.; and *Salix* spp., "willows") may also co-occur.	**Present.** A small lobe of slough sedge- (*Carex obnupta*)-dominated vegetation extends from the Sitka spruce understory into the palustrine emergent wetland habitats in the northeast extension of the project area. Associated species include *Scirpus microcarpus* ("small-fruited bulrush"), *Oenanthe sarmentosa* ("water parsley"), *Athyrium felix-femina* var. *cyclosorum* ("lady fern"), *Juncus* spp. (various "rushes"), *Veronica americana* ("American brooklime"), *Stachys mexicana* ("Mexican hedge nettle"), *Erythranthe guttata* ("seep monkeyflower"), and *Epilobium ciliatum* ssp. *watsonii* ("Watson's willowherb"), as well as the alien *Ranunculus repens* ("creeping buttercup").
Picea sitchensis "Sitka spruce forest and woodland"	S2 G5	Sitka spruce (*Picea sitchensis*) dominant in the canopy, with greater than 50% relative cover in canopy. Associated tree species include *Abies grandis*, *Alnus rubra*, *Sequoia sempervirens* and *Tsuga heterophylla*. Successional stands sometimes occur adjacent to wetlands of *Salix hookeriana* and *Deschampisa cespitosa* alliances. Rapidly colonized stands of shrubs including *Rhododendron occidentale*, *Corylus cornuta, Frangula purshiana* and others.	**Present.** Sitka spruce- (*Picea sitchensis*)-dominated portions of adjacent forest stands extend into the project area (and along much of its perimeter), with associated tree species such as *Alnus rubra*, *Abies grandis*, and *Sequoia sempervirens*. Recruitment of sapling representatives of the aforementioned tree species within contiguous *Rubus ursinus*-dominated Coastal Brambles represent a successional gradient along some edges of these forest stands.

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Natural Communities	Status*	Alliance Characteristics (CNPS 2020)	Potential for Occurrence
Rubus (*parviflorus, spectabilis, ursinus*) "Coastal brambles"	S3 G4	Thimbleberry (*Rubus parviflorus),* salmonberry (*Rubus spectabilis*), or California blackberry (*Rubus ursinus*) are dominant or occur with comparable cover, or *R. spectabilis* has greater than 50% relative cover in the shrub canopy layer. Often associated with *Baccharis pilularis, Garrya elliptica, Gaultheria shallon, Lonicera involucrata, Ribes menziesii, Vaccinium ovatum* and small emergent trees including *Picea sitchensis*. This is one alliance of the coastal scrub or "northern coastal bluff scrub" as treated in Holland (1986). However, a revision of this alliance currently in preparation, and scheduled to be released in spring of 2021 (Keeler-Wolf pers. comm.), recognizes the distinct ecological role of *Rubus ursinus* as a more widespread, early-successional, facultative species, that is less restricted to mesic habitats. This revision will split *R. ursinus* out from the *Rubus spectabilis*–*R. parviflorus* Alliance, and will instead be placed in a separate vegetation alliance, which recognizes its early seral status and wider range, and will be designated with a reduced rarity rank such that it will no longer qualify as a Sensitive Natural Community.	**Present.** Under the current definition of this vegetation alliance's membership rules, this vegetation community is present within the study area in the form of large (> 100 sq ft) bramble patches dominated (> 50%) by California blackberry (*Rubus ursinus*). Associations with *Baccharis pilularis* and *Ribes menziesii* are visible throughout some of these patches. However, in light of the proposed revision to the role of R. ursinus within this vegetation alliance, our opinion is that the Coastal Bramble habitats at the site should not be considered a Sensitive Natural Community.
Scirpus microcarpus "Small-fruited bulrush marsh"	S2 G4	*Scirpus microcarpus* ("small-fruited bulrush") dominant or co-dominant in the herbaceous layer associated with flooded or saturated substrates (>30% relative cover [VegCAMP 2020]) and commonly found along the wetland periphery adjacent to deciduous or coniferous forest.	**Present.** Small-fruited bulrush- (*Scirpus microcarpus*)-dominated palustrine emergent wetland habitats are present at the site in the northeast extension of the project area. Associated species include *Carex obnupta* ("slough sedge"), *Oenanthe sarmentosa* ("water parsley"), *Athyrium felix-femina* var. *cyclosorum* ("lady fern"), *Juncus* spp. (various "rushes"), *Veronica americana* ("American brooklime"), *Stachys mexicana* ("Mexican hedge nettle"), *Erythranthe guttata* ("seep monkeyflower"), and *Epilobium ciliatum* ssp. *watsonii* ("Watson's willowherb"), as well as the alien *Ranunculus repens* ("creeping buttercup").

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Natural Communities	Status*	Alliance Characteristics (CNPS 2020)	Potential for Occurrence
Sequoia sempervirens "redwood forest and woodland"	S3.3 G3	Redwood (*Sequoia sempervirens*) is dominant or co-occurs with other conifer species (*Abies grandis, Picea sitchensis*, *Pseudotsuga menziesii*, *Tsuga heterophylla*) or broadleaved species (*Notholithocarpus densiflorus*, *Alnus rubra, Acer macrophyllum*). Redwood attains >50% relative cover in the canopy or >30% cover with other conifers.	**Moderate Potential: Not Detected.** Only a single coast redwood (*Sequoia sempervirens*) tree with mature characteristics was encountered within the project area.

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Insect Species	Status*	Habitat Characteristics	Potential for Occurrence
Bombus caliginosus "obscure bumble bee"	VU S1S2 G4?	Coastal areas from Santa Barbara county, CA north to WA. Food plant genera include *Baccharis*, *Cirsium*, *Lupinus*, *Lotus*, *Grindelia* and *Phacelia*.	**Low Potential.** While some of the forage plant genera this species specializes on do occur within the study area, this species is most commonly known from the immediate coastal zone. The nearest confirmed record to the study area is Lanphere Dunes in 1978 and Clam Beach in 1971 (CNDDB 2020).
Bombus occidentalis "western bumble bee"	SCE S1 G2G3	Once common and widespread, this species has declined precipitously (~40%) from central CA to southern B.C., possibly due to disease. Listed as "imperiled" by the Xerces Society. Generalist foragers, often in open grassy areas, urban/parklands, chaparral/shrub lands and mountain meadows. Local queen emergence is generally between mid-March and mid-April and nesting habitat typically consists of well-drained grassland habitats with cavities and holes, such as those created by burrowing rodents (Mesler pers. comm.).	**Moderate Potential.** The sloped, well-drained grassland habitat with abundant rodent burrows within the study area provides suitable nesting and foraging habitat for this species. The nearest records include 6, which range in distance from 0.8–4 miles away from the site, and at least one of these was of similar habitat. CNDDB; Mesler pers. comm.; Mola pers. comm.).

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Fish Species	Status*	Habitat Characteristics	Potential for Occurrence
Oncorhynchus clarkii clarkii "coastal cutthroat trout"	SSC VU VU S3 G5T4	Coastal rivers and low-gradient streams with cool water temperatures (912°C), minimum dissolved oxygen levels of 5 mg/L (), gravel substrates, diverse channel morphology, and complex cover. This anadromous salmonid is closely tied to freshwater but will migrate to the ocean where barriers to fish passage do not occur. Resident, non-migratory populations exist. Most migration occurs within a river system or between a river and its estuary, and individuals that do migrate to saltwater during summer months remain close to natal stream mouths. Sexual maturity is reached in 24 years. Eggs are laid and fertilized in redds with gravel substrate and fry emerge within 67 weeks between MarchJune where they briefly remain in the safety of the gravel before dispersing.	**High Potential**. Resident coastal cutthroat trout are known to occur downstream of the proposed project area in Mill Creek (CNDDB 2020), which receives discharges from the stormwater system that drains the site. Mill Creek Falls presents a total natural barrier to anadromous migration approximately one mile (1.6 km) downstream from the point of stormwater discharge (CDFW 2021).

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Amphibian Species	Status*	Habitat Characteristics	Potential for Occurrence
Plethodon elongatus "Del Norte salamander"	WL	Strongly associated with moist talus in closed-canopy and shaded coastal forests of mixed hardwoods and conifers. Can also be found in riverbeds, and under bark debris. Favors older forests.	**Low Potential.** This species is known to occur in the lower Mad River watershed (iNaturalist 2020), but habitats with sufficient rock cover do not exist within the project area.
Rana aurora "northern red-legged frog"	SSC LC S3 G4	Found in humid forests, woodland, grasslands, diked former tidelands, and stream sides in northwest California, often near dense riparian cover. Usually near permanent water but can be found far from water in damp woods and meadows during non-breeding season.	**Present.** Two individuals (one adult and one juvenile) were encountered along the eastern edge of the project area during April of 2021. No naturally-occurring ponds or similar suitable breeding habitat for Northern Red-legged frog exists at the site. (The small "wallow" created by the domestic pig at the site could eventually provide some marginal breeding habitat if left undisturbed, but such an outcome is considered unlikely given the on-going disturbance to this feature by said pig.) Coniferous forest and freshwater emergent wetland habitats provide suitable non-breeding habitat within the project area. This species is also known to occur less than one mile to the south at the Azalea State Reserve (CNDDB 2020).
Rana boylii "foothill yellow-legged frog"	SE (Except NW/NC Clade) SCT SSC NT S3 G3	Partly-shaded, shallow streams and riffles or broad, exposed river bars with a rocky substrate. Also known to occur in freshwater wetlands and in a variety of habitats. Typically not found on the immediate coast.	**Low Potential.** While some potentially suitable freshwater wetlands do occur within the study area, the site likely experiences too much coastal fog to be suitable for this species.
Rhyacotriton variegatus "southern torrent salamander"	SSC LC S2S3 G3G4	Cold, well-shaded, permanent streams and seeps, or within the splash zone or on adjacent moss-covered rock within trickling water. Coastal redwood, Douglas-fir, mixed conifer, montane hardwood-conifer habitats.	**Low Potential.** Well-shaded seeps within coniferous forest provides marginally-suitable habitat within the study area, though these are likely too ephemeral to support this species. Occurrences are known from the Arcata Community Forest and Blue Lake area (iNaturalist 2020).

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Reptile Species	Status*	Habitat Characteristics	Potential for Occurrence
Emys marmorata "western pond turtle"	SSC VU S3 G3G4	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Basking sites and suitable upland habitat (e.g., sandy banks or grassy open fields) for egg-laying are important habitat features.	**Low Potential.** While some wetland features occur in the project area, they are likely not sufficiently inundated with water and the site likely experiences too much coastal fog to support this species. Nearby extant records include Jolly Giant Creek, the Mad River near Giuntoli and Mather Creek (Fieldbrook) (CNDDB 2020). Although this species has been reported from the North Spit in at least one instance, such occurrences are believed to have been the result of anthropogenic translocation from inland locations (Ashton pers. comm.).

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Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Accipiter cooperii† "Cooper's Hawk" (Nesting)	WL LC S4 G5	Occurs in open or marginal woodlands, preferring to nest in deciduous trees and live oaks. Commonly utilizes urban areas and has successfully nested in ornamental trees.	**High Potential.** Although no breeding behavior was observed in the study area in 2020, migrating and wintering birds likely use woodland habitats in and adjacent to the project site. Coniferous and mixed coniferous-deciduous forest along the eastern portion of the study area, and on adjacent parcels, do provide suitable nesting habitat for this species, The entire project area as a whole offers high-quality foraging habitat. Possible breeding behavior has been reported from the vicinity of Azalea Reserve in 2017 (eBird 2020).
Accipiter striatus "Sharp-shinned Hawk" (Nesting)	WL LC S4 G5	Occupies dense to semi-open montane coniferous, deciduous, or mixed forests, preferring riparian habitats and nests within 275 feet of water. Birds in migration and in winter will use woody hollows and coniferous forest.	**High Potential.** Although no breeding behavior was observed in the study area in 2020, migrating and wintering birds likely use woodland habitats in and adjacent to the project site. Coniferous and mixed coniferous-deciduous forest along the eastern portion of the study area, and on adjacent parcels, do provide suitable nesting habitat for this species, The entire project area as a whole offers high-quality foraging habitat and numerous reports of foraging exist from within one mile of the site (eBird 2020).
Ardea alba "Great Egret" (Nesting Colonies)	LC S4 G5	Occurs in coastal lowland pastures, sloughs, and marshlands as well as along inland rivers (Harris 1996). Nests colonially in large trees near water.	**Low Potential.** The study area offers little – no suitable nesting habitat for this species in the form of large trees over water. Emergent wetland and grassland habitats likely do provide some suitable foraging habitat.
Ardea herodias "Great Blue Heron" (Nesting Colonies)	BCC (March 15-August 15) LC S4 G5	Occurs widely along lakes, ponds, rivers, and marshes (Fix and Bezner 2000), Rookery sites are located in close proximity to estuarine areas, usually in tall trees but also on cliffsides and sequestered locations within marshes.	**Low Potential.** While some characteristics of potential breeding sites occur within the study area, including tall trees and proximity to wetland features, the study area is likely too far from estuarine areas to offer much suitable breeding habitat. Emergent wetland and grassland vegetation communities likely do provide some suitable foraging habitat.

† Note: Where present, parenthetical references below species indicate the specific life history phase or habitat to which protective status applies.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Asio flammeus "Short-eared Owl" (Nesting)	LC SSC S3 G5	Short-eared owls are migrant and winter visitors in northwestern California. They hunt over open habitats such as grasslands, scrub, prairies, meadows, dunes, irrigated lands, ungrazed pastures, and both fresh and saltwater marshes.	**Low Potential.** Some marginally-suitable winter foraging habitat may occur in the study area in the form of disturbed grasslands; however these areas are regularly grazed and probably rarely produce sufficiently tall vegetation that provides ample habitat for prey species. This owl has been observed as a winter visitor in the Arcata Bottoms (eBird 2020) and Eel River estuary (pers. obs.) but is not known to nest in Humboldt County (CNDDB 2020).
Brachyramphus marmoratus "Marbled murrelet"	FT SE EN S RWL	This seabird forages in near shore waters and in protected bays and inlets but flies inland to nest in large conifer trees in late successional and old-growth forests within 50 miles of the coast. Nest (microsite) habitat suitability is typically defined as platforms > 10 cm, diam.; < 45° slope; and > 10 m above ground (Evans Mack et al. 2003). This species is rarely known to nest in mature hardwood species (*Acer macrophyllum* and *Alnus rubra*) within surrounding conifer-dominated habitats (pers. obs.; Bradley & Cooke 2001; respectively). In the northern portion of its range where suitable forested habitats are lacking, nesting has been documented in steep cliff environments (Bradley & Cooke 2001).	**Low Potential.** A few larger individual trees within the project area do have arboreal platforms that may satisfy the nesting microhabitat suitability criteria. However, these are few in number and the individual trees, as well as the small, disjunct stand in which they occur lack the degree of structural complexity associated with known occupied stands. The lack of sufficient forest stand structural complexity, in combination with the surrounding rural neighborhood context, and confirmed presence of breeding Red-tailed Hawk and Great Horned Owl in the stand during our 2020 fieldwork collectively make it highly unlikely that the project provides suitable breeding habitat for Marbled Murrelet. The nearest known CNDDB records for this species are from 13 and 19 miles distant (near the headwaters of Freshwater Creek and Iaqua Buttes (1983) and Tall Trees Grove in Redwood Creek (1975, 1988), respectively). Correspondence with Green Diamond Resource Company wildlife biologist staff (Early & Lucchesi pers. comm.) confirmed that no surveys for Marbled Murrelet have occurred within nearby industrial timberlands under their ownership in the vicinity of the project area, and to their knowledge, CDFW has not identified any potentially suitable habitat in the vicinity.
Chaetura vauxi "Vaux's Swift" (Nesting)	LC SSC S2S3 G5	Breeds in coastal coniferous forests, requiring preexisting cavities created by decay, fire, or natural excavators such as woodpeckers. A significant minority of this species now uses chimneys in towns and cities. Forages in forest openings, burned-over forest, meadows, rivers, lakes, and suburban development.	**High Potential.** Some tree cavities within the coniferous forest associated with the project area may provide suitable nesting habitat for this species. No such structures were identified during our 2020 fieldwork, but some could occur in the adjacent forested landscape. Suitable foraging habitat does occur above the study area, as evidenced by our observation of foraging Vaux's Swifts over the site during our 2020 field work.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Circus cyaneus "Northern Harrier" (Nesting)	SSC LC S3 G5	Found in open grassland habitats, primarily lowland pastures and marshlands of the coastal plain (Harris 1996). Builds large stick nests on the ground, usually in shrubby vegetation along marsh edges (Poole and Gill 2020).	**Low Potential.** Coastal prairie and palustrine emergent wetland habitats at the site provide foraging habitat for this species but grazing disturbances throughout much of the project area renders the site unsuitable for breeding. This species has been reported within 0.5 miles of the study area (eBird 2020).
Contopus cooperi "Olive-sided Flycatcher" (Nesting)	BCC (May 20 – Aug. 31) SSC NT YWL S4 G4	Breeds in western coniferous forests from sea level into subalpine elevations. Commonly use forest edges along meadows, rivers and streams, logged areas, recent burns, and wetland habitats. Nests are generally placed in conifers (including burned and dead trees). In the Humboldt Bay area this species has been observed at increased frequency in grand fir and Sitka spruce forest edges along coastal terraces (pers. obs.)	**High Potential.** Grand fir, Sitka spruce, and Douglas-fir trees along forest edges within the project area provide suitable breeding habitat for this species, and the site as a whole provides ample foraging habitat. Olive-sided Flycatcher was not detected during our 2020 fieldwork, though the species was reported to be singing from the corner of Hewitt Rd and Terra Vista Place on 5 May 2020 (eBird 2020), ~0.1 miles from the project area, and records of breeding behavior exhibited by this species have been reported from the Azalea State Reserve, < 1 mile south of the project area (eBird 2020).
Egretta thula "Snowy Egret" (Nesting Colonies)	LC S S4 G5	Forages in open mudflats and tidal sloughs, exposed rocky or sandy ocean coast (locally), salt- and freshwater marshes, wet meadows, lakeshores, and (to a limited extent) upland pastures. Nests colonially in dense and protected tule beds near their foraging areas.	**Low Potential.** The study area offers little – no suitable nesting habitat for this species, though emergent wetland and grassland habitats likely do provide some suitable foraging habitat. Nesting colonies used by this species are known from the southern end of Humboldt Bay, in the vicinity of the Humboldt Bay National Wildlife Refuge and Indian Island between Eureka and the Samoa Peninsula (CNDDB 2020).
Elanus leucurus "White-tailed Kite" (Nesting)	FP S LC S3S4 G5	Common local residents and breeders in northern California, in agricultural and riparian areas of the coastal plain (Harris 1996). Forages in open grasslands, meadows, and marshes. Perches and nests in dense upper crowns of trees, commonly grand fir, Sitka spruce, Douglas-fir, and Monterey cypress along coastal terraces in the Humboldt Bay region (pers. obs.).	**High Potential.** Dense-crowns of maturing grand fir, Sitka spruce, and to a lesser extent, Douglas-fir, provide suitable breeding habitat for White-tailed Kite and adjacent grassland and palustrine emergent wetlands offer good-quality foraging habitat. This species was detected flying over the project area during our 2020 fieldwork, but no obvious interest in the site was evident. A breeding pair of Red-tailed Hawk at the site likely provide some deterrent at present as these species are known to be relatively intolerant of nesting in close proximity (pers. obs.). Nesting locations are known from approximately 3 miles away at McDaniel Slough (CNDDB 2020).

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Empidonax traillii brewsteri "Little Willow Flycatcher" (Nesting)	LC SE S BCC S1S2 G5T3T4	Inhabits riparian and wetland areas and typically breeds in habitats that supporting high proportion of willow species. In addition to classic riparian stands and stringers, occupied sites in northern California and southern Oregon have included beaver meadows, regenerating clear cuts and mesic openings in coniferous forests where will species co-occur. During migration, this subspecies utilizes riparian and forest edge habitats.	**Low Potential.** Some willow (*Salix lasiolepis*, and *S. lasiandra* ssp. *lasiandra*, and *S. scouleriana*) trees do occur within the project area, growing along the edge of the Sitka spruce-dominated coniferous forest and emergent palustrine wetland habitats. However these few individuals are minor components of the surrounding vegetation and not likely to constitute a patch substantial enough to represent suitable breeding habitat for this species. Mesic forest edges and emergent wetland habitats within the northeastern portion of the project area do provide foraging habitat and migration refugia.
Falco columbarius "Merlin" (Wintering)	WL LC S3S4 G5	Found in a wide variety of open and forested habitats. Preys primarily on small shorebirds and songbirds (Fix and Bezener 2000).	**High Potential.** Forested and grassland habitats within the project area provide potentially suitable wintering and foraging habitat. This species has been observed within ~0.25 miles of the study area in 2015, 2016, 2017, 2018, and 2019 (eBird 2020).
Falco peregrinus anatum "American Peregrine Falcon" (Nesting)	FP LC S BCC S3S4 G4T4	Not strictly tied to aquatic habitats, but relies upon flocking birds (such as shorebirds and ducks, among others) during colder months and thus favors shorelines and shallows for foraging habitat (Fix and Bezener 2000; Harris 1996). Preferred nesting sites include inaccessible cliffs on rocky outcrops and in river gorges, but also successfully nests on human-made structures. This species is also known to breed in tree cavities of coast redwood (*Sequoia sempervirens*) trees.	**Low Potential.** This species has been reported flying over, and within 0.25 miles of the project area (eBird 2020), but no suitable nesting structures were observed at the site. Only four CNDDB nesting records exist for Humboldt County, none of which are within 25 miles of the study area (CNDDB 2020), though nesting has been suspected, but not confirmed at the Samoa Bridge (just over 8 miles southwest of the project area). Green Diamond Resource Company wildlife biologist staff also report no known occurrences under their ownership within the vicinity (Early & Lucchesi pers. comm.).

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Haliaeetus leucocephalus "Bald Eagle" (Nesting & Wintering)	FD FP CE S LC S3 G5	In forested areas nesting habitat is generally located in stands with at least some old-growth characteristics including varying age classes, stratified canopies, snags and senescent individuals, canopy gaps, and emergent trees. In non-forested habitats ground nests have been documented from cliffs, ridges, and sea stacks with good flight access but limited (terrestrial) predator access. Typically located within one mile of a river, lake, or ocean shore that supports adequate food supply for both nesting and wintering. Migratory habitat is generally along the coast following the salmon runs.	**Moderate Potential.** Maturing forest stands within and immediately adjacent to the project area provide potentially suitable nesting habitat for Bald Eagle, with ready access to nearby foraging habitat along the Mad River, Humboldt Bay, and the Pacific Ocean. Although no species-specific surveys were conducted for this species as part of our 2020 fieldwork, no nests, nor indication of breeding at the site were observed during our efforts. A single adult Bald Eagle was observed being harassed by one member of a breeding pair of Red-tailed Hawks present at the site during our 2020 fieldwork as the former species was passing overhead from north to south. Numerous such observations of this species (fly-overs, vocalizations, inter-species interactions [primarily with Red-tailed Hawk], etc.) have also been recorded in the vicinity of the study area over the period of several years (eBird 2020). The presence of breeding Red-tailed Hawks at the site in 2020 affirms our assessment about Bald Eagle within the project area. Green Diamond Resource Company wildlife biologist staff also report no known occurrences under their ownership within the vicinity (Early & Lucchesi pers. comm.).
Icteria virens "Yellow-breasted Chat" (Nesting)	SSC LC S3 G5	Prefers areas of dense undergrowth, brambles, thickets and shrubs, including riparian areas, clear cuts, fallow field edges, forest edges and fencerows. Nests are built low (< 8 feet), off the ground in dense vegetation, including but not limited to berry brambles (*Rubus*), grape vines, willows, rose, dogwood, etc.	**High Potential.** Although typically found further inland, large patches of dense vegetation including California blackberry thickets and rose within the project area could provide suitable nesting habitat for this species. Adjacent brambles, grasslands, early-successional forest habitats and maturing forest edges, fencerows, and riparian areas also provide ample foraging habitat for Yellow-breasted Chat at the site. Although this species was not detected during our 2020 field work, at least two credible reports of a vocalizing male during the breeding season are known from the immediate vicinity of the site as recently as April 2020 (eBird 2020). Other similar reports also exist for the nearby Azalea State Reserve (eBird 2020).

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Numenius americanus "Long-billed Curlew" (Nesting)	WL LC BCC (Breeds elsewhere) S2 G5	In northern California, most common on tidal mud flats, flooded coastal pastures, and diked former tidelands but also forages in the wet sand of the wave slope in coastal beach habitats. Not known to breed in coastal California.	**Low Potential.** Due to the slope of the pastureland present within the study area, it likely rarely if ever becomes sufficiently flooded to provide foraging habitat for this species. This species is not known to breed in Humboldt county and the project area likely never provides the requisite combination of suitable vegetation height and flooding to provide adequate breeding and/or foraging habitat for this species.
Pandion haliaetus "Osprey" (Nesting)	WL LC S S4 G4	Forages over fish-producing lakes, reservoirs, rivers, estuaries, and the open sea coast (Fix and Bezener 2000). Roosts and builds large nests on exposed treetops, towers, pilings, or similar structures nearby. Common summer resident and breeder, with some individuals also over-wintering near major feeding areas (Harris 1996).	**Moderate Potential.** Maturing forest stands within and immediately adjacent to the project area provide potentially suitable nesting habitat for Osprey, with ready access to nearby foraging habitat along the Mad River, Humboldt Bay, and the Pacific Ocean. Although no species-specific surveys were conducted for this species as part of our 2020 fieldwork, no nests, nor indication of breeding at the site were observed during our efforts. A single Osprey was observed flying over the site during our 2020 fieldwork and numerous such observations of this species have also been recorded in the vicinity of the study area over the period of several years (eBird 2020). The presence of breeding Red-tailed Hawks at the site in 2020 affirms our assessment about Osprey within the project area. The closest known nest to the site is ~2.5 miles upstream along the Mad River (pers. obs.), and Green Diamond Resource Company wildlife biologist staff also report no known occurrences under their ownership within the vicinity (Early & Lucchesi pers. comm.).
Passerculus sandwichensis alaudinus "Bryant's savannah sparrow"	SSC S2S3 G5T2T3	Year-round resident locally, breeding between April and August. Primarily inhabits tidally-influenced habitats such as salt marsh, diked former tidelands, moist grasslands within and just above the fog belt, and adjacent ruderal areas (Shuford 2008). Around Humboldt Bay, breeds extensively in dairy pastures and bottom lands, as well as in tall grasses/sedges along roads and fences, sometimes with moist swale or other mesic features (Shuford 2008).	**Low Potential.** Tidally-influenced and bottom land habitats do not exist within the study area and breeding season reports for this species are not know from the immediate vicinity of the study area.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Parus atricapillus "Black-capped Chickadee"	WL LC S3 G5	Occupies mixed hard and softwood forests, natural and suburban woodlands, scattered trees, shrubs, and thickets, old fields, clear cuts, forest edges, and dense undergrowth replacement, as well as suburban areas such as parks and gardens. This species typically nests in cavities in trees.	**High Potential.** Suitable nesting habitat exists within the study area in the form of appropriately-sized tree cavities, primarily in alder snags but also in some conifer trees as well. Suitable foraging habitat also exists along forested habitats throughout the site. This species has been observed along Azalea Avenue within 0.5 miles of the study area and is commonly detected within the nearby Azalea State Reserve (eBird 2020).
Progne subis "Purple Martin" (Nesting)	LC SSC S3 G5	Breeds in riparian and oak woodlands, partially logged, damaged or burned coniferous forests and montane mixed forests, nesting in cavities (usually old woodpecker cavities) of tall trees, often near water (Fix and Bezener 2000). Foraging occurs over bottomlands, bays, coastal lagoons, ponds, riparian areas, and wetlands.	**Moderate Potential.** Eventual snags and senescent trees in conifer forests within the project area and adjacent parcels could provide potentially suitable nesting habitat for Purple Martin, though no such occurrences or structural components were observed during our 2020 fieldwork. Suitable foraging habitat also exists along forested and wetland habitats throughout the site. Although this species was not detected as part of our efforts, Fly-overs" and vocalizations have been reported from the immediate vicinity of the project area (eBird 2020).
Selasphorus rufous "Rufous Hummingbird" (Nesting Colonies)	BCC (Apr. 15 – Jul. 15) YWL S1S2 G5	Long-distance migratory species that breeds from Northern California, north to Alaska. Typically breeds in open, shrubland, forest openings, meadows and swamps. Often nest in coniferous trees including *Picea sitchensis*, *Pseudotsuga menziesii*, *Thuja plicata*, etc. 0-3000 m elevation.	**Moderate Potential.** Sitka spruce forest provides potentially suitable nesting habitat within, and adjacent to, the project area. Potentially suitable foraging habitat also occurs throughout the study area and adjacent neighborhoods may provide further feeding assistance by way of hummingbird feeders. An undetermined *Selasphorus* sp. hummingbird was detected during our 2020 fieldwork and this species has been observed within the immediate vicinity of the study area (eBird 2020).
Selasphorus sasin "Allen's Hummingbird" (Nesting)	BCC (Feb. 1 – Jul. 15) S4 G5	Migratory species that nests in coastal California and Oregon. Breeds in a narrow strip of coastal forest, shrubland, and chaparral habitat between sea level and 1000 m elevation. Often nests in shaded dense tangled vegetation such as *Rubus* spp.-dominated habitats.	**High Potential.** Forested and California blackberry-dominated Coastal Brambles provide potentially suitable nesting habitat within, and adjacent to, the project area. Potentially suitable foraging habitat also occurs throughout the study area and adjacent neighborhoods may provide further feeding assistance by way of hummingbird feeders. An undetermined *Selasphorus* sp. hummingbird was detected during our 2020 fieldwork and this species has been observed engaging in courtship displays within the immediate vicinity of the study area (eBird 2020).

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Strix occidentalis caurina "Northern Spotted Owl"	FT ST NT YWL S G3T3 S2S3	Generally inhabits structurally complex late-seral and old-growth conifer forests for nesting, roosting and foraging, though individuals may visit less complex forest stands during dispersal events and to hunt. Low heat tolerance and the need to reposition often to find favorable microclimate may explain the complex habitat requirements of this species to some extent (Barrows & Barrows 1978).	**Low Potential.** The lack of well-developed forest stand structural complexity and virtual absence of snags, tree cavities, and downed coarse woody debris likely render the conifer forest associated with the project area and contiguous parcels unsuitable as nesting habitat for Northern Spotted Owl (NSO). The disjunct and relatively small patch-size of this habitat, coupled with the surrounding rural neighborhood context further reinforce this assessment. The maturing mesic coniferous forest within and adjacent to the project site may, however, provide occasional foraging and/or roosting habitat for far-ranging individuals. The confirmed presence of breeding Red-tailed Hawk and Great Horned Owl in the stand during our 2020 fieldwork is likely an additional deterrent for the latter, at least at present though. The nearest known positive detection record for this species is on nearby Green Diamond Resource Company timberlands, ~2 miles to the northeast in the vicinity of the upper headwaters of Mill and Lindsay Creeks (CNDDB 2020). Correspondence with Green Diamond wildlife biologist staff (Early & Lucchesi pers. comm.) indicates that this location is currently considered "unoccupied" and that the site is surveyed ≥ 3 times annually, with no detections having occurred during the 6-year period 2015–2020. Additionally, no NSO detections occurred in conjunction with two nearby timber harvest plans (THPs) located in the Lindsay Creek watershed. These THPs had 13 and 18 survey stations (respectively) and each was surveyed 6 times annually between March – May over the 6-year period 2015 – 2020.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence
Toxostoma redivivum "California Thrasher"	BCC (Apr. 15 – Oct. 31) SNR G5	Commonly found in chaparral habitats featuring dense shrubs and small trees. In Humboldt county, often also inhabits transitional upland habitats where oak, fir and pines contact shrubland/chaparral habitats. Prefers heavy leaf litter and dense vegetation for breeding.	**Low Potential.** Habitat conditions within the project area do not provide suitable breeding habitat for California Thrasher, with the possible exception of California blackberry-dominated Coastal Bramble habitats. This species has not been reported from the greater Humboldt Bay area, and the nearest confirmed recent records occur in the Willow Creek and in Petrolia areas (eBird 2020), approximately 30 and 45 miles (respectively) distant.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence
Aplodontia rufa humboldtiana "Humboldt mountain beaver"	SNR G5TNR	Coast range in SW Del Norte and NW Humboldt Co. Inhabits a variety of coastal habitats, including coastal scrub, riparian forests, and North Coast coniferous forest, typically with open canopy and densely vegetated understory. Prefers north-facing slopes and requires high soil moisture content. Evidence of this species includes loosely mounded soil covering or partially covering burrows/tunnels that maintaining a consistent [mean] diameter of ~6 inches (r = 4–11 inches) for at least 1–2 feet in length (USFWS 2017). Exposed caches of vegetative material (i.e., "haystacks") may also be present.	**Inferred Presence**. North- and northeast-facing forested slopes with vegetated understories and high soil moisture content provide suitable habitat for this species within the study area. This species is known to occur approximately one mile south of the study area at the Azalea State Reserve (CNDDB 2020). No mammal-specific surveys were conducted during our 2020 field season, but numerous burrows of ~5-6 inches in diameter extending for at least 1 foot in length were found in multiple locations throughout the Sitka spruce forest along the north eastern portion of the project area during 2020 field work. These burrows contrasted decisively with other smaller burrows (~1.75 inches, diameter), attributed to Botta's pocket gopher (*Thomomys bottae*) in more xeric locations within the project area.
Arborimus albipes "white-footed vole"	SSC LC S2 G3G4	Mature coastal forests in Humboldt and Del Norte Counties. Prefers areas near small, clear streams with dense alder and shrubs.	**Moderate Potential.** Some suitable habitat for this species may exist within the project area. Little is known about this species, with only three CNDDB records known from Humboldt County. The most recent of these records is from 1983 in beach pine forest near the Mad River Slough (CNDDB 2020). While mammal-specific surveys were not conducted as part of this effort no incidental observations of rodent nests were made during our 2020 fieldwork.
Arborimus pomo "Sonoma tree vole"	SSC NT S3 G3	Primarily inhabits coniferous or hardwood-conifer forests with Douglas-fir (*Pseudotsuga menziesii*), its primary forage species. Also known to forage on grand fir (*Abies grandis*), Sitka spruce (*Picea sitchensis*), and Bishop pine (*Pinus muricata*) (Swingle pers. comm.).	**Moderate Potential.** Maturing coniferous forest provides somewhat suitable habitat for this species within the project area (CNDDB 2020).

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence
Corynorhinus townsendii townsendii "Townsend's western big-eared bat"	LC SSC H S2 G3G4	Primarily occupies a variety of habitat types in rural areas: riparian, agricultural, coastal, and coniferous forests types locally (WBWG 2020). Diurnal roosts are found within caves, abandoned mines, and buildings. Nocturnal roosts may occur in more open settings, including under bridges (Philpott 1997). Highly susceptible to human disturbance.	**Moderate Potential.** There are several roosting sites for Townsend's big-eared bats known in Humboldt County, all of which have been in anthropogenic structures, but none are known from or near the immediate study area. This species was caught in a mist net in 2017 in the Blue Lake area (iNaturalist 2020) and grassland habitats, coniferous forests, and emergent wetland habitats may provide foraging habitat for this species. No obvious roosting sites were observed during our 2020 fieldwork, but may occur adjacent to the project area.
Erethizon dorsatum "North American porcupine"	LC S3 G5	Inhabits a wide variety of coniferous and mixed woodland habitats, across Sierra Nevada, Cascade, Transverse and Coast Ranges.	**Low Potential.** Coniferous forests within the project area may provide suitable habitat for this species. Recent CNDDB records include a road-killed porcupine in Freshwater in 2017 (CNDDB 2020). No obvious porcupine foraging evidence was observed during our 2020 fieldwork.
Lasiurus cinereus "hoary bat"	LC M S4 G5	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths and requires fresh water nearby.	**High Potential.** Nearby riparian and wetland habitats, and a diverse complex of grasslands, forest and intermediate successional stages may provide suitable foraging habitat for this species. Dense foliage and large trees at the study area may provide suitable nesting sites. Ultrasonic audio recordings of this species have recently been detected in the Arcata area (iNaturalist 2020).
Myotis evotis "long-eared myotis"	LC M S3 G5	Found in brush, woodland and forest habitats from sea level to ~9000 ft. Prefers coniferous woodlands and forests. Nursery colonies in buildings, crevices, spaces under bark of trees and snags. Caves used primarily as night roosts.	**Low Potential.** Coniferous forests at the site may offer some suitable foraging habitat for this species. The surrounding rural/suburban habitat matrix may offer some roosting and colony sites. However, the most recent CNDDB records from near the study area are 1999 in Freshwater and 1979 near Arcata.

Appendix D – Refined List of Protected Biological Resources with Reasonable Potential to Occur.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence
Pekania pennanti "fisher – Northern California/Southern Oregon DPS"	FPT SSC SCT S2S3 G5T2T3Q	Predominantly found in large stands of mature and dense coniferous forests and deciduous-riparian areas with high canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning.	**Low Potential.** Little–no larger snags and/or downed coarse woody debris for denning/whelping were observed within the study area, though such forest structural features could exist to a limited extent on adjacent forested parcels. Portions of maturing coniferous forest on the eastern edge of the study area could provide suitable foraging and resting habitat for this species, but all of these forested areas are of marginal structural complexity, relatively small, disjunct from larger forested habitats in the vicinity, and are surrounded by increasingly developed rural neighborhood. The closest credible reports are 2 and 2.3 miles from the project area to both the north and south over the period between 2015-2017 (CNDDB 2020) and game camera images of this species have also recently been reported in the vicinity of Korblex and lower Mad River watershed (iNaturalist 2020).

Appendix E — Conservation Status Designations, Codes, and Applicable Regulatory Acts.

Conservation Status Designations, Codes, and Applicable Regulatory Acts

Global (G)/State (S) Rarity Ranks (NatureServe "Heritage Method")

G/S1: Critically imperiled, due to extreme rarity (often 5 or fewer occurrences) and because of factors making it especially vulnerable to extirpation.
G/S2: Imperiled, due to rarity, very restricted range, very few occurrences (20 or fewer), steep declines.
G/S3: Vulnerable, due to restricted range, populations 80 and fewer, recent declines.
G/S4: Apparently secure, but with cause for long-term concern due to declines or other factors.
G/S5: Secure, due to common or widespread abundance.

Federal Endangered Species Act (FESA)

FE: Federal Endangered
FT: Federal Threatened
FC: Federal Candidate
FPE: Federal Proposed Endangered
FPT: Federal Proposed Threatened
FD: Federal Delisted

Bald and Golden Eagle Protection Act (BGEPA)

U.S. Fish & Wildlife Service (USFWS)

BCC: Birds of Conservation Concern

U.S. Forest Service (USFS)

S: Sensitive

Bureau of Land Management (BLM)

S: Sensitive

American Fisheries Society (AFS)

S: Sensitive

California Endangered Species Act (CESA)

SE: State Endangered
ST: State Threatened
SCE: State Candidate Endangered
SCT: State Candidate Threatened
SNR: State Not Reviewed

California Department of Fish & Wildlife (CDFW)

FP: Fully Protected species
SSC: Species of Special Concern
WL: Watch List

California Native Plant Society (CNPS)

Rare Plant Rank:

1A. Presumed extirpated in CA and rare or extinct elsewhere.
1B. Rare or endangered in CA and elsewhere.
2A. Presumed extirpated in CA but more common elsewhere.
2B. Rare or endangered in CA but more common elsewhere.
3. Plants which need more information to evaluate – a review list.
4. Plants of limited distribution – a review list.

Threat Rank:

.1 – Seriously threatened in CA (over 80% of occurrences threatened, high degree of immediacy of threat.)
.2 – Moderately threatened in CA (20-80% of occurrences threatened, moderate degree of immediacy of threat.)
.3 – Not very threatened in CA (<20% of occurrences threatened, low degree of immediacy of threat/no current threat known.)

Western Bat Working Group (WBWG)

H: High Priority
M: Medium Priority

National American Bird Conservation Initiative (NABCI)

YWL: Yellow Watch List: Species that may be range restricted or may be widespread but with declines and high threats.
RWL: Red Watch List: Species with extremely high vulnerability to population declines.

International Union for Conservation of Nature (IUCN)

T: Threatened
NT: Near Threatened

Appendix F. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Trees				
Native Vegetation				
Abies grandis	grand fir	FACU		
Alnus rubra	red alder	FAC		
Frangula purshiana	cascara	FAC		
Picea sitchensis	Sitka spruce	FAC		
Pinus radiata	Monterey pine	NL		
Pseudotsuga menziesii ssp. *menziesii*	Douglas-fir	FACU		
Salix lasiandra var. *lasiandra*	Pacific willow	FACW		
Salix lasiolepis	arroyo willow	FACW		
Salix scouleriana	Scouler's willow	FAC		
Sequoia sempervirens	coast redwood	NL		
Alien Vegetation				
Ilex aquifolium	English holly	NL	Limited	High
Prunus cerasifera	cherry plumb	NL	Limited	
Shrubs				
Native Vegetation				
Baccharis pilularis	coyote bush	NL		
Oemleria cerasiformis	oso berry	FACU		
Ribes bracteosum	stink currant	FAC		
Ribes laxiflorum	trailing black currant	FACU		
Ribes menziesii var. *menziesii*	canyon gooseberry	NL		
Ribes sanguineum var. *glutinosum*	red-flowering currant	FACU		
Rosa nutkana ssp. *nutkana*	Nootka rose	FAC		
Rubus leucodermis	whitebark raspberry	FACU		
Rubus parviflorus	thimbleberry	FACU		
Rubus spectabilis	salmonberry	FAC		
Rubus ursinus	California blackberry	FACU		
Sambucus racemosa var. *racemosa*	red elderberry	FACU		
Vaccinium ovatum	evergreen huckleberry	FACU		
Vaccinium parvifolium	red huckleberry	FACU		
Alien Vegetation				
Cotoneaster franchetii	Franchet's Cotoneaster	NL	Moderate	High
Crataegus monogyna	hawthorn	NL	Limited	No Priority
Rubus armeniacus	Himalayan blackberry	NL	High	High
Woody Vines				
Alien Vegetation				
Delairea odorata	cape ivy	FAC	High	High
Hedera helix	English ivy	NL	High	High
Herbs				
Native Vegetation				
Achillea millefolium	yarrow	FACU		
Alopecurus geniculatus	water foxtail	OBL		
Anaphalis margaritacea	pearly everlasting	FACU		
Anthoxanthum occidentale	California sweet grass	NL		
Asarum caudatum	wild ginger	FACU		
Athyrium felix-femina var. *cyclosorum*	lady fern	NL		
Blechnum spicant	deer fern	FAC		
Callitriche heterophylla	water-starwort	OBL		
Carex c.f. *leptopoda*	slender-foot sedge	FAC		
Carex obnupta	Slough sedge	OBL		
Claytonia perfoliata ssp. *perfoliata*	miner's lettuce	FAC		

Appendix F. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Herbs (Continued)				
Native Vegetation (Continued)				
Claytonia sibirica	candy flower	FAC		
Dicentra formosa	bleeding hearts	FACU		
Dryopteris expansa	wood fern	FACW		
Epilobium ciliatum ssp. *watsonii*	Watson's willowherb	FACW		
Equisetum telmateia ssp. *braunii*	giant horsetail	FACW		
Erythranthe guttata	seep monkeyflower	OBL		
Galium aparine	bedstraw	FACU		
Galium triflorum	sweet-scented bedstraw	FACU		
Glyceria elata	fowl manna grass	FACW		
Heracleum lanatum	cow parsnip	NL		
Iris douglasiana	Douglas' iris	NL		
Isolepis cernua	low bulrush	OBL		
Juncus bolanderi	Bolander's rush	OBL		
Juncus bufonius	toad rush	FACW		
Juncus effusus ssp. *pacificus*	Pacific rush	FACW		
Juncus ensifolius	dagger rush	FACW		
Juncus hesperius	coast rush	FACW		
Lonicera hispidula	honeysuckle	FACU		
Lonicera involucrata var. *ledebourii*	twinberry	FAC		
Lupinus littoralis	lupine	NL		
Luzula comosa var. *comosa*	hairy wood rush	FAC		
Luzula parviflora var. *parviflora*	small-flowered wood rush	FAC		
Lysichiton americanum	skunk cabbage	OBL		
Lysimachia latifolia	Pacific starflower	FACW		
Maianthemum dilatatum	false Solomon's seal	FAC		
Marah oreganus	coast man-root	NL		
Nasturtium officinale	water cress	OBL		
Oenanthe sarmentosa	water parsley	OBL		
Osmorhiza berteroi	sweet cicely	FACU		
Oxalis oregana	redwood sorrel	FACU		
Polypodium scouleri	leather-leaf fern	NL		
Polystichum munitum	sword fern	FACU		
Prosartes smithii	Smith's fairybells	NL		
Pteridium aquilinum	bracken fern	FACU		
Scirpus microcarpus	small-fruited bulrush	OBL		
Scrophularia californica	figwort	FAC		
Stachys ajugoides var. *ajugoides*	hedge nettle	OBL		
Stachys mexicana	Mexican hedge nettle	FACW		
Stellaria crispa	crisp starwort	FAC		
Symphyotrichum chilense	Pacific aster	NL		
Tolmiea diplomenziesii	pig-a-back plant	FACW		
Trillium ovatum ssp. *ovatum*	western Trillium	FACU		
Veronica americana	American brooklime	OBL		
Viola sempervirens	redwood violet	NL		
Alien Vegetation				
Agrostis stolonifera	creeping bent	FAC	Limited	High
Aira caryophyllea	silver European hairgrass	FACU		High
Anthoxanthum odoratum	sweet vernal grass	FACU	Limited	No Priority
Avena fatua	wild oat	NL	Moderate	No Priority
Bellis perennis	English daisy	NL		

Appendix F. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Herbs (Continued)				
Alien Vegetation (Continued)				
Bromus hordeaceous	soft-chess	FACU	Limited	High
Cerastium fontanum ssp. *vulgare*	mouse-ear chickweed	FACU		
Cirsium vulgare	bull thistle	FACU	Moderate	High
Conium maculatum	poison hemlock	FAC	Moderate	Moderate
Dactylis glomerata	orchard grass	FACU	Limited	No Priority
Digitalis purpurea	fox glove	FACU	Limited	Moderate
Festuca perennis	perennial ryegrass	NL	Moderate	No Priority
Geranium dissectum	cut-leaf Geranium	NL	Limited	No Priority
Glyceria declinata	low manna grass	FACW	Moderate	No Priority
Holcus lanatus	velvet grass	FAC	Moderate	Moderate
Hypochaeris radicata	rough cats-ear	NL	Moderate	No Priority
Leontodon saxatilis	hawkbit	FACU		Moderate
Leucanthemum vulgare	ox-eye daisy	FACU	Moderate	No Priority
Linum bienne	flax	NL		
Lotus corniculatus	bird's-foot trefoil	FAC		Monitor
Lysimachia arvensis	scarlet pimpernel	FAC		No Priority
Parentucellia viscosa	yellow Parentucellia	FAC	Limited	Monitor
Plantago lanceolata	English plantain	FACU	Limited	No Priority
Prunella vulgaris var. *vulgaris*	self-heal	FACU		
Ranunculus repens	buttercup	OBL	Limited	No Priority
Raphanus raphanistrum	jointed charlock	NL		No Priority
Raphanus sativus	radish	NL	Limited	No Priority
Rumex acetosella	sheep sorrel	FACU	Moderate	Moderate
Rumex conglomeratus	green dock	FACW		
Rumex crispus	curly dock	FAC	Limited	No Priority
Senecio minimus	coastal burnweed	FACU		
Silybum marianum	milk thistle	NL	Limited	No Priority
Stellaria media	common chickweed	FACU		
Taraxacum officinale	common dandelion	FACU		
Trifolium pratense	red clover	FACU		
Trifolium repens	white clover	FAC		
Vicia hirsuta	vetch	NL		
Vicia sativa ssp. *nigra*	narrow-leaved vetch	NL		
Nonvascular Species				
Mosses				
Isothecium c.f. *myosuroides*				
Neckera douglasii				
Liverworts				
Frullania nisquallensis				
Porella navicularis				
Lichens				
Evernia prunastri				
Heterodermia leucomela				
Hypotrachyna sinuosa				
Parmelia hygrophila				
Parmelia sulcata				
Parmotrema perlatum				
Ramalina farinacea				
Ramalina menziesii				

Appendix F. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Nonvascular Species (Continued)				
Lichens (Continued)				
Usnea cornuta				
Usnea filipendula				
Fungi				
Phaeolus schweinitzii	dyer's polypore			

[†] USACE (2020)
[‡] Cal-IPC (2021)
[§] Humboldt County WMA (2010)

Appendix G. List of Detected Wildlife Species.

Species*	Common Name	Comments
Invertebrates		
Odonata sp.	Dragonfly	
Apis mellifera	European Honey Bee	
Bombus vosnesenskii	Yellow-faced Bumble Bee	
Papilio rutulus	Western Tiger Swallowtail	
Pieres rapae	Cabbage White	
Ctenucha rubroscapus	Red-shouldered Ctenucha Moth	
Amphibians		
Pseudacris regilla	Pacific Tree Frog	
Rana aurora	Northern Red-legged Frog	
Reptiles		
Elgaria multicarinata multicarinata	California Alligator Lizard	
Thamnophis atratus hydrophilus	Oregon Gartersnake	
Birds		
Bombycilla cedrorum	Cedar Waxwing	
Callipepla californica	California Quail	
Patagioenas fasciata	Band-tailed Pigeon	
Zenaida macroura	Mourning Dove	
Chaetura vauxi	**Vaux's Swift**	(Foraging)
Calypte anna	Anna's Hummingbird	
Selasphorus sp.	Rufous/Allen's Hummingbird	
Cathartes aura	Turkey Vulture	
Pandion haliaetus	**Osprey**	(Fly-over)
Elanus leucurus	**White-tailed Kite**	(Fly-over)
Haliaeetus leucocephalus	**Bald Eagle**	(Fly-over)
Buteo jamaicensis	**Red-tailed Hawk**	(Agitated pair/territorial defense)
Bubo virginianus	**Great Horned Owl**	(2 roosting juveniles)
Sphyrapicus ruber	Red-breasted Sapsucker	
Dryobates pubescens	Downy Woodpecker	
Dryobates villosus	Hairy Woodpecker	
Contopus sordidulus	Western Wood-Pewee	(Nesting)
Empidonax difficilis	Pacific-slope Flycatcher	(Nesting)
Sayornis nigricans	Black Phoebe	
Cyanocitta stelleri	Steller's Jay	
Corvus corax	Common Raven	
Tachycineta thalassina	Violet-Green Swallow	
Hirundo rustica	Barn Swallow	
Poecile rufescens	Chestnut-backed Chickadee	
Sitta canadensis	Red-breasted Nuthatch	
Certhia americana	Brown Creeper	
Troglodytes pacificus	Pacific Wren	
Regulus satrapa	Golden-crowned Kinglet	
Chamaea fasciata	Wrentit	
Catharus ustulatus	Swainson's Thrush	
Turdus migratorius	American Robin	
Haemorhous mexicanus	House Finch	
Haemorhous purpureus	Purple Finch	
Loxia curvirostra	Red Crossbill	
Spinus pinus	Pine Siskin	
Spinus psaltria	Lesser Goldfinch	
Spinus tristis	American Goldfinch	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	

Appendix G. List of Detected Wildlife Species.

Species*	Common Name	Comments
Birds (Continued)		
Zonotrichia leucophyrs	White-crowned Sparrow	
Melospiza melodia	Song Sparrow	
Icterus bullockii	Bullock's Oriole	
Molothrus ater	Brown-headed Cowbird	
Leiothlypis celata	Orange-crowned Warbler	
Setophaga coronata	Yellow-rumped (Audubon's) Warbler	
Cardellina pusilla	Wilson's Warbler	
Piranga ludoviciana	Western Tanager	
Pheucticus melanocephalus	Black-headed Grosbeak	
Mammals		
Aplodontia rufa humboldtiana	Humboldt Mountain Beaver	
Thomomys bottae	Botta's Pocket Gopher	
Tamiasciurus douglasii	Douglas Squirrel	
Odocoileus hemionus columbianus	Blacktail Deer	
Procyon lotor	Raccoon	

* Bold text indicates special status species (CNDDB 2021).

Appendix D – Wetland Delineation Report

Final Wetland Delineation Report

McKinleyville Community Services District 4.5MG Water Reservoir Project

Humboldt County, California

Prepared for Planwest Partners, Inc.
1125 16th Street
Arcata, California
95521

Submitted: June 4, 2021

J.B. Lovelace & Associates
HC 69, Box 38
Covelo, CA 95428
www.jblovelace.com

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Summary

The McKinleyville Community Services District (MCSD) has secured funding through a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant being administered by the grant recipient, California Office of Emergency Services (CAL-OES), to increase the seismic resiliency of MCSD's municipal water delivery system. Towards that end MCSD is proposing the addition of a new 4.5 million-gallon (MG) water storage reservoir adjacent to two existing water storage tanks in the southern portion of the unincorporated township of McKinleyville, California (Humboldt County). Construction of the new water reservoir would ensure MCSD's ability to continue providing water to its customers for up to four days should the system's connection to the regional wholesale water provider, Humboldt Bay Municipal Water District (HBMWD), be lost due to a seismic event.

J.B. Lovelace & Associates conducted a routine wetland delineation at the proposed project location (Humboldt County APNs 509-021-045 and 046) from August 26–28, 2020, and a subsequent site visit also occurred on April 22, 2021 to assess hydrological conditions at the site during the spring season. Through the course of our work, we identified the presence of 1.083 acres of freshwater wetland habitat within the proposed project area. These wetland habitats consist of a 0.605-acre portion of a larger offsite seasonally saturated, Sitka spruce-dominated palustrine forested wetland system, and two discrete seasonally flooded–saturated palustrine emergent wetland features collectively totaling 0.478 acres. No other federal or state waters were identified at the site.

The proposed project does have the potential to impact wetland habitats identified through this effort, though current (30% Submittal) design plans available at the time of this writing have already incorporated measures to minimize potential impacts to these sensitive habitats based on our initial findings. Such measures include changes to the original proposed location of the new reservoir to avoid fill of one palustrine emergent wetland feature, as well as changes in the original proposed alignment of a new reservoir overflow drain pipeline, and the adoption of alternative construction methods to avoid and reduce potential impacts to palustrine forested and emergent wetlands during construction of this design element.

Herein, we suggest additional mitigation measures and best management practices to avoid and/or reduce potential wetland impacts associated with the construction of the proposed reservoir, which are consistent with those recommended and/or required by local, state, and/or federal agencies with applicable regulatory jurisdiction and/or trustee responsibilities.

1.0 Introduction

In August of 2020, J.B. Lovelace & Associates was engaged by Planwest Partners, Inc. to conduct a wetland delineation for McKinleyville Community Services District's (MCSD) proposed 4.5 million-gallon (MG) water reservoir construction project in the unincorporated township of McKinleyville, in Humboldt County, California (Figures 1–3). Our efforts included a review of current National Wetlands Inventory data (USFWS 2020) and subsequent fieldwork to identify and delineate any wetlands and/or other waters present within the proposed project area. This document describes the methodologies and findings associated with our work, addresses potential project-related impacts to identified wetland habitats, and provides recommendations to mitigate such impacts.

1.1 Purpose and Need

Humboldt Bay Municipal Water District (HBMWD) is a regional wholesale water provider that supplies water sourced from the Mad River to MCSD through a single pipeline buried below the bed of the Mad River. This single source of water to MCSD's customers is seismically vulnerable and could fail during a severe earthquake. In the event of such a failure, MCSD's current emergency water storage capacity would last for approximately two days, assuming normal average daily demand. The addition of the proposed new 4.5 MG water reservoir would significantly increase system resiliency, helping to ensure MCSD's ability to continue providing water to its customers for up to four days should the connection to HBMWD be lost due to a seismic event.

1.2 Project Location and Description

The proposed augmentation of MCSD's water storage capacity would occur in the northern portion of Humboldt County Assessor's Parcel number (APN) 509-021-045 in southern McKinleyville (Humboldt County, California), with related construction activities also involving two existing water storage tanks located on the immediately adjacent APN 509-021-046 (Appendix A). Both parcels in question are located outside of the California Coastal Zone and are currently zoned as "Rural Residential (Low Density)," "Residential Suburban" (Humboldt County 2021). Primary access to the project area would be by way of a gated private driveway (Hilltop Lane) from Cochran Road, though unimproved access is also potentially possible directly from Cochran Road at the northeastern portion of the project area and from Hewitt Road along its southern boundary. Although the two parcels of interest total 15 acres in size (13.09 and 1.91 acres[1], respectively), the project area currently being proposed would only consist of the northern 8.94 acres of APN 509-021-045, all 1.91 acres of APN 509-021-046,

[1]Humboldt County Planning & Building Department (2021) reports the parcel size of APN 509-021-045 as 13.09 "GIS" acres" (5.3 ha), and the assessed lot size as 12.67 acres (5.13 ha). No such area discrepancy was reported for APN 509-021-046.

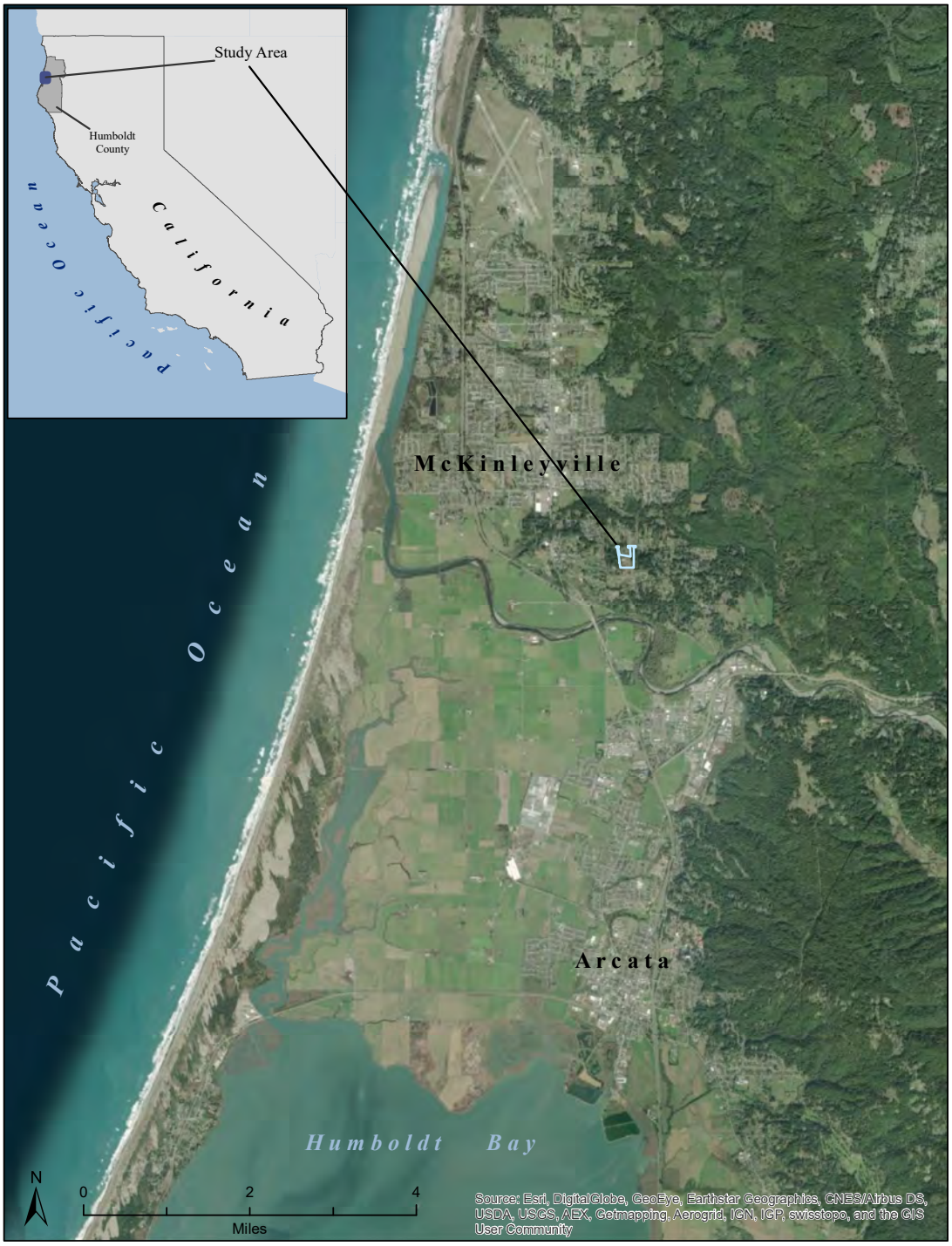

Figure 1. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Vicinity.

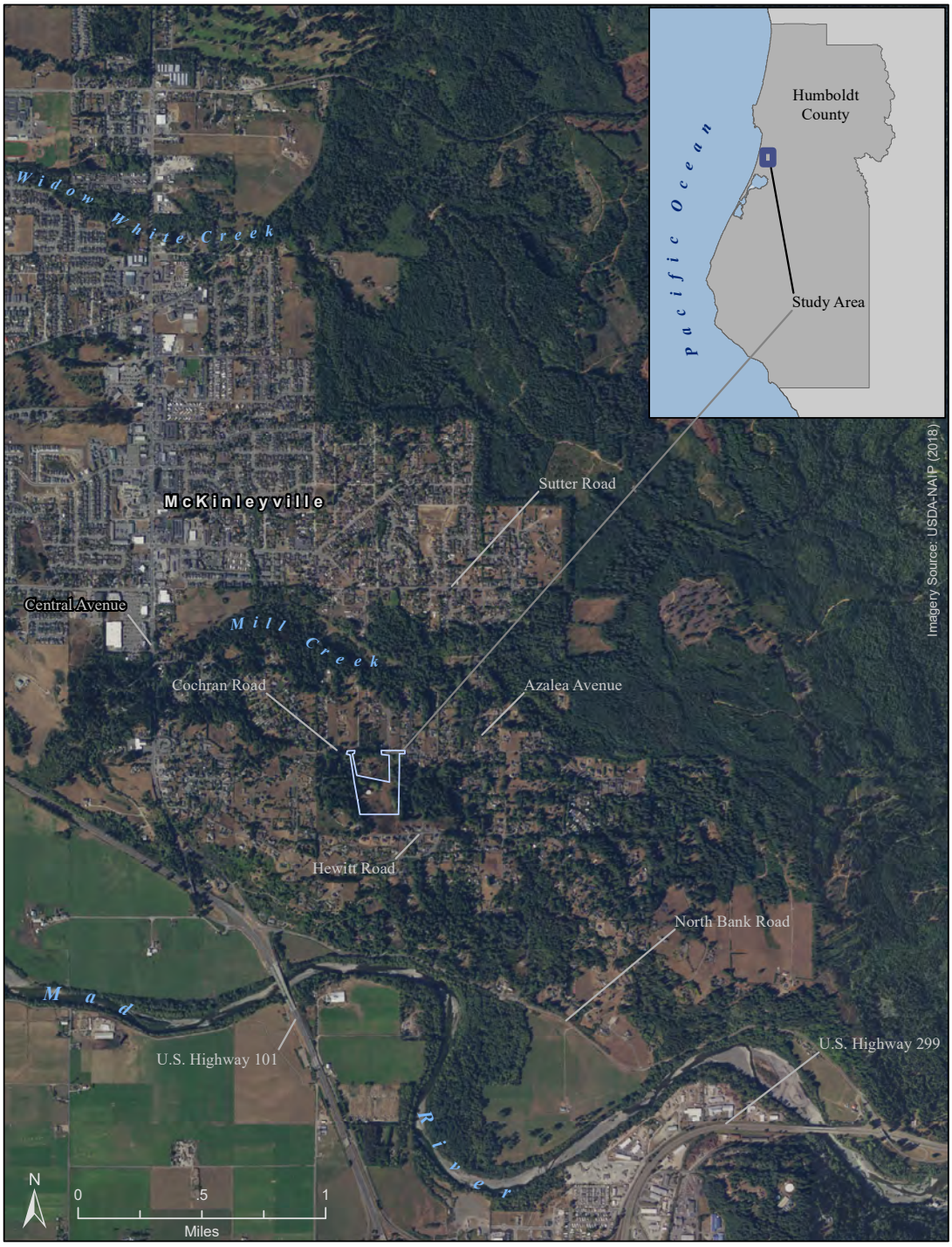

Figure 2. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Area.

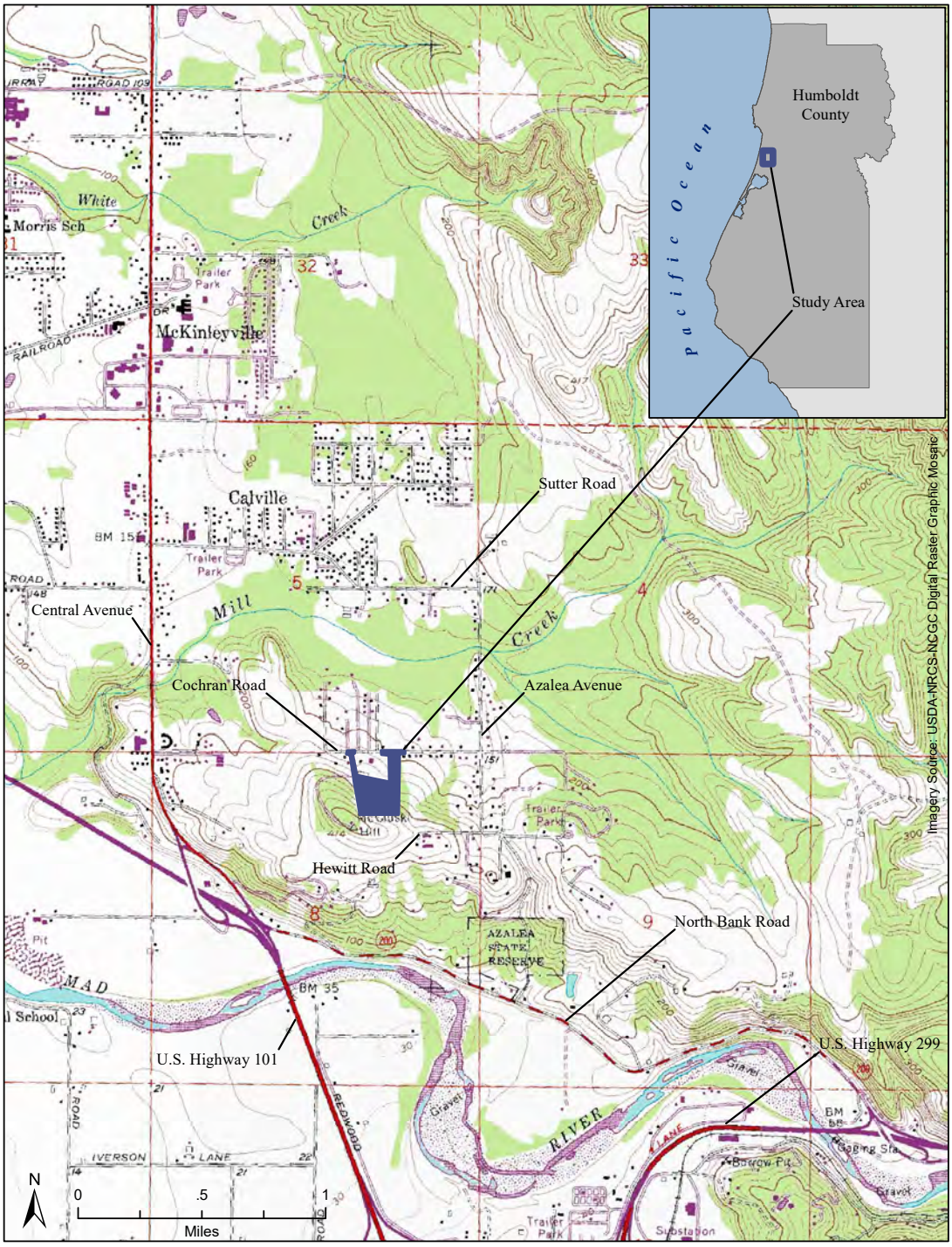

Figure 3. McKinleyville Community Services District's 4.5 MG Water Reservoir Project Area.

and a combined 0.67 acres of contiguous portions of Cochran Road, resulting in a cumulative total project area of 11.52 acres (Appendix A).

Current design plans (30% Submittal, Kennedy Jenks 2021) for the new reservoir reference the onsite construction of a circular prestressed concrete tank that would be ~142 feet (~43 m) in diameter, with a total height of ~52 feet (~16 m). The new tank would be backfilled around its full circumference to an approximate depth of 18 feet (~5.5 m) to resist sliding forces associated with potential earthquake events. Access to, and around, the new reservoir for routine maintenance would require construction of a 17-foot- (~5 m)-wide paved road, which would originate from the already-developed surface associated with the existing storage tanks, and that would also include a 3-foot- (1 m)-wide concrete swale (resulting in a 20-foot- [~6 m]-wide paved surface) around the new reservoir's circumference. Cut slopes on the uphill side of the proposed reservoir are described as being no steeper than 1.5H:1V and fill slopes on the downhill side of the proposed reservoir would be constructed no steeper than 2H:1V.

Addition of the new reservoir would also necessitate construction of a new 16-inch (~40.5 cm) overflow drain pipeline, which, once installed would serve both new and existing reservoirs at the water storage site. The new drain line would be routed to the northeast where it would discharge to the existing storm drain system on the south side of Cochran Road between Landis and Quail Run Courts. Installation of the new drain would incorporate both buried sections as well as above-grade sections to minimize impacts to the environmentally sensitive habitats identified in the northeast project area extension (addressed herein).

Upon completion, the new reservoir would be connected to MCSD's existing telemetry system to monitor and control water levels and existing onsite utilities would provide electricity to power a small mixer installed inside the reservoir to help maintain water quality by reducing water age

2.0 Regulatory Context

2.1 Federal Regulatory Context

Executive Order 11990 (*Protection of Wetlands*) (1977) established the legal basis for federal protection of wetland habitats and directs federal agencies to consider the effects of proposed actions with a federal nexus (including projects utilizing federally-sourced funds) to the survival and quality of wetlands. Said Order further mandates that agencies:

> "…shall provide leadership and shall take action to avoid the destruction, loss or degradation of wetlands, and to preserve and enhance natural and beneficial values of wetlands in carrying out the agency's responsibilities…"

The U.S. Environmental Protection Agency's (EPA) *Statement of Procedures on Floodplain Management and Wetlands Protection* (EPA 1979) clarifies that such requirements be implemented through existing procedures such as the National Environmental Policy Act (NEPA), yet in instances where NEPA is not required and/or where anticipated project-related impacts do not warrant the development of an Environmental Impact Statement (EIS), alternative but equivalent evaluation and notice procedures must be established.

Section 404 of the federal Clean Water Act (33 U.S. CFR § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC § 403) regulate actions affecting navigable and other special waters of the U.S., including wetlands. The Clean Water Act, as amended, also designates the U.S. Army Corps of Engineers (USACE) and the EPA as the primary federal agencies with regulatory jurisdiction over impacts to wetlands and other waters of the U.S. (33 U.S. CFR 328).

The definition of "waters of the U.S." was recently revised as part of the Navigable Waters Protection Rule (85 FR 22341 [April 21, 2020]) and limit such waters to:

- territorial seas and traditional navigable waters (i.e., historically, currently, and/or with future potential to be used for interstate and/or international commerce, including waters subject to the ebb and flow of the tide);
- tributaries to territorial seas and traditional navigable waters;
- lakes, ponds, and impoundments of jurisdictional waters that contribute surface flow to a traditional navigable water in a typical year; or
- wetlands adjacent to, and sharing hydrologic connectivity with, jurisdictional waters.

The common definition of "wetlands" utilized by both the EPA and the USACE has not changed since its adoption in 1980 (40 CFR 230.3[t] [45 FR 85346]) and 1986 (33 CFR 328.3[b] [51 FR 41250]), respectively. Both agencies define wetlands as:

> "...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

2.2 California State Regulatory Context

The state of California maintains independent regulatory authority over impacts to wetlands and other waters of the state under Sections 401 and 402 of the federal Clean Water Act (33 USC §§ 1341 & 1342 and 40 CFR §§ 121 & 122) as amended, and the Porter-Cologne Water Quality Control Act (California Water Code § 13000 *et seq*.). The state agency with primary regulatory responsibility

for waters of the state is the State Water Resources Control Board (SWRCB) and its nine regional boards. The North Coast Regional Water Quality Control Board (NCRWQCB) maintains jurisdiction over all water resources in its regulatory scope, including isolated wetlands and headwaters in the region that includes the proposed project area.

"Waters of the state" are defined in the California Water Code as:

> "...any surface water or groundwater, including saline waters, within the boundaries of the state"

and include all waters of the U.S., natural wetlands, wetlands created by modification of a surface Water of the state, as well as some artificial wetlands as described in the SWRCB's (2019) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. Therein, the SWRCB also defines a wetland as an area which, under normal circumstances:

> "(1) …has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;
> (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and
> (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."

The SWRCB's wetland definition is largely consistent with that provided by the USACE (1987) and differs substantively only in that the former explicitly recognizes the potential existence of unvegetated wetland habitats and recognizes that some wetlands may occur where supportive substrates may not technically qualify as "soils."

Within the state of California, development potentially affecting wetlands and/or other waters of the state is also subject to review by the California Department of Fish and Wildlife (CDFW) (California Fish and Game Code §§ 1600–1607), which serves as a trustee agency pursuant to the California Environmental Quality Act (CEQA). CDFW requires prior notification through their Lake and Streambed Alteration (LSA) Agreement process before the commencement of any actions that may:

- "divert or obstruct the natural flow of any river, stream, or lake;
- change the bed, channel, or bank of any river, stream, or lake;
- use material from any river, stream, or lake; or
- deposit or dispose of material into any river, stream, or lake."

Rivers, streams, and/or lakes subject to this requirement include intermittent features which may be dry for periods of time, as well as those that remain wet throughout the year.

CDFW also serves in an advisory capacity regarding impacts to wetland habitats, and is generally a commenting agency for actions subject to CEQA and other local, county and/or state environmental review processes. CDFW utilizes a third, and more inclusive definition of wetlands, originally presented in the U.S. Fish and Wildlife Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979):

> "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands must have one or more of the following three attributes:
>
> (1) at least periodically, the land supports predominantly hydrophytes;
> (2) the substrate is predominantly undrained hydric soil; and
> (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year."

2.3 Local Agency Regulatory Context

2.3.1 Humboldt County General Plan and Humboldt County Code

The Humboldt County Planning and Building Department maintains responsibility for reviewing and permitting proposed development within the County and ensuring that any such development is consistent with the provisions of the County's updated General Plan and the Humboldt County Code, including those provisions developed to protect wetlands and other sensitive biological resources. Both the Humboldt County General Plan (Chapter 10 § 10.3.4 BR-S11) and County Code (§ 314-61.1.7.6.5) reference the County's adoption of the USACE's wetland definition described previously herein (Section 2.1).

Humboldt County's "Streamside Management Area and Wetlands Ordinance" (SMAWO) (Humboldt County Code § 314-61 *et seq*.) establishes minimum standards "pertaining to the use and development of land located within Streamside Management Areas (SMAs), wetlands, and other wet areas" within the unincorporated areas of Humboldt County that lie outside of the Coastal Zone. Humboldt County Code § 314-61.1.7.6.4 characterizes "other wet areas" as:

> "Natural ponds, springs, vernal pools, marshes and wet meadows. The existence of possible other wet areas shall be identified by the responsible department using normal soils investigation criteria. These criteria indicate the presence of any of the following: standing water, evidencing a natural pond or poor drainage conditions, wetland soils, or hydrophytic vegetation (e.g., swamp grass)."

2.3.2 Amended McKinleyville Community Plan

The amended McKinleyville Community Plan is a long-range public policy statement for land use within the McKinleyville Planning Area, which includes

MCSD's proposed 4.5 MG water reservoir project area. Rural land use policies (§ 2505) within the McKinleyville Community Plan include:

> "1. The community shall maintain its rural qualities within and beyond the Urban Expansion Area by defining and protecting its streams, riparian corridors and greenbelts, wetlands, open spaces, and parks.
> 2. Comprehensive and effective protection of streams, riparian corridors, greenbelts, wetlands, open spaces, and potential parks shall be an important component of maintaining rural qualities throughout all of McKinleyville."

Said Plan also specifies the following goals (§ 3421) pertaining to sensitive and critical habitats:

> "1. To identify and preserve wetlands, streams, and their buffers to protect fisheries, preserve natural habitats, and provide open space.
> 2. To identify and map Streamside Management Areas as buffers to protect the streams and their natural habitats from significant impacts.
> 3. To identify and map Wetland and Wetland Buffer Areas (distinct from the Streamside Management Areas), to protect wetlands from significant impacts, and to retain the many valuable social and ecological functions which wetlands provide.
> 4. To protect sensitive fish and wildlife habitats by minimizing erosion, runoff and interference with surface water flows."

Finally, Section 3422.7 indicates that wetland areas shall be:

> "defined according to the criteria utilized by the CA Dept. of Fish and Game (also included in the County's Open Space Implementation Standards). In summary, the definition requires that a given area satisfy at least one of the following three criteria:
> - the presence of at least periodic predominance of hydrophytic vegetation; or
> - predominately hydric soils; or
> - periodic inundation for seven (7) consecutive days."

3.0 Historical Context & Existing Conditions

3.1 Historical Context

The proposed project site occurs within the traditional territory of the Wiyot people (Wiyot Tribe 2021), which was first populated by settlers of European descent in the mid-1800's. The location is on the south side of Mill Creek, just south of "Calville," a sub-community of McKinleyville, which was settled by employees of the California Barrel Company in the late 19th-century (Historical Sites Society of Arcata 2021). Since that time the primary anthropogenic influences in the immediate vicinity of the proposed project area are assumed to

have consisted of timber harvest and livestock grazing. Incremental subdivision and residential development of the surrounding landscape in the latter part of the 20th-century have resulted in the larger of the two parcels of interest becoming one of the few remaining undeveloped parcels greater than two acres (0.81 ha) in size.

3.2 Current Environmental Conditions

3.2.1 Regional Geographic and Ecological Context

For purposes of natural resource evaluation, it can be helpful to consider the relationship between the location of a project and the surrounding geographical and ecological context, and various classification systems have been developed to facilitate such an exercise. One such landscape-defined regionalization, classification, and mapping system has been developed by a subgroup of the USDA Forest Service's Ecological Classification and Mapping Task Team (ECOMAP), which stratifies the Earth into "progressively smaller areas of increasingly uniform ecological potentials" (Bailey 1994). That analysis identifies the current proposed project area as being part of the "Humboldt Bay Flats and Terraces Subsection" within the following hierarchical organizational system:

Humid Temperate Domain
Mediterranean Division
Mixed Forest and Redwood Forest Province
California Coastal Steppe
Northern California Coast Section
Humboldt Bay Flats and Terraces Subsection

An alternative, floristically-defined geographical classification system presented in *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012) identifies the site as being part of the "North Coast" subregion within the greater "Northwestern California" floristic region.

3.2.2 Proposed Project Area Site Conditions

The proposed project area itself ranges in elevation between ~60–120 meters (~200–400 feet) (AMSL) and is located within a rural neighborhood on the north-facing slope of McCluski Hill, approximately 4 kilometers (~2.5 miles) inland from the Pacific Ocean (Figure 1). McCluski Hill is part of a west-northwestward-projecting lobe of a dissected coastal terrace that lies between the Mad River floodplain and associated diked-former-tidelands that comprise the "Arcata Bottoms" to the south, and Mill Creek, a Class 1 tributary of the Mad River, to the north (Figures 1–3). Being situated on the north slope of this elevated landform, the entirety of the project area lies within the Mill Creek watershed.

The shape and orientation of the combined parcels of interest form a rectangular trapezoid that extends north from Hewitt Road along the southern boundary at the top of McCluski Hill, downslope to an elevation where the grade transitions from ~19% to ~11% along the northern flank of the hillside. Slightly downslope of the approximate location of this topographic transition, two narrow parallel

extensions along the combined parcels' east and west boundaries continue from the main bulk of the project area, north to Cochran Road. These two parallel extensions partially encompass a distinct and unrelated, "inset" adjacent parcel (APN 509-021-040), which separates the majority of the project area's northern boundary from Cochran Road by ~110–130 meters (~360–430 feet).

The proposed project area includes the entirety of APN 509-021-046, most of the northern portion of APN 509-021-045 and contiguous portions of Cochran Road, but current design plans indicate that the southern limit of the proposed project area would stop ~97 meters (~320 feet) north of the latter parcel's southern boundary (Planwest Partners, Inc. pers. comm.) (Appendix A). Virtually all of the northwestern extension of the project area consists of the paved segment of the gated private driveway, Hilltop Lane, which is the primary means of access to both the existing and proposed water storage infrastructure.

3.2.2.1 Soils

Soils within the immediate vicinity of the project area are, for the most part, deep and well-drained fine–coarse loams derived from recent marine sediments, sometimes overlain to a limited extent with eolian and/or colluvial sediments (NRCS 2020). Discrete regions of poorly-drained hydric soils also occur within mesic drainages and along the slope toe where the water table can sometimes be relatively shallow. The primary corresponding soil map unit within the proposed project area is the Lepoil-Espa-Candymountain Complex (15 to 50 percent slopes) though a small inclusion of Arcata and Candymountain soils (2 to 9 percent slopes) is also mapped as occurring in the extreme northeastern project area extension adjacent to Cochran Road (NRCS 2020) (Appendix A, Figure 2).

3.2.2.2 Hydrology

Current U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory data (USFWS 2020) indicate that no wetland, riparian, or deepwater habitats have yet been identified within the proposed project area prior to the current effort.

Precipitation appears (based on surface observations) to percolate readily into the well-drained substrates throughout the majority of the proposed project area with two notable exceptions. These occur along the toe of the slope in the north-central and northeastern portions of the project area where the water table is shallow enough to reach the surface and produce overland flow. Surface flow associated with the former feature located in the north-central region of the proposed project area becomes intermittent during the driest months of the year, whereas surface flow associated with the northeastern portion of the project area appears to be perennial even during periods of below-normal precipitation.

Upslope (offsite) mesic habitats to the east of the parcels of interest also contribute additional variable hydrologic input to the latter system at the approximate location where the northeastern branch diverges from the main

body of the project area. Here, the seasonally flooded–saturated soils support increasingly hydrophytic vegetation. Some amount of anthropogenic hydrologic input from the overflow drain pipe for the existing water tanks, which daylights in this area also likely contributes to this system, though the lack of obvious evidence of scouring and/or overland flow at the drainpipe outfall indicates that such contribution is probably rare, insubstantial, or both.

Following the slope of the terrain, surface and subsurface flow drains north and north-northeasterly before eventually being collected into the existing stormwater infrastructure at Cochran Road between the intersections with Landis and Quail Run Courts. The latter engineered system eventually empties to Mill Creek, ~600 linear meters (~2,000 linear feet) downstream from this point of collection.

Recent Regional Drought Conditions

The National Oceanic and Atmospheric Administration's (NOAA) National Integrated Drought Information System (NIDIS) program indicates that the vicinity of the study area (i.e., coastal Humboldt County, California) was assigned "Moderate" (D1) and "Abnormally Dry" (D0) Drought Intensity Category designations for the respective time periods during which our initial wetland delineation fieldwork (i.e., August 2020) and subsequent follow-up site visit (i.e., April 2021) occurred (NOAA 2021). Relevant precipitation data (Table 1) for the respective ~3-month periods preceding our fieldwork further reflect these abnormally dry climatic conditions, indicating that accumulated precipitation was ~24% of "normal" during August of 2020 and 56% of "normal" during April 2021.

Table 1. Antecedent Precipitation Summary. Comparison of recent and "normal" precipitation values for the Humboldt Bay region during the respective three-month periods preceding our August 26–28, 2020 wetland delineation fieldwork and subsequent April 22, 2021 site visit.

	Precipitation			
Period	Observed[1] (Inches)	"Normal"[2] (Inches)	Difference (Inches)	Percent of "Normal"
2020				
June	0.20	0.75	-0.55	27%
July	0.02	0.18	-0.16	11%
(1-26) August	0.08	0.31	-0.23	26%
Total	**0.30**	**1.24**	**-0.94**	**24%**
2021				
February	4.34	5.51	-1.17	79%
March	3.00	5.54	-2.54	54%
(1-22) April	0.09	2.13	-2.04	4%
Total	**7.43**	**13.18**	**-5.75**	**56%**

[1] California Department of Water Resources & U.S. Geological Survey (2021). Observations for Eureka (Woodley Island), CA

[2] U.S. Department of Agriculture, Natural Resource Conservation Service's (2021) "WETS" Data (1981-2010) for Eureka (Woodley Island), CA

3.2.2.3 Vegetation (See also Appendix A, Figure 1)

Plant communities occurring within the proposed project area are described below and are presented in an order following the general hydrological gradient at the site: from upland vegetation to plant communities dominated by wetland species. Reference of individual plant species includes published (USACE 2020) "wetland vegetation indicator status ratings" for each (see also Section 4, Table 2).

"Common Velvet Grass - Sweet Vernal Grass Meadows"
(*Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance)

Much of the proposed project area consists of grazed non-native grassland habitat that is consistent with plant community membership rules for the *Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance ("Common Velvet Grass - Sweet Vernal Grass Meadows") as defined in the California Native Plant Society's (CNPS) *A Manual of California Vegetation* (CNPS 2021), though the relative dominance of those two grass species varies across the site. Wetland vegetation indicator status ratings for *Holcus lanatus* and *Anthoxanthum odoratum* are FAC and FACU, respectively (USACE 2020). Other than a few isolated *Baccharis pilularis* ("coyote brush") (NL) shrubs, herbaceous plants present in this habitat include alien species such as *Linum bienne* ("flax") (NL), *Leontodon saxatilis* ("hawkbit") (FACU), *Leucanthemum vulgare* ("ox-eye daisy") (FACU), *Raphanus raphanistrum* ("jointed charlock") (NL), etc., with occasional small patches of native *Iris douglasiana* ("Douglas Iris") (NL) adjacent to forest edges.

"Coastal Brambles"
(*Rubus* [*parviflorus*, *spectabilis*, *ursinus*] Shrubland Alliance)

Grassland habitats at the site variously intergrade with stands of native *Rubus ursinus* ("California blackberry") (FACU)-dominated "Coastal Brambles" (i.e., the *Rubus* [*parviflorus*, *spectabilis*, *ursinus*] Shrubland Alliance as defined in CNPS [2021]). Portions of this vegetation community exhibit evidence of plant community succession where the dense vegetation provides some protection for establishing native shrubs (e.g., *Ribes menziesii* var. *menziesii*, "canyon gooseberry" [NL]; *Rosa nutkana* var. *nutkana*, "Nootka rose" [FAC]; and *Baccharis pilularis*, "coyote brush" [NL]) and tree saplings (i.e.; *Alnus rubra*, "red alder" [FAC]; *Frangula purshiana*, "cascara" [FAC]; *Picea sitchensis*, "Sitka spruce" [FAC]; *Abies grandis*, "grand fir" [FACU]; and *Pseudotsuga menziesii* var. *menziesii*, "Douglas-fir" [FACU]) from browsing herbivores. Occasional naturalized *Pinus radiata* ("Monterey pine") (NL) saplings are also establishing within, and adjacent to, these Coastal Bramble habitats.

On-going disturbance from domesticated livestock present at the site (i.e., cattle, goats, and pigs) is evident throughout these two vegetation communities. The relatively flat narrow strip between the existing water tanks and the recessed northern project area boundary is particularly disturbed, as this is the location where water and shelter are provided, and where regular feeding and loafing occurs. Grazing-related disturbances in this location primarily consist of barren

and compacted soil that is sparsely vegetated by close-cropped and stunted ruderal herbaceous vegetation typical of similar such agricultural areas in the region. Associated plant species include the aforementioned members of the *Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance as well as *Agrostis stolonifera* ("creeping bent") (FAC), *Aira caryophyllea* ("silver hair grass") (FACU), *Bromus hordeaceus* ("soft chess") (FACU), *Festuca perennis* ("ryegrass") (FAC), *Raphanus raphanistrum* ("jointed charlock") (NL), *Hypochaeris radicata* ("hairy cat's-ear") (FACU), *Trifolium* spp. ("clover") (various), *Rumex* spp. (various "docks") (various), *Cirsium vulgare* ("bull thistle") (FACU), *Silybum marianum* ("milk thistle") (NL), and others.

Many of these non-native plants are recognized to have the potential to adversely affect native vegetation and significantly impair important ecological processes and have been variously classified as "invasive" and/or "noxious" (Appendix G). *Rubus armeniacus* ("Himalayan blackberry") (FAC), another noteworthy invasive plant occurring at the site is becoming established in some of the aforementioned Coastal Bramble patches and along forested edges.

"Sitka Spruce Forest and Woodland"
(*Picea sitchensis* Forest & Woodland Alliance)

Forested habitats cover the majority of adjacent parcels along both eastern and western boundaries of the project area, and a small lobe of developing early successional forest is emerging from within the "Coastal bramble" habitat described previously, just inside the southwestern boundary. Slightly north of that location, a narrow strip of *Alnus rubra* Forest Alliance ("Red Alder Forest") extends east into the project area from the gated access entrance at Hilltop Lane, for ~120 meters (~400 feet) along the constructed hillslope below the existing water storage tanks on APN 509-021-046. This young forest of somewhat regularly-spaced trees was likely replanted to help conceal the existing water tanks from the adjacent neighborhood following construction. In this area, there is no shrub layer in the understory (except along the fence line) and the close-cropped herbaceous vegetation is actively grazed by domesticated goats. Mature, and in some instances, senescent planted and/or naturalized *Pinus radiata* ("Monterey pine") (NL) trees also occur near the existing water tanks on APN 509-021-046 as well as along Hilltop Lane and the contiguous section of Cochran Road.

The forested habitat along the eastern project area boundary represents a somewhat disjunct portion of the larger, adjacent patch of coniferous forest to the east of the project area, though the conifers also interdigitate with small inclusions of Red Alder Forest along the eastern boundary. Here, the forested edge extends ~30–50 meters (~40–165 feet) into the project area and descends northward from near Hewitt Road at the top of McCluski Hill, down along an easterly-facing slope before reaching the lower and more gradual terrain draining the mesic habitats along the northeastern flank of this elevated landform. Much of the project area's northeastern branch is forested.

This predominantly *Picea sitchensis* (“Sitka spruce”) (FAC)-dominated forest community is consistent with the membership rules for the *Picea sitchensis* Forest & Woodland (“Sitka Spruce Forest and Woodland”) Alliance as defined in *A Manual of California Vegetation* (CNPS 2021) and includes other mixed coniferous (*Abies grandis*, “grand fir” [FACU] and *Sequoia sempervirens*, “coast redwood” [NL]) and broad-leaved deciduous (*Alnus rubra*, “red alder” [FAC] and *Frangula purshiana*, “cascara” [FAC]) tree components. In the understory of this forested habitat, dominant shrubs include *Rubus spectabilis* (“salmonberry”) (FAC), *Ribes sanguineum* var. glutinosum (“red-flowering currant”) (FACU), *Vaccinium ovatum* (“evergreen huckleberry”) (FACU), *Vaccinium parvifolium* (“red huckleberry”) (FACU), and *Sambucus racemosa* var. *racemosa* (“red elderberry”) (FACU). The most prevalent herbaceous plants in this habitat include *Oxalis oregana* (“redwood sorrel”) (FACU), *Lysimachia latifolia* (“Pacific starflower”) (FACW), *Maianthemum dilatatum* (“false Solomon’s seal”) (FAC), *Claytonia sibirica* (“candy flower”) (FAC), *Asarum caudatum* (“wild ginger”) (FACU), *Prosartes smithii* (“Smith’s fairy bells”) (NL), *Oenanthe sarmentosa* (“water parsley”) (OBL), *Polystichum munitum* (“sword fern”) (FACU), *Dryopteris expansa* (“wood fern”) (FACW), *Blechnum spicant* (“deer fern”) (FAC), *Carex obnupta* (“slough sedge”) (OBL), and *Carex* c.f. *leptopoda* (“slender-footed sedge”) (FAC). Four localized occurrences of invasive plants are also establishing within these forested habitats: *Delairea odorata* (“cape ivy”) (FAC), *Hedera helix* (“English ivy”) (FACU), *Ilex aquifolium* (“English holly”) (FACU), and *Cotoneaster franchetii* (“Franchet’s Cotoneaster”) (NL).

Evidence of legacy and contemporary anthropogenic disturbance is apparent throughout this forested habitat and wind has downed at least two shallow-rooted mature *Picea sitchensis* (“Sitka spruce”) trees along the leading northern edge of the forest in recent history. Given the age (i.e., 84 years, based on trunk-cross-sectional tree-ring analysis) of one windthrown tree with a diameter-at-breast-height (DBH) of ~75 cm (~ 30 inches) at the time of the treefall event, the estimated age of this forest stand is ~125–150 years old.

The overall stand structural characteristics associated with this habitat most closely reflect an incipient example of the “biomass accumulation/competitive exclusion stage” in the updated model of forest structural development proposed by Franklin et al. (2002). This developmental stage primarily consists of rapid growth and accumulation of biomass, tree crown structural differentiation, competitive exclusion of both less vigorous individual trees and other organisms, and self-pruning of lower canopy branches and foliage. A few larger individuals among the cohort established at the site do currently present with increasingly mature dimensional characteristics (e.g., DBH >> 100 cm [~40 inches], height ≈ 45 m [~150 feet], etc.), however, in aggregate, the canopy structure of this stand is still lacking abundant complexity.

"Slough Sedge Swards" and "Small-fruited Bulrush Marsh"
(*Carex obnupta* and *Scirpus microcarpus* Herbaceous Alliances)

Approximately half-way along the northeastern branch of the project area, the mesic Sitka spruce forest gives way to herbaceous and mixed herb–shrub vegetation of two distinct types. Following the dominant drainage path emerging from the forested wetland habitat, a mosaic of *Carex obnupta* ("slough sedge") (OBL)- and *Scirpus microcarpus* ("small-fruited bulrush") (OBL)-dominated plant communities extend north along the eastern half of the northeastern branch of the project area to Cochran Road (and the associated stormwater infrastructure).

This herbaceous wetland vegetation is initially representative of "Slough Sedge Swards" (*Carex obnupta* Herbaceous Alliance) before transitioning into what is more appropriately classified as "Small-fruited Bulrush Marsh" (*Scirpus microcarpus* Herbaceous Alliance). In addition to the aforementioned dominant plants associated with these habitats, other commonly co-occurring species throughout include native obligate and facultative hydrophytes such as *Oenanthe sarmentosa* ("water parsley") (OBL), *Nasturtium officinale* ("water cress") (OBL), *Athyrium felix-femina* var. *cyclosorum* ("lady fern") (FAC), *Juncus* spp. (various "rushes") (various), *Veronica americana* ("American brooklime") (OBL), *Stachys mexicana* ("Mexican hedge nettle") (FACW), *Erythranthe guttata* ("seep monkeyflower") (OBL), and *Epilobium ciliatum* ssp. *watsonii* ("Watson's willowherb") (FACW), as well as the alien *Ranunculus repens* ("creeping buttercup") (FAC). Isolated individual trees established nearby include *Salix lasiandra* spp. *lasiandra* ("Pacific willow") (FACW), *Salix lasiolepis* ("arroyo willow") (FACW), *Alnus rubra* ("red alder") (FAC), *Picea sitchensis* ("Sitka spruce") (FAC), and *Sequoia sempervirens* ("coast redwood") (NL).

The remaining western half of the northeastern project area extension is slightly higher in elevation and more well-drained. In this area, additional patches of *Rubus ursinus* ("California blackberry") (FACU)- and *Rosa nutkana* ("Nootka rose") (FAC)-dominated Coastal Brambles are established along the transitional soil moisture gradient. These brambles variously give way to an upland strip of *Holcus lanatus – Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance, which extends along the western edge of this branch of the project area before eventually reaching Cochran Road.

"Water Foxtail Meadows"
(*Alopecurus geniculatus* Provisional Herbaceous Alliance)

One other distinct vegetation community present at the site is associated with a discrete palustrine emergent wetland feature located within the main bulk of the project area, just south of the point where the two northern extensions diverge. This feature lies approximately 30 meters (~100 feet) east of the existing water tanks on APN 509-021-046 and ~60 meters (~200 feet) south of the main northern boundary of the project area where the water table surfaces near the slope transition.

The associated vegetation in this localized area is sparse, but representative of "Water Foxtail Meadows" (*Alopecurus geniculatus* Provisional Herbaceous Alliance) and consists of the following native herbaceous wetland plants: *Isolepis cernua* ("low bulrush") (OBL), *Alopecurus geniculatus* ("water foxtail") (OBL), *Juncus bufonius* ("toad rush") (FACW), and *Juncus effusus* ssp. *pacificus* ("Pacific rush") (FACW), as well as two alien grasses: *Glyceria declinata* ("low manna grass") (FACW) and *Holcus lanatus* ("velvet grass") (FAC). Also growing nearby (i.e., < 10 m [~30 feet] away) are the native *Rubus ursinus* ("California blackberry") (FACU) and young *Alnus rubra* ("red alder") (FAC).

4.0 Methods

A routine wetland delineation was conducted within the proposed project area between August 26–28, 2020 to identify potentially occurring state- and federal-jurisdictional wetlands and/or other waters. A subsequent additional site visit was also performed on April 22, 2021, which provided additional opportunity to observe hydrological conditions at the site during the spring season. Methodologies used in the performance of this fieldwork were consistent with those described in the *U.S. Army Corps of Engineer's Wetland Delineation Manual* (USACE 1987); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Valleys, Mountains, and Coastal Regions (Version 2.0)* (USACE 2010).

Two transects consisting of three or more sampling points each, were established within the proposed project area to identify the boundary between suspected wetlands and adjacent upland habitats. These transects were oriented parallel to perceived hydrological gradients associated with each suspected wetland feature, and in such a way as to intersect distinct vegetation communities and/or apparent topographical transitions. One additional sampling point was also established in a distinct plant community (i.e, Sitka spruce forest) adjacent to one of the aforementioned transects to evaluate the suspected continuity of wetland conditions therein.

At each sampling point; soil, hydrology, and vegetation characteristics were documented using regionally specific Wetland Determination Data Forms (USACE 2010) and were evaluated to determine if "wetland indicators" (i.e., characteristics diagnostic of wetland habitats) were present or absent for each. Such data were then used to make a preliminary determination for conditions at each sampling point (i.e., "wetland" or "upland"), pending final verification and approval by the U.S. Army Corps of Engineers and/or other relevant regulatory agencies with applicable jurisdiction. The results from wetland sampling points were then used, in conjunction with additional observations of associated vegetation, soil, and hydrology characteristics (using a one-inch diameter soil probe), to delineate and map all wetland habitats identified within the proposed project area. Abnormally dry climatic conditions experienced throughout the region during the period of our fieldwork were considered during this process.

The vegetation sampling plot size for each sampling point extended radially from the center of each sampling plot as follows: 5 feet (~1.5 m) for the herbaceous stratum, and 30 feet (~9.1 m) for vine, shrub, and/or tree strata, wherever the latter three were present. Vegetation occurring within each plot was identified to at least the species-level, and the abundance (i.e., estimated absolute percent cover) of dominant species in each vegetative stratum was used to assess the extent of wetland vegetation at each sampling point based on published "wetland vegetation indicator status ratings" (USACE 2020) for each species. These indicator status-ratings are defined in Table 2 (below).

At the center of each sampling point, soil pits were dug to a depth of at least 20 inches (~50 cm) to evaluate the soil profile for evidence of hydric soils and/or indicators of wetland hydrology. Moist soil coloration was compared with *Munsell Soil Color* chips (Gretag-Macbeth 2009) and documented, along with other soil attributes such as strata thickness, soil texture, soil moisture, and the presence/absence of redoximorphic features and/or organic material. Surface and subsurface indicators of wetland hydrology (e.g., inundation, algal mats, water marks, drift/sediment deposits, oxidized rhizospheres, etc.) were also documented where present.

Table 2. Wetland Vegetation Indicator Status Ratings.[1]

Rating Code	Rating	Description
OBL	Obligate Wetland Plants	Almost always occur in wetlands. With few exceptions, these plants are found in standing water or seasonally saturated soils near the surface.
FACW	Facultative Wetland Plants	Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soil or floods the soil surface at least seasonally.
FAC	Facultative Plants	Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
FACU	Facultative Upland Plants	Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soil or floods the soil surface seasonally.
UPL	Upland Plants	Almost never occur in wetlands. These plants occupy mesic to xeric non-wetlands habitats. They almost never occur in standing water or saturated soils.
NL	Not Listed	Not included in the National List. Generally considered to occur predominantly in uplands, though numerous exceptions exist.

[1] Adapted from *National Wetland Plant List Indicator Rating Definitions* (Lichvar et al. 2012).

All fieldwork was performed by J.B. Lovelace and Associate's Principal Environmental Scientist, J. Brett Lovelace. Natural-resource-related geographic field data were collected using Environmental Systems Research Institute's (ESRI) ArcGIS Collector (v.20.2.4) mobile application installed on an iOS device referencing a Bad Elf Flex™ Global Navigation Satellite System (GNSS) receiver capable of sub-meter accuracy. All such data were subsequently uploaded and orthorectified using a combination of ESRI's web application, ArcGIS Online, and ArcMap (ESRI 2015) geographic information system (GIS) desktop software with the most recent available satellite imagery (National Agriculture Imagery Program [NAIP] 2018; Google Earth 2020) to produce relevant figures depicting our findings (Appendix A, Figures 1 and 3).

Taxonomic nomenclature for vascular plants presented in this effort is consistent with *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012), or the *Jepson eFlora* (Jepson Flora Project 2021) where updated taxonomic changes may have occurred subsequent to publishing of the former resource. Both sources were also used to classify encountered plant species as either native or alien. "Native" plants are defined as "occurring naturally in an area, as neither a direct nor indirect consequence of human activity;" whereas "alien" species are "not native; introduced purposely or accidentally into an area" (Baldwin et al. 2012).

Some alien species may be further classified as being "invasive" where they have a demonstrated ability to threaten "wildlands" by displacing and/or hybridizing with native species and/or are likely to "alter biological communities, or alter ecosystem processes" (California Invasive Plant Council [Cal-IPC] 2021). Various entities evaluate the degree of risk posed by alien vegetation to native ecosystems at different geographical scales and assign invasive status ranks and/or classifications to prioritize management efforts to reduce and/or eradicate species that pose the greatest perceived threat.

Given that the response of some species may vary with geography and under different environmental conditions, invasive status rankings for a given species are not always consistent across the spectrum of classification systems. For the purposes of this biological resource assessment, alien vegetation is considered to be "invasive" if a species under consideration is assigned a "high" invasive rank by the California Invasive Plant Council (Cal-IPC 2021), is considered a "high priority" invasive species in the Humboldt County Weed Management Area (WMA) (2010), is listed as a "noxious weed" by the California Department of Food & Agriculture (CDFA 2021) and/or the U.S. Department of Agriculture (USDA 2021), or otherwise warrants concern based on known or perceived potential to adversely alter biological communities or associated ecosystem processes.

Classification and nomenclature of natural [vegetation] communities follow the modern systematic vegetation classification system of "alliances" and "associations" as presented originally in *A Manual of California Vegetation,*

Second Edition (Sawyer et al. 2009), and subsequent updates provided in *Manual of California Vegetation Online* (CNPS 2020b).

5.0 Results

We identified the presence of 1.083 acres of freshwater wetland habitat within the proposed project area during the performance of our wetland delineation fieldwork (Tables 3 & 4; Appendix A, Figure 3). These wetland habitats consist of a 0.605-acre portion of a larger offsite seasonally saturated palustrine forested wetland system, and two discrete seasonally flooded–saturated palustrine emergent wetland features collectively totaling 0.478 acres. No other federal or state waters were identified at the site.

Table 3. Quantitative Summary of Delineated Wetland Habitat within the Proposed MCSD 4.5 MG Water Reservoir Project Study Area. (Data reflect discrete wetland polygons mapped in the field, which may or may not represent fractional portions of a given wetland feature, which extends beyond the proposed project area boundary.)

Wetland System	NWI Code*	Acres
Palustrine Wetlands		
	Palustrine Emergent Wetlands	
	PEM1E	0.435
	PEM1E	0.043
	Total	*0.478*
	Palustrine Forested Wetlands	
	PFO4B	0.605
	Total	*0.605*
	Total Wetland Area	**1.083**

*National Wetland Inventory (NWI) Codes are consistent with classifications described in *Classification of Wetlands and Deepwater Habitats of the United States. Second Edition* (FGDC 2013).

Wetland habitats delineated within the proposed project area are characterized below, and are addressed within the context of their respective wetland classification category, consistent with *Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (FGDC 2013). A summary of sampling results from our wetland delineation fieldwork is also provided in Table 4 (below).

Table 4. Summary of Wetland Sampling Point Results.

Sample Point ID	Wetland Vegetation	Hydric Soils	Wetland Hydrology	Preliminary Determination
1A				Upland
1B		X	X	Transitional
1C	X	X	X	Wetland
1D		X		Transitional
2	X	X	X	Wetland
3A	X	X	X	Wetland
3B		X	X	Transitional
3C				Upland

5.1 Palustrine System Wetlands and Relevant Water Regime Modifiers

Palustrine wetlands are non-tidal (freshwater) wetlands or tidal wetlands with low ocean-derived salinity levels (<0.5 ppt). Palustrine wetlands are typically vegetated, though in instances where they lack vegetation, they are generally both small (< ~20 acres) and shallow (< 6.6 feet). The latter two criteria help to distinguish palustrine wetlands from larger and deeper freshwater wetlands and waters, which are classified as part of the lacustrine system.

Hydrological conditions associated with "seasonally saturated" wetland water regimes are characterized (FGDC 2013) as having substrates that are:

> "saturated at or near the surface for extended periods during the growing season, but unsaturated conditions prevail by the end of the season in most years. Surface water is typically absent, but may occur for a few days after heavy rain and upland runoff."

Whereas, hydrological conditions associated with "seasonally flooded–saturated" wetland water regimes are characterized (FGDC 2013) as follows:

> "Surface water is present for extended periods (generally for more than a month) during the growing season, but is absent by the end of the season in most years. When surface water is absent, the substrate typically remains saturated at or near the surface."

5.1.1 Seasonally Saturated Palustrine Forested Wetlands (PFO4B)

Palustrine forested wetlands are characterized as having > 30% aerial cover of woody vegetation > 6m (20 feet) tall. In the case of the forested wetlands identified within the proposed project area, these can be further classified at the sub-class level as being dominated by needle-leaved evergreen species (Sitka spruce, *Picea sitchensis*). Vegetation characteristics associated with the Sitka spruce (*Picea sitchensis*)-dominated palustrine forested wetland habitat identified at the site have been described previously herein (Section 3.2.2.3). Quantitative wetland sampling within this area also confirmed that the associated plant species composition is dominated (i.e., using the "dominance test" [USACE 2010]) by hydrophytic species (Appendix C).

Soil sampling within this area revealed silty loams with abundant roots and organic material in the upper ~18–20 cm (~7–8 inches), underlain by restrictive sandy clay loams extending to a depth of at least ~51 cm (~20 inches). Moist soil matrix color ranged from 10YR to 7.5YR, with matrix values ranging from 2–3 and chroma ranging from 1–2. Associated redoximorphic features included depleted areas (2.5Y 5/1), concentrations in the matrix (10YR 4/6), and oxidized rhizospheres (10YR 4/6) of significant contrast and abundance. The associated hydric soils indicators included "Depleted Dark Surface" and "Depleted Below Dark Surface" (USDA-NRCS 2010). Indicators of wetland hydrology in this period of regional drought (refer to Section 3.2.2.2) consisted of oxidized rhizospheres

along living roots and a shallow aquitard created by the high clay content of the substrate below ~18–20 cm (~7–8 inches) (USACE 1987, 2010).

5.1.2 Seasonally Flooded–Saturated Palustrine Emergent Wetlands (PEM1E)

Palustrine "emergent" wetlands are characterized as having > 30% aerial cover of (typically perennial) persistent, erect, rooted, herbaceous wetland vegetation (FGDC 2013). One of the two seasonally flooded–saturated palustrine emergent wetland features identified at the site occurs within the northeastern project area extension and represents a downstream continuation of the same wetland system that supports the Sitka spruce (*Picea sitchensis*) forest after it transitions from a forested plant community to vegetation dominated by herbaceous species. Specifically, the vegetation communities associated with this palustrine emergent wetland feature include both "Slough Sedge Swards" (*Carex obnupta* Herbaceous Alliance) and "Small-fruited Bulrush Marsh" (*Scirpus microcarpus* Herbaceous Alliance) as described previously herein (Section 3.2.2.3). Quantitative sampling within this palustrine emergent wetland feature confirmed that the associated plant species composition is dominated (i.e., using the "dominance test" [USACE 2010]) by hydrophytic species (Appendix C).

Soil sampling within this area revealed a ~7.5 cm (~3 inch)-thick surface clay loam layer underlain by sandy clay loams extending to a depth of at least ~51 cm (~20 inches). Moist soil matrix color was 10YR 2/2 in the upper 20 cm (~8 inches), and 2.5Y 5/2 extending from ~20 cm (~8 inches) to at least ~51 cm (~20 inches). Associated redoximorphic features of significant contrast and abundance were evident across all strata with concentrations and oxidized rhizospheres (7.5YR 4/6) in the upper ~20 cm (~8 inches), and both concentrations (10YR 3/6) and depletions (2.5Y 5/1) below ~20 cm (~8 inches). Carbon streaking was also evident between 7.5–20 cm (3–8 inches). Indicators of hydric soils included "Redox Dark Surface" and "Depleted Below Dark Surface" (USDA-NRCS 2010).

Soil saturation during this period of regional drought (refer to Section 3.2.2.2) was encountered at a depth of ~51 cm (~20 inches) during our August 2020 fieldwork and other indicators of wetland hydrology consisted of oxidized rhizospheres along living roots, the presence of reduced iron, and vegetation passed the "FAC-Neutral Test" (USACE 1987, 2010). Subsequent field observations in April of 2021 included extensive surface saturation throughout this habitat, as well as inundation and (overland) laminar flow in multiple locations.

The remaining palustrine emergent wetland features consists of a seasonally flooded–saturated spring in the north-central portion of the proposed project area, which emerges near the toe of the slope and drains downhill for ~30 m (~100 feet) before intersecting with the project area/parcel boundary. The adjacent parcel (APN 509-021-040), which is not included in the proposed project area, was not investigated as part of this effort. However, it is assumed that this wetland feature is connected hydrologically to the wetland habitats in the northeastern project area extension (described above) during periods of

abundant precipitation (although no apparent evidence of any surface "channel" was evident in the latter location during our work). Substrate saturation and drainage patterns evident in available aerial imagery (Google Earth 2016, etc.) support this assumption.

Standing water and saturated soils were observed at this location July 26-27, 2020 during fieldwork conducted for the associated biological resource assessment being prepared concurrently (J.B. Lovelace & Associates *in Prep.*), at which time there was sufficient moisture for a resident domestic pig to have excavated an inundated wallow. The vegetation of the surrounding upland areas is comprised of "Common Velvet Grass-Sweet Vernal Grass Meadows" (*Holcus lanatus-Anthoxanthum odoratum* Herbaceous Semi-Natural Alliance), but the sparsely-vegetated plant community supported by this discrete wetland feature is representative of "Water Foxtail Meadows" (*Alopecurus geniculatus* Provisional Herbaceous Alliance) described previously herein (Section 3.2.2.3). Quantitative wetland sampling within this wetland feature confirmed that the associated plant species composition is dominated (i.e., using the "dominance test" [USACE 2010]) by hydrophytic species (Appendix C), and as referenced previously, this wetland "spring" feature is subject to regular grazing disturbance by the domesticated cattle, goats, and pigs present in this portion of the proposed project area.

Soil sampling within this area revealed sandy clay loams extending to at least ~51 cm (~20 inches), with carbon streaking evident in the upper ~25 cm (~10 inches). Observed hydric soil indicators consisted of "Redox Dark Surface" (USDA-NRCS 2010), with [moist] soil matrix color ranging from 7.5YR 3/2 to 10YR 2/2. Associated redoximorphic features of significant contrast and abundance (10YR 4/4 and 10YR 3/4, respectively) included concentrations in the matrix and oxidized rhizospheres.

Soils were saturated at the surface during our August 2020 fieldwork and the water table was encountered at a depth of ~30.5 cm (~12 inches) during this period of regional drought (refer to Section 3.2.2.2). Other indicators of wetland hydrology consisted of oxidized rhizospheres along living roots, the presence of reduced iron, drainage patterns, saturation visible on aerial imagery (Google Earth 2016, etc.), and vegetation passed the "FAC-Neutral Test" (USACE 1987, 2010). Subsequent field observations in April of 2021 included inundation and overland surface flow.

6.0 Anticipated Impacts and Associated Mitigation Measures

Federal, State, and local governments have policies in place that require no net loss of the quantity of wetland area and the quality of associated ecological functions. Some such policies go further to encourage gains in both. Consistent with these requirements, impacts to wetland habitats should be avoided wherever possible. Where avoidance is not possible, measures should be taken to mitigate wetland impacts to the extent that at least the minimum requirement

of “no net loss” is achieved. Where feasible, measures to expand and/or enhance wetland habitat are encouraged.

6.1 Wetland Buffers

Humboldt County’s *Development Standards for Wetlands and Other Wet Areas* (Humboldt County General Plan Chapter 10 [Biological Resources] § 10.3.4, BR-S10) and *Streamside Management Areas and Wetlands Ordinance* (Humboldt County Code § 314-61.1.7.6.6) specify that development standards for wetlands (outside of the Coastal Zone) shall be consistent with the standards for streamside management areas, except that the wetland setback buffer widths are as follows (with the setback being measured from the edge of respective delineated wetlands):

- Seasonal wetlands = fifty (50) feet;
- Perennial wetlands = one hundred fifty (150) feet;

These standards and the code do provide for potential reductions in wetland buffer widths based on site-specific analysis and consultation with the California Department of Fish and Wildlife.

6.2 Anticipated Impacts and Measures Already Adopted

Implementation of the proposed project would result in temporary impacts to the palustrine emergent wetland feature in the north-central portion of the project area (i.e., the spring), and both temporary and permanent impacts within the wetland buffers associated with the aforementioned wetland feature as well as the palustrine wetland system in the northeastern project area extension (but not within the latter wetland system itself). Current (30% Submittal) design plans (Kennedy Jenks 2021) available at the time of this writing have already incorporated measures to minimize potential impacts to these sensitive habitats based on our initial findings and include both changes to the original proposed locations of various design elements as well as the adoption of alternative construction methods.

One such measure includes changes to the original proposed location of the new reservoir itself, placing it further south to avoid fill of the palustrine emergent wetland feature (i.e., the spring) in the north-central portion of the project area. The original project design positioned the new reservoir in-line with the two existing tanks (to the east-southeast), which would have resulted in the placement of the fill slope below the new reservoir directly overtop of the wetland feature in question. Considering the need to maintain a common elevation along the base of the existing and proposed tanks, the revised design positions the new reservoir as far south as is feasible, given the slope of the surrounding terrain. This revised design results in the base of the fill slope extending to a point approximately 3 meters (~ 10 feet) away from the upland/wetland boundary at this location.

Other measures already adopted include changes to the original proposed alignment of the new reservoir overflow drain pipeline in the northeastern project area extension, and the adoption of alternative associated construction methods to avoid and minimize impacts to both palustrine forested and emergent wetlands in this area. Original design plans for the new overflow drain pipeline proposed open-trench construction methods along an alignment considered to be most economical and that provided the best fall path. This original proposed approach would have resulted in substantial disturbance to the shallow root systems of as many as 10 maturing Sitka spruce trees associated with the palustrine forested wetland system and would also have impacted adjacent palustrine emergent wetland habitats also present at this location.

To avoid direct disturbance to these wetland habitats, and to minimize impacts to the root systems of contiguous maturing Sitka spruce in adjacent transitional one–two-parameter habitats, the new overflow pipeline alignment has been revised to instead construct the pipeline along the western boundary of the northeastern project area extension. This new alignment would place the overflow drain pipeline outside of the delineated wetland habitats within this area (though still within the associated wetland buffer), and further from the Sitka spruce trees. Additionally, revised construction methods further propose transitioning from open-trench (below-grade) pipeline installation to an above-grade section prior to intersecting with the root zone of maturing Sitka Spruce trees, thereby minimizing and/or avoiding damage to these individuals and potential premature project-related mortality and/or failure.

The reduced and remaining impacts resulting from construction of this above-grade pipeline within the wetland buffer are expected to be limited to the permanent installation of ~17 (42” [length] x 48” [width] x 30” [depth]) supportive reinforced concrete footings placed every 15–20 feet along the ~260-foot length of the above-grade section, as well as the pipeline outfall, and the temporary disturbance associated with construction of these elements.

The new overflow drain pipeline outfall is currently designed (30% Submittal, Kennedy Jenks 2021) as a concrete headwall of comparable dimensions to the pipeline support footings and would be placed in the upland strip of Velvet Grass–Sweet Vernal Grass Meadow vegetation along the northwestern edge of the northeast project area extension. Here, the outfall shall include some appropriate means of flow velocity dissipation (e.g., rock, etc.) to prevent scouring and/or erosion, and discharges are expected to both infiltrate and sheetflow overland through existing vegetation for approximately 15 meters (~50 feet) prior to reaching the adjacent palustrine emergent wetland habitat, and ultimately, the associated stormwater drain system on the south side of Cochran Road, ~40 linear meters (~130 feet) further north of the upland-wetland boundary.

The total volume of individual future discharges from the new overflow drain pipeline is expected to increase (relative to current levels), proportionate to the

increase in system storage capacity. However, existing measures already implemented as part of contemporary periodic reservoir maintenance activities are expected to ensure that such future discharges continue to comply with provisions set forth in the *Statewide NPDES General Permit for Drinking Water Discharges to Waters of the US, Order WQ 2014-0194-DWQ, General Order No. CAG140001* (SWRCB 2014). Such measures include the drawing down of individual reservoirs prior to being serviced to minimize water waste and discharge volume, as well as ensuring that District staff are present on-site during such maintenance operations to monitor and regulate flow rates and velocities to avoid any scouring, erosion, and/or other adverse effects to associated aquatic resources. The periodicity and chemical composition of future overflow drain pipeline discharges are also anticipated to be consistent with current operations.

6.3 Additional Anticipated Impacts and Recommended Mitigation Measures

The aforementioned adopted measures provide for the avoidance and reduction of most of the potential project-related wetland impacts, however, some additional anticipated impacts remain. These primarily consist of temporary impacts to the intermittent drainage path of the palustrine emergent wetland feature (i.e., the spring) in the north-central portion of the project area resulting from:

1. open-trenching across this wetland feature to remove and replace the existing overflow drain infrastructure with the new overflow drain pipeline; and
2. construction access across this wetland feature between the various construction elements and the proposed staging area below the existing tanks, accessed from Hilltop Lane.

We recommend the following additional mitigation measures and best management practices to avoid and/or reduce additional remaining potential wetland impacts associated with the construction of the proposed reservoir, which are consistent with those recommended and/or required by local, state, and/or federal agencies with applicable regulatory jurisdiction and/or trustee responsibilities.

6.3.1 Wetland Buffer Identification and Demarcation

In advance of any clearing and grubbing and/or other construction-related disturbance within the proposed project area, the perimeters of protective wetland habitat buffers should be clearly staked and flagged in the field by a qualified biologist as “no entry” special treatment zones to prevent project-related impacts to these protected habitats. Exceptions to such staking and flagging should be restricted to the minimum limits of temporary access within such buffers and associated wetlands required to complete respective construction tasks. Immediately following task completion in each instance, staking and flagging should be revised to re-establish the efficacy of respective protective buffers.

6.3.2 Open-Trenching Construction and Restoration

6.3.2.1 Surface Material Handling

Where open-trenching occurs within wetlands, the top 15.25–30.5 cm (~6–12 inches) of excavated material (i.e., "topsoil") containing seeds, rhizomes, roots, and other vegetative propagules and organic material should be stockpiled separately from deeper material and kept moist for subsequent proportional replacement in the surface horizon during backfilling operations. Such handling will aid in rapid revegetation of the trench footprint and maintain pre-construction soil texture and drainage properties. This surface layer should be replaced at the earliest opportunity and should not be compacted or otherwise handled in such a way as to discourage the restoration of pre-project vegetation and/or surface drainage characteristics. This surface layer material may need to be filled to 2.5–5 cm (~1–2 inches) above grade to allow for natural backfill settling to finished grade level.

6.3.2.2 Backfill Material Composition

Backfill material used within the overflow drain pipeline trench should include only native material excavated from the trench except where design constraints require use of engineered backfill material. In such cases, use of engineered material should be limited to the specific location where it is required, with native backfill material comprising the remainder. The upper 15.25–30.5 cm (~6–12 inches) of backfill material should consist of surface material as described in Section 6.3.2.1.

6.3.2.3 Excess Spoils Handling

Any excess spoils material resulting from construction should not be deposited in, or otherwise be placed in such a way that would allow it to be discharged into, wetlands and/or other surface waters. In onsite upland locations, any such excess spoils material should only be broadcast to a thickness that does not exceed one-inch (2.54 cm). Any spoils material that cannot be appropriately broadcast onsite should only be disposed of at permitted and/or otherwise approved locations.

6.3.2.4 Trench Baffles

Should trench conditions indicate significant potential for redirection of groundwater along the trench alignment, transverse baffles should be installed periodically as needed to prevent such redirection.

6.3.3 During-Construction Measures and Monitoring

6.3.3.1 Seasonal Considerations and Stormwater Pollution Prevention

To the extent possible, work should occur during seasonal periods with the least likelihood for abundant precipitation, soil saturation, stormwater events, and associated erosion and mobilization of disturbed materials. Should work occur during the period from October 15–April 15, "winter operations" should implement the following measures, consistent with Humboldt County General Plan 10.3.4 Standard BR-S9 (Erosion Control):

1. “Slopes will be temporarily stabilized by stage seeding and/or planting of fast germinating seeds…and mulched with protective coverings such as natural or chemical stabilizations, and
2. Runoff from the site will be temporarily detained or filtered by berms, vegetated filter strips, and/or catch basins to prevent the escape of sediment from the site. Drainage controls are to be maintained as long as necessary to prevent erosion throughout construction.”

A Stormwater Pollution Prevention Plan (SWPPP) consistent with existing state regulations should be prepared for the project, which includes appropriate Best Management Practices (BMPs) focused on preventing erosion, sediment mobilization, discharges, and turbidity control, and which incorporates other applicable measures included in Humboldt County General Plan 10.3.4 BR-S8 (Required Mitigation Measures), BR-S9 (Erosion Control), and BR-S10 (Development Standards for Wetlands).

6.3.3.2 Adherence to Project-Related Permit Conditions

Project personnel should adhere to all wetland-related permit conditions imposed by approval agencies as part of project implementation.

6.3.3.3 During-Construction Monitoring

A qualified biologist should be engaged to periodically monitor the construction process, evaluate the implementation of adopted mitigation measures during construction, and provide recommendations should implementation prove insufficient to adequately mitigate project-related wetland impacts.

6.3.4 Post-Construction Restoration and Revegetation

6.3.4.1 Grade Restoration and Surface Treatment

Upon completion of construction, all disturbed portions of the project area should be restored to re-establish original pre-project grade and contours with the obvious exception of the new reservoir footprint, its access route, and associated cut and fill slopes. To the extent possible, drainage and runoff from the new reservoir and its associated improved surfaces and fill slope should be directed away from the nearby palustrine emergent wetland feature. Revegetation, contouring, and texturing of the fill slope can help in this regard. In construction areas subject to significant soil compaction (e.g., staging areas, access routes, etc.), disking or scarification of the soil surface should be performed to attempt to restore pre-project surface infiltration and drainage characteristics.

6.3.4.2 Revegetation

All disturbed areas should be promptly revegetated with locally-sourced, regionally-appropriate native species to the extent possible or at least with species representative of those present prior to project initiation. Exceptions include alien plant species determined to be invasive (refer to Appendix B), which should not be included in revegetation efforts. Project implementation is not expected to result in the removal of any trees or other large woody vegetation. However, if any native trees > 7.5 cm (> 3 inches) in diameter-at-breast-height

(DBH) area removed, each should be replaced in kind (i.e., the same species) during post-construction revegetation efforts at a ratio of 2:1 (i.e., two individuals planted for each individual removed) to account for expected attrition.

6.3.5 Post-Construction Mitigation Monitoring

Following completion of post-construction restoration and revegetation efforts, a mitigation monitoring program should be developed and initiated by a qualified biologist to establish thresholds to demonstrate “success” of the restoration effort and to track progress towards the realization of those thresholds.

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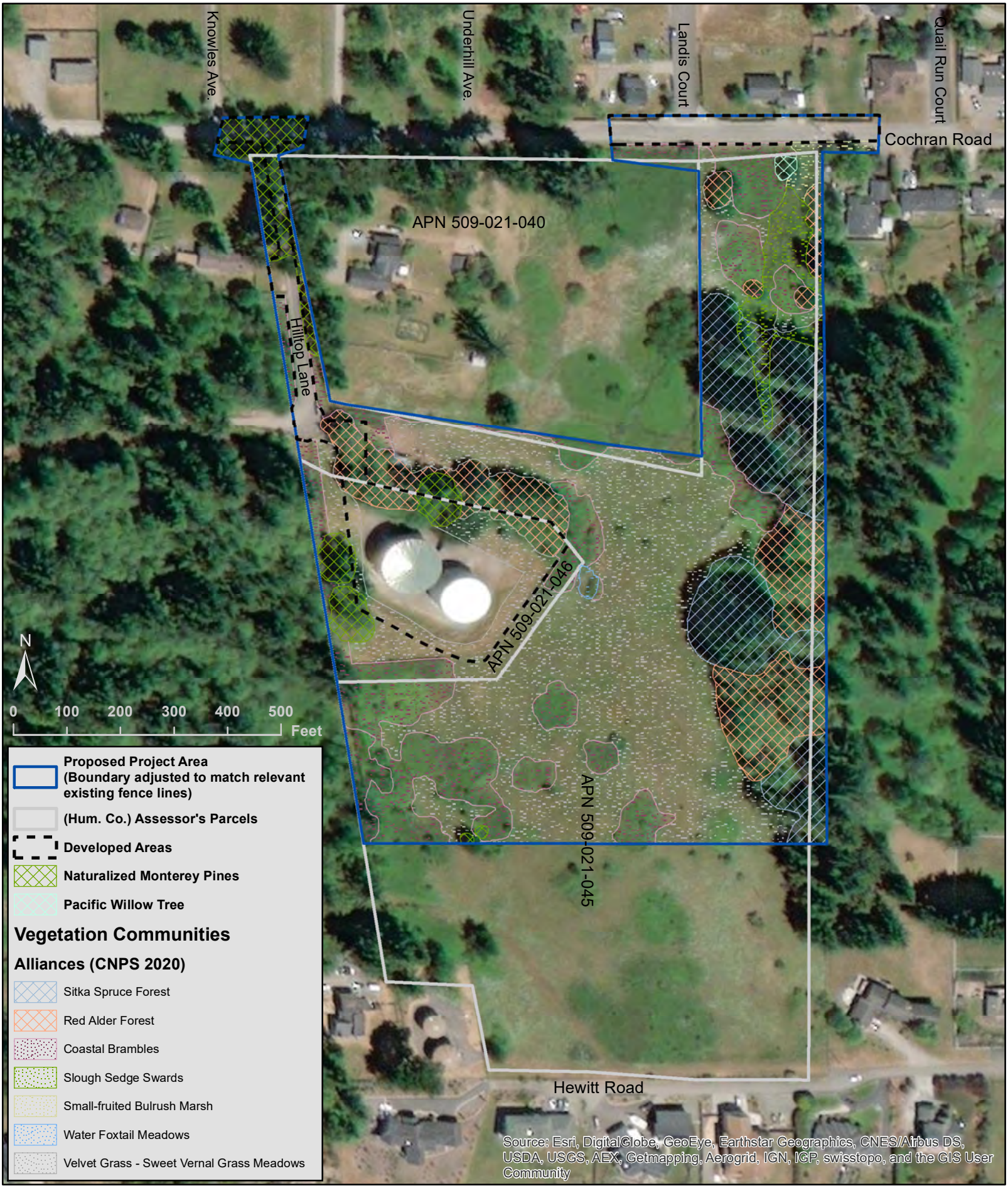
Appendices

Appendix A. Project Figures

Figure 1. Distribution of Vegetation Communities within the Proposed Project Area

Figure 2. Distribution of Natural Resource Conservation District's (NRCS) Soils Map Units

Figure 3. Distribution of Delineated Wetland Habitats

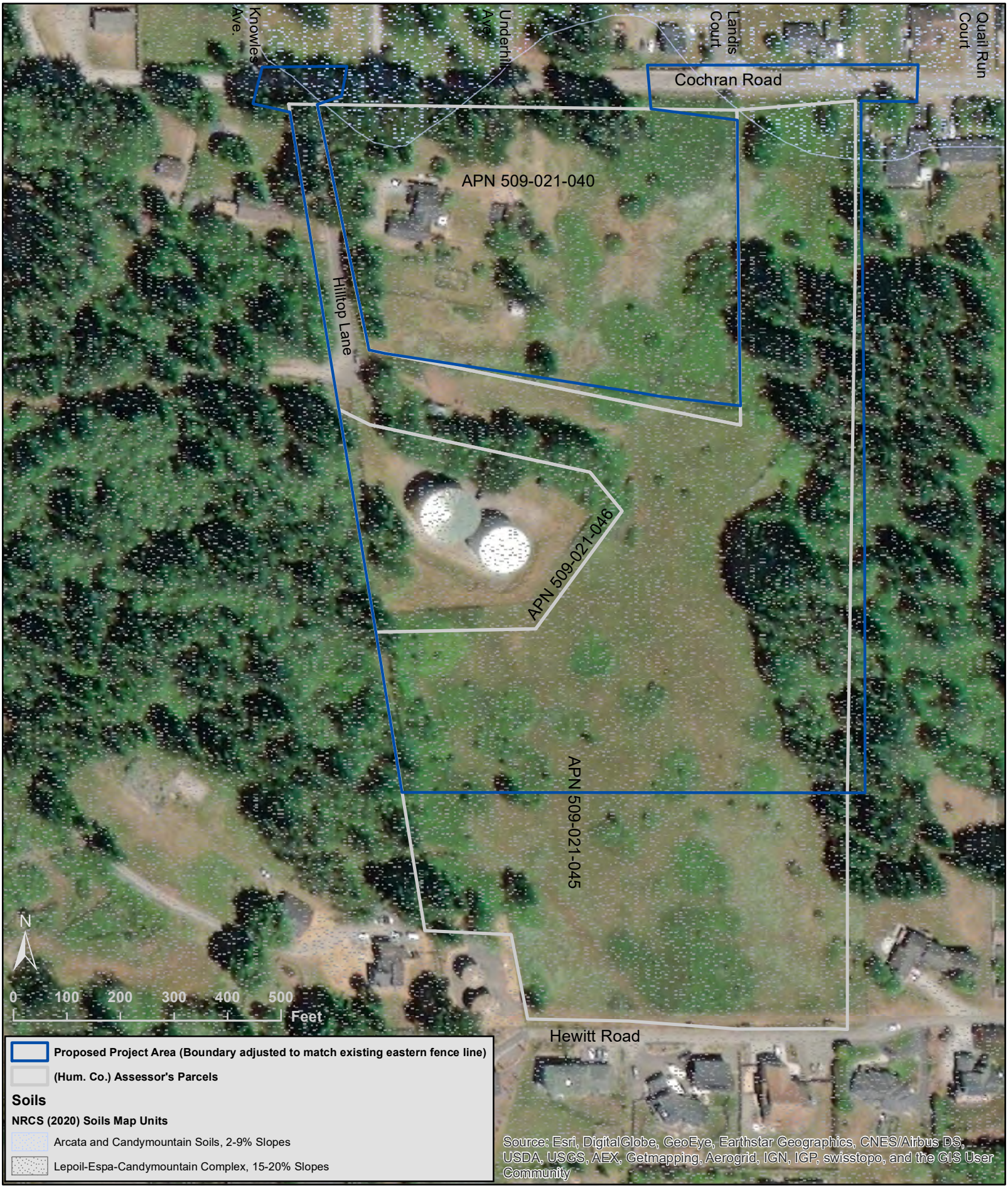


McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Distribution of Vegetation Communities within the Proposed Project Area

(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

J.B. LOVELACE & ASSOCIATES



McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Distribution of Natural Resource Conservation Service's (NRCS) Soils Map Units

J.B. LOVELACE & ASSOCIATES

McKinleyville Community Services District. 4.5 MG Water Reservoir Project

Distribution of Delineated Wetland Habitats

(This figure should not be construed to substantiate the absence of natural resources potentially occurring beyond the proposed project area boundary as such areas were not addressed as part of the current effort.)

J.B. LOVELACE & ASSOCIATES

Appendix B. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Trees				
Native Vegetation				
Abies grandis	grand fir	FACU		
Alnus rubra	red alder	FAC		
Frangula purshiana	cascara	FAC		
Picea sitchensis	Sitka spruce	FAC		
Pinus radiata	Monterey pine	NL		
Pseudotsuga menziesii ssp. *menziesii*	Douglas-fir	FACU		
Salix lasiandra var. *lasiandra*	Pacific willow	FACW		
Salix lasiolepis	arroyo willow	FACW		
Salix scouleriana	Scouler's willow	FAC		
Sequoia sempervirens	coast redwood	NL		
Alien Vegetation				
Ilex aquifolium	English holly	NL	Limited	High
Prunus cerasifera	cherry plumb	NL	Limited	
Shrubs				
Native Vegetation				
Baccharis pilularis	coyote bush	NL		
Oemleria cerasiformis	oso berry	FACU		
Ribes bracteosum	stink currant	FAC		
Ribes laxiflorum	trailing black currant	FACU		
Ribes menziesii var. *menziesii*	canyon gooseberry	NL		
Ribes sanguineum var. *glutinosum*	red-flowering currant	FACU		
Rosa nutkana ssp. *nutkana*	Nootka rose	FAC		
Rubus leucodermis	whitebark raspberry	FACU		
Rubus parviflorus	thimbleberry	FACU		
Rubus spectabilis	salmonberry	FAC		
Rubus ursinus	California blackberry	FACU		
Sambucus racemosa var. *racemosa*	red elderberry	FACU		
Vaccinium ovatum	evergreen huckleberry	FACU		
Vaccinium parvifolium	red huckleberry	FACU		
Alien Vegetation				
Cotoneaster franchetii	Franchet's Cotoneaster	NL	Moderate	High
Crataegus monogyna	hawthorn	NL	Limited	No Priority
Rubus armeniacus	Himalayan blackberry	NL	High	High
Woody Vines				
Alien Vegetation				
Delairea odorata	cape ivy	FAC	High	High
Hedera helix	English ivy	NL	High	High
Herbs				
Native Vegetation				
Achillea millefolium	yarrow	FACU		
Alopecurus geniculatus	water foxtail	OBL		
Anaphalis margaritacea	pearly everlasting	FACU		
Anthoxanthum occidentale	California sweet grass	NL		
Asarum caudatum	wild ginger	FACU		
Athyrium felix-femina var. *cyclosorum*	lady fern	FAC		
Blechnum spicant	deer fern	FAC		
Callitriche heterophylla	water-starwort	OBL		
Carex c.f. *leptopoda*	slender-foot sedge	FAC		
Carex obnupta	Slough sedge	OBL		

Appendix B. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Herbs (Continued)				
Native Vegetation (Continued)				
Claytonia perfoliata ssp. *perfoliata*	miner's lettuce	FAC		
Claytonia sibirica	candy flower	FAC		
Dicentra formosa	bleeding hearts	FACU		
Dryopteris expansa	wood fern	FACW		
Epilobium ciliatum ssp. *watsonii*	Watson's willowherb	FACW		
Equisetum telmateia ssp. *braunii*	giant horsetail	FACW		
Erythranthe guttata	seep monkeyflower	OBL		
Galium aparine	bedstraw	FACU		
Galium triflorum	sweet-scented bedstraw	FACU		
Glyceria elata	fowl manna grass	FACW		
Heracleum lanatum	cow parsnip	NL		
Iris douglasiana	Douglas' iris	NL		
Isolepis cernua	low bulrush	OBL		
Juncus bolanderi	Bolander's rush	OBL		
Juncus bufonius	toad rush	FACW		
Juncus effusus ssp. *pacificus*	Pacific rush	FACW		
Juncus ensifolius	dagger rush	FACW		
Juncus hesperius	coast rush	FACW		
Lonicera hispidula	honeysuckle	FACU		
Lonicera involucrata var. *ledebourii*	twinberry	FAC		
Lupinus littoralis	lupine	NL		
Luzula comosa var. *comosa*	hairy wood rush	FAC		
Luzula parviflora var. *parviflora*	small-flowered wood rush	FAC		
Lysichiton americanum	skunk cabbage	OBL		
Lysimachia latifolia	Pacific starflower	FACW		
Maianthemum dilatatum	false Solomon's seal	FAC		
Marah oreganus	coast man-root	NL		
Nasturtium officinale	water cress	OBL		
Oenanthe sarmentosa	water parsley	OBL		
Osmorhiza berteroi	sweet cicely	FACU		
Oxalis oregana	redwood sorrel	FACU		
Polypodium scouleri	leather-leaf fern	NL		
Polystichum munitum	sword fern	FACU		
Prosartes smithii	Smith's fairybells	NL		
Pteridium aquilinum	bracken fern	FACU		
Scirpus microcarpus	small-fruited bulrush	OBL		
Scrophularia californica	figwort	FAC		
Stachys ajugoides var. *ajugoides*	hedge nettle	OBL		
Stachys mexicana	Mexican hedge nettle	FACW		
Stellaria crispa	crisp starwort	FAC		
Symphyotrichum chilense	Pacific aster	NL		
Tolmiea diplomenziesii	pig-a-back plant	FACW		
Trillium ovatum ssp. *ovatum*	western Trillium	FACU		
Veronica americana	American brooklime	OBL		
Viola sempervirens	redwood violet	NL		
Alien Vegetation				
Agrostis stolonifera	creeping bent	FAC	Limited	High
Aira caryophyllea	silver European hairgrass	FACU		High
Anthoxanthum odoratum	sweet vernal grass	FACU	Limited	No Priority

Appendix B. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating[†]	Invasive Status Rating	
			Cal-IPC[‡]	Humboldt Co. WMA[§]
Herbs (Continued)				
Alien Vegetation (Continued)				
Avena fatua	wild oat	NL	Moderate	No Priority
Bellis perennis	English daisy	NL		
Bromus hordeaceous	soft-chess	FACU	Limited	High
Cerastium fontanum ssp. *vulgare*	mouse-ear chickweed	FACU		
Cirsium vulgare	bull thistle	FACU	Moderate	High
Conium maculatum	poison hemlock	FAC	Moderate	Moderate
Dactylis glomerata	orchard grass	FACU	Limited	No Priority
Digitalis purpurea	fox glove	FACU	Limited	Moderate
Festuca perennis	perennial ryegrass	NL	Moderate	No Priority
Geranium dissectum	cut-leaf Geranium	NL	Limited	No Priority
Glyceria declinata	low manna grass	FACW	Moderate	No Priority
Holcus lanatus	velvet grass	FAC	Moderate	Moderate
Hypochaeris radicata	rough cats-ear	NL	Moderate	No Priority
Leontodon saxatilis	hawkbit	FACU		Moderate
Leucanthemum vulgare	ox-eye daisy	FACU	Moderate	No Priority
Linum bienne	flax	NL		
Lotus corniculatus	bird's-foot trefoil	FAC		Monitor
Lysimachia arvensis	scarlet pimpernel	FAC		No Priority
Parentucellia viscosa	yellow Parentucellia	FAC	Limited	Monitor
Plantago lanceolata	English plantain	FACU	Limited	No Priority
Prunella vulgaris var. *vulgaris*	self-heal	FACU		
Ranunculus repens	buttercup	OBL	Limited	No Priority
Raphanus raphanistrum	jointed charlock	NL		No Priority
Raphanus sativus	radish	NL	Limited	No Priority
Rumex acetosella	sheep sorrel	FACU	Moderate	Moderate
Rumex conglomeratus	green dock	FACW		
Rumex crispus	curly dock	FAC	Limited	No Priority
Senecio minimus	coastal burnweed	FACU		
Silybum marianum	milk thistle	NL	Limited	No Priority
Stellaria media	common chickweed	FACU		
Taraxacum officinale	common dandelion	FACU		
Trifolium pratense	red clover	FACU		
Trifolium repens	white clover	FAC		
Vicia hirsuta	vetch	NL		
Vicia sativa ssp. *nigra*	narrow-leaved vetch	NL		
Nonvascular Species				
Mosses				
Isothecium c.f. *myosuroides*				
Neckera douglasii				
Liverworts				
Frullania nisquallensis				
Porella navicularis				
Lichens				
Evernia prunastri				
Heterodermia leucomela				
Hypotrachyna sinuosa				
Parmelia hygrophila				
Parmelia sulcata				

Appendix B. List of Encountered Botanical Species.

Species	Common Name	NWPL Rating†	Invasive Status Rating	
			Cal-IPC‡	Humboldt Co. WMA§
Nonvascular Species (Continued)				
Lichens (Continued)				
Parmotrema perlatum				
Ramalina farinacea				
Ramalina menziesii				
Usnea cornuta				
Usnea filipendula				
Fungi				
Phaeolus schweinitzii	dyer's polypore			

† USACE (2020)
‡ Cal-IPC (2021)
§ Humboldt County WMA (2010)

Appendix C. Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 1A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): A Lat: 40.926403 Long: -124.086896 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = , 20% =	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	20	yes	FACU
2. *Rubus armeniacus*	5	yes	FAC
3. *Cotoneaster franchetii*	1	no	NL (UPL)
4.			
5.			
50% = 10, 20% = 4	20	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Anthoxanthum odoratum*	80	yes	FACU
2. *Leucanthemum vulgare*	15	no	FACU
3. *Vicia nanum*	10	no	NL (UPL)
4. *Leontodon saxatilis*	5	no	FACU
5. *Aira caryophyllea*	5	no	FACU
6. *Rumex acetosella*	5	no	FAC
7. *Ranunculus repens*	5	no	FAC
8. *Polystichum munitum*	3	no	FAC
9.			
10.			
11.			
50% = 47.5, 20% = 19	95	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = , 20% =	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	18	x3 =	54
FACU species	125	x4 =	500
UPL species	11	x5 =	55
Column Totals:	154 (A)		609 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					Loam	Abundant roots
4-20+	10YR 3/4	60	10YR 4/6	40	C	M	Clay loam	Few roots

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 1B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): A Lat: 40.926342 Long: -124.086766 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: Boundary

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

Wetland/upland boundary sampling point.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	15	yes	FAC
2.			
3.			
4.			
50% = 7.5, 20% = 3	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	40	yes	FACU
2. *Rubus armeniacus*	5	no	FAC
3. *Alnus rubra*	3	no	FAC
4.			
5.			
50% = 20, 20% = 8	40	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Anthoxanthum odoratum*	80	yes	FACU
2. *Holcus lanatus*	15	no	FAC
3. *Ranunculus repens*	15	no	FAC
4. *Aira careophyllea*	10	no	FACU
5. *Stachys mexicana*	3	no	FACW
6.			
7.			
8.			
9.			
10.			
11.			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	3	x2 =	6
FAC species	53	x3 =	59
FACU species	130	x4 =	520
UPL species	0	x5 =	0
Column Totals:	186 (A)		585 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	97	7.5YR 4/6	3	C	M/PL	Sandy loam	
6-20+	7.5YR 6/3	60	10YR 5/6	40	C	M	Sandy clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 1C

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 6

Subregion (LRR): A Lat: 40.926343 Long: -124.086673 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	20	yes	FAC
2.			
3.			
4.			
50% = 10, 20% = 4	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	10	yes	FACU
2. *Alnus rubra*	5	yes	FAC
3.			
4.			
5.			
50% = 7.5, 20% = 3	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Scirpus microcarpus*	60	yes	OBL
2. *Erythranthe guttata*	15	no	OBL
3. *Juncus effusus ssp. pacificus*	15	no	FACW
4. *Athyrium felix-femina*	15	no	FAC
5. *Anthoxanthum odoratum*	15	no	FACU
6. *Oenanthe sarmentosa*	10	no	OBL
7. *Veronica americana*	5	no	OBL
8. *Ranunculus repens*	5	no	FAC
9. *Senecio minimus*	5	no	FACU
10. *Stachys mexicana*	5	no	FACW
11.			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = , 20% =	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 1C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	80	7.5YR 4/6	20	C	M/PL	Clay loam	
3-8	10YR 2/2	75	7.5YR 4/6	25	C	M/PL	Sandy clay loam	Carbon streaking
8-20+	2.5Y 5/2	70	10YR 3/6	30	C	M	Sandy clay loam	
			2.5Y 5/1		D	M		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☒ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	20"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 1D

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): convex Slope (%): 3

Subregion (LRR): A Lat: 40.926287 Long: -124.086532 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: Boundary

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

Localized, slightly elevated, transitional area.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	10	yes	FAC
2.			
3.			
4.			
50% = 5, 20% = 2	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30")			
1. *Rubus ursinus*	60	yes	FACU
2. *Lonicera involucrata ssp. ledebourii*	5	no	FAC
3.			
4.			
5.			
50% = 30, 20% = 12	60	= Total Cover	
Herb Stratum (Plot size: 5")			
1. *Anthoxanthum odoratum*	95	yes	FACU
2. *Holcus lanatus*	10	no	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	25	x3 =	75
FACU species	155	x4 =	620
UPL species	0	x5 =	0
Column Totals:	180 (A)		695 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 1D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6.5	10YR 2/2	98	10YR 4/6	2	C	M	Loam	Carbon streaking
6.5-20+	7.5YR 2.5/1	83	10YR 3/3	7	C	M	Loam	Carbon streaking
			2.5Y 5/2	10	D	M		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 2

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 6

Subregion (LRR): A Lat: 40.926097 Long: -124.086537 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: PFO4B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea sitchensis*	90	yes	FAC
2. *Alnus rubra*	10	no	FAC
3.			
4.			
50% = 45, 20% = 18	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	25	yes	FACU
2. *Sambucus racemosa*	10	yes	FACU
3. *Frangula purshiana*	10	yes	FAC
4. *Rubus spectabilis*	5	no	FAC
5. *Ilex aquifolium*	5	no	FACU
50% = 20, 20% = 8	40	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum dilatatum*	75	yes	FAC
2. *Oxalis oregana*	25	yes	FACU
3. *Athyrium felix-femina*	20	yes	FAC
4. *Carex obnupta*	20	yes	OBL
5. *Polystichum munitum*	15	no	FACU
6. *Holcus lanatus*	5	no	FAC
7.			
8.			
9.			
10.			
11.			
50% = 45, 20% = 18	90	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Hedera helix*	1	yes	FACU
2.			
50% = 0.5, 20% = 0.2	1	= Total Cover	
% Bare Ground in Herb Stratum 10			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☒ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Picea sitchensis exhibits buttressing throughout.

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7.5	10YR 2/2	90	2.5Y 5/1	10	D	M	Silt Loam	Abundant organic matter & tree roots
7.5-20+	7.5YR 3/1	50	7.5YR 4/6	20	C	M/PL	Sandy clay loam	
			2.5Y 5/1	30	D	M	Sandy clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☒ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	_____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	_____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High clay content in soils likely inhibits/reduces drainage.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 3A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): A Lat: 40.925240 Long: -124.087567 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	10	yes	FAC
2. *Prunus cerasifera*	5	yes	NL (UPL)
3.			
4.			
50% = 7.5, 20% = 3	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	30	yes	FACU
2.			
3.			
4.			
5.			
50% = 15, 20% = 6	30	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Alopecurus geniculatus*	25	yes	OBL
2. *Glyceria declinata*	25	yes	FACW
3. *Isolepis cernua*	10	yes	OBL
4. *Juncus bufonius*	10	yes	FACW
5. *Holcus lanatus*	10	yes	FAC
6. *Veronica americana*	3	no	OBL
7. *Juncus effusus ssp. pacificus*	3	no	FACW
8. *Anthoxanthum odoratum*	3	no	FACU
9.			
10.			
11.			
50% = 25, 20% = 10	50	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 50

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x1 = _____
FACW species _____	x2 = _____
FAC species _____	x3 = _____
FACU species _____	x4 = _____
UPL species _____	x5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Vegegation is intensively grazed by domesticated cattle, goats, and pigs (present during fieldwork).

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 3/2	90	10YR 4/4	10	C/CS	M/PL	Sandy loam	Carbon streaking
10-20+	10YR 2/2	97	10YR 3/4	3	C/CS	M/PL	Sandy loam	Carbon streaking

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☒ Dry-Season Water Table (C2)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches):	< 1"
Water Table Present?	Yes	☒	No	☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 3B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 12

Subregion (LRR): A Lat: 40.925191 Long: -124.087595 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: Boundary

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

Wetland/upland boundary sampling point.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus cerasifera*	5	yes	NL (UPL)
2.			
3.			
4.			
50% = 2.5, 20% = 1	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	10	yes	FACU
2.			
3.			
4.			
5.			
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Holcus lanatus*	45	yes	FAC
2. *Trifolium repens*	15	no	FAC
3. *Ranunculus repens*	15	no	FAC
4. *Cirsium vulgare*	5	no	FACU
5. *Leontodon saxatilis*	5	no	FACU
6.			
7.			
8.			
9.			
10.			
11.			
50% = 42.5, 20% = 17	85	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 15

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	75	x3 =	225
FACU species	20	x4 =	80
UPL species	5	x5 =	25
Column Totals:	100 (A)		330 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks: Vegegation is intensively grazed by domesticated cattle, goats, and pigs (present during fieldwork)

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL

Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 2.5/2	95	7.5YR 4/6	5	C	M/PL	Sandy clay loam	
9-20+	2.5Y 3/2	90	10YR 3/6	10	C	M	Sandy clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: MCSD's 4.5MG Emergency Water Reservior Project City/County: Unincorp./Humboldt Sampling Date: 8/27/20

Applicant/Owner: McKinleyville Community Services District (MCSD) State: CA Sampling Point: 3C

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 8, T6N, R1E, Humboldt BM

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 17

Subregion (LRR): A Lat: 40.925145 Long: -124.087594 Datum: GCS NAD 1983 2011

Soil Map Unit Name: Lepoil-Espa-Candymountain Complex (15% – 50% slopes) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐	**No** ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2020] for Woodley Island, Eureka, CA) indicate that measured recent (1 June - 25 August 2020) regional precipitation is ~24% of "normal" (NRCS' WETS data [1981-2010] for Woodley Island, Eureka, CA. [2020]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus cerasifera*	5	yes	NL (UPL)
2.			
3.			
4.			
50% = 2.5, 20% = 1	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Rubus ursinus*	10	yes	FACU
2.			
3.			
4.			
5.			
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Aira caryophyllea*	70	yes	FACU
2. *Anthoxanthum odoratum*	60	yes	FACU
3. *Holcus lanatus*	10	no	FAC
4. *Leontodon saxatilis*	5	no	FACU
5. *Ranunculus repens*	3	no	FAC
6. *Leucanthemum vulgare*	3	no	FACU
7. *Raphanus raphanistrum*	3	no	NL (UPL)
8.			
9.			
10.			
11.			
50% = 47.5, 20% = 19	95	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	13	x3 =	39
FACU species	148	x4 =	592
UPL species	8	x5 =	40
Column Totals:	169 (A)		671 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: Vegegation is intensively grazed by domesticated cattle, goats, and pigs (present during fieldwork)

Project Site: MCSD's 4.5MG Emergency Water Reservior Project

SOIL Sampling Point: 3C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5YR 3/3	100					Loam	Dry & friable
7-13	7.5YR 2.5/3	100					Loam	
13-20+	10YR 3/3	98	7.5YR 3/4	2	C	M	Silty clay loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix E – Applicable Code, Policies, and Plans

MCSD 4.5 Million Gallon Reservoir
Applicable Codes, Policies, and Plans

(Not Comprehensive)

California Health and Safety Code

§7050.5: (a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the Public Resources Code or to any person authorized to implement Section 5097.98 of the Public Resources Code.

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

(Amended by Stats. 1987, Ch. 404, Sec. 1.)

California Public Resources Code

§5097.98: (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site.

(b) Upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section, with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

(1) The descendants' preferences for treatment may include the following:

(A) The nondestructive removal and analysis of human remains and items associated with Native American human remains.

(B) Preservation of Native American human remains and associated items in place.

(C) Relinquishment of Native American human remains and associated items to the descendants for treatment.

(D) Other culturally appropriate treatment.

(2) The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains, as defined in this section, are located in the project area, providing a basis for additional treatment measures.

(c) For the purposes of this section, "conferral" or "discuss and confer" means the meaningful and timely discussion and careful consideration of the views of each party, in a manner that is cognizant of all parties' cultural values, and where feasible, seeking agreement. Each party shall recognize the other's needs and concerns for confidentiality of information provided to the other.

(d) (1) Human remains of a Native American may be an inhumation or cremation, and in any state of decomposition or skeletal completeness.

(2) Any items associated with the human remains that are placed or buried with the Native American human remains are to be treated in the same manner as the remains, but do not by themselves constitute human remains.

(e) Whenever the commission is unable to identify a descendant, or the descendants identified fail to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendants and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance. To protect these sites, the landowner shall do one or more of the following:

(1) Record the site with the commission or the appropriate Information Center.

(2) Utilize an open-space or conservation zoning designation or easement.

(3) Record a document with the county in which the property is located. The document shall be titled "Notice of Reinterment of Native American Remains" and shall include a legal description of the

property, the name of the owner of the property, and the owner's acknowledged signature, in addition to any other information required by this section. The document shall be indexed as a notice under the name of the owner.

(f) Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with the descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of the discovery may be ascertained from a review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and items associated and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to subdivision (e).

(g) Notwithstanding Section 5097.9, this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

(h) Notwithstanding Section 30244, this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

(Amended by Stats. 2009, Ch. 208, Sec. 6. (SB 833) Effective January 1, 2010.)

Humboldt County General Plan (Adopted October 23, 2017)

Air Quality Element

AQ-P4. Construction and Grading Dust Control. Dust control practices on construction and grading sites shall achieve compliance with NCAQMD fugitive dust emission standards.

AQ-P17. Preservation and Replacement of On-site Trees. Projects requiring discretionary review should preserve large trees, where possible, and mitigate for carbon storage losses attributable to significant removal of trees.

AQ-S1. Construction and Grading Dust Control. Ground disturbing construction and grading shall employ fugitive dust control strategies to prevent visible emissions from exceeding NCAQMD regulations and prevent public nuisance.

AQ-S3. Evaluate Air Quality Impacts. During environmental review of discretionary projects, evaluate new commercial and industrial sources of emissions using analytical methods and significance criteria used, or recommended by, the NCAQMD.

Open Space and Conservation Element

CU-P4. Avoid Loss or Degradation. Projects located in areas known, or suspected to be archeological sites or Native American burial sites shall be conditioned and designed to avoid significant impacts to

significant sites, or disturbance or destruction to Indian burial grounds. Preserving Native American remains undisturbed and in place shall be selected as the preferred alternative unless substantial factual evidence is presented demonstrating that no alternative(s) are feasible. Conditions of approval shall include standard provisions for postreview inadvertent archaeological discoveries and discovery and respectful treatment and disposition of Native American remains with or without funerary objects in accordance with state law (Health and Safety Code (HSC) §7050.5 and PRC §5097.98).

CU-S4.E Conditioning, Designing, or Mitigating Projects to Avoid Loss or Reduce Impacts to Archaeological Resources. Conditioning, designing, and/or mitigating projects to avoid or reduce impacts to archaeological resources, significant for their cultural value to descendent communities and/or scientific value shall consider the following options:

> *(E.) Standard Conditions and Notations for Inadvertent Archaeological or Native American Remains Discoveries.* In addition, for discretionary projects and ministerial permits that involve ground disturbing activities, the following measures shall be included as standard conditions of approval or as notations to be placed on development plans:
>
> "The project site is not located within an area where known archaeological sites have been identified. However, as there exists the possibility that undiscovered archaeological resources may be encountered during construction activities, the following post-review, inadvertent archaeological discovery measures are required under state and federal laws:
>
> If archaeological resources are encountered, all ground disturbing work at the find location plus a reasonable buffer zone must be immediately suspended, the approving County department contacted, and a qualified professional archaeologist retained to analyze the significance of the find and formulate further mitigation (e.g., project relocation, excavation plan, and protective cover) in consultation with culturally affiliated tribes or other descendant groups, where applicable.
>
> Pursuant to California Health and Safety Code §7050.5, if known or suspected Native American or other human remains are encountered, all ground-disturbing work must cease in the vicinity of the discovery, and the County Coroner contacted. The respectful treatment and disposition of remains and associated grave offerings shall be in accordance with PRC §5097.98.
>
> The applicant and successors in interest are ultimately responsible for ensuring compliance with this condition."

<u>Housing Element</u>

H-IM66. Expand Public Water and Sewer Capacity for Housing. The County shall work with community service districts to identify and overcome constraints to providing service for housing, including but not limited to the Redway Community Services District ("RCSD") to resolve the existing stormwater inflow and infiltration issues associated with the County road that affect the RCSD wastewater collection system, and for the development a community groundwater well. The County shall also work with the McKinleyville Community Services District (MCSD) to identify capacity constraints and develop phasing plans to allow development within the limits of utility constraints and work to pursue funding

mechanisms for the MCSD to design and implement capacity improvements. Responsible Agency: Planning and Building Department. Timeframe: Ongoing.

Conservation and Open Space Element

SR-S4. Light and Glare. New outdoor lighting shall be compatible with the existing setting. Exterior lighting fixtures and street standards (both for residential and commercial areas) shall be fully shielded, and designed and installed to minimize off-site lighting and direct light within the property boundaries.

SR-IM5. Lighting Design Guidelines. Amend the Zoning Regulations to include lighting design guidelines for discretionary projects. Require new development and projects that would make significant parking lot improvements or add new exterior lighting to submit a lighting plan consistent with these guidelines. Lighting design guidelines should address:

A. Intensity – Acceptable standards shall be defined for various land uses and development types specifying the maximum allowable total lumens per acre.
B. Directional Control – Standards shall be developed to minimize the upward transmission and intensity of light at various distances from its source through the use of full-cutoff lighting, downward casting, shielding, visors etc.
C. Signage – Standards with respect to illuminated signs shall be developed that prohibit or limit the size, spacing, design, upward transmission of light, and hours of operation. In addition, signs should be white or light colored lettering on dark backgrounds.
D. Night Lighting – Hours of operation for various uses shall be specified in order to prohibit all night lighting except when warranted for public safety reasons. On demand lighting shall be encouraged.
E. Incentives – The County shall develop incentives for residents and businesses encouraging the conversion of existing lighting sources to compliant ones.
F. Enforcement – These standards shall be incorporated into the County Development Code and design review process for new development.

BR-S10. Development Standards for Wetlands. Development standards for wetlands shall be consistent with the standards for Streamside Management Areas, as applicable except that the widths of the SMA for wetlands area as follows:

Seasonal wetlands = 50 ft.

Perennial wetlands = 150 ft.

and the setback begins at the edge of the delineated wetland. Buffers may be reduced based on site specific information and consultation with the California Department of Fish and Wildlife. No buffer shall be required for man-made wetlands except wetlands created for mitigation purposes.

Appendix F – Mitigation, Monitoring, and Reporting Program

Mitigation, Monitoring, and Reporting Program

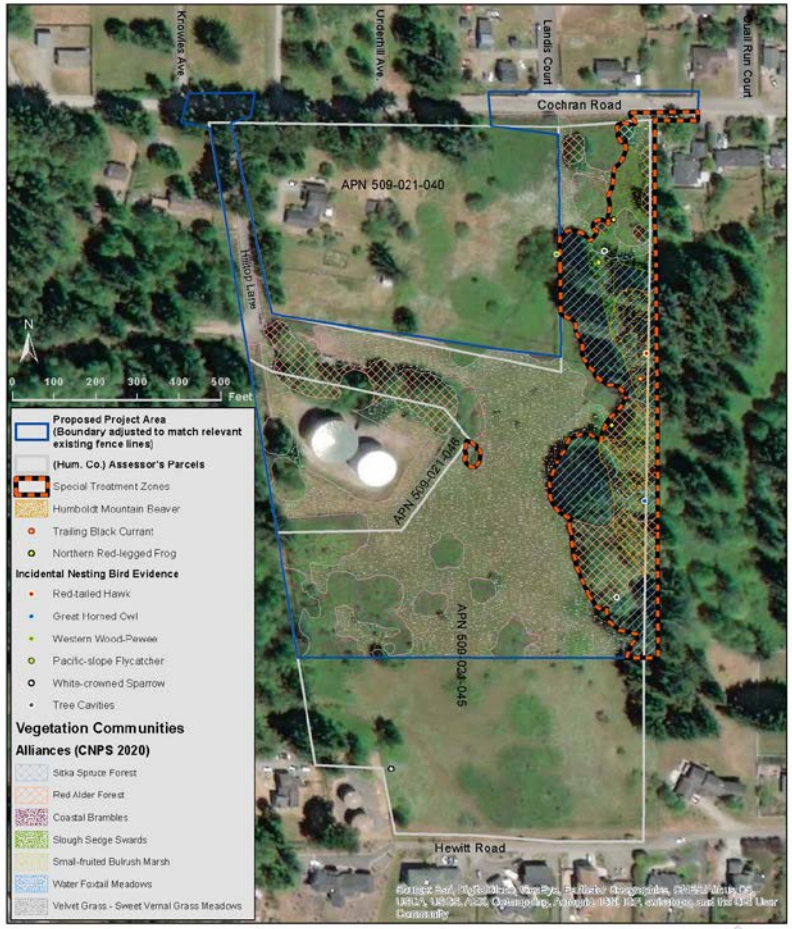
This Mitigation Monitoring/Reporting Program (MMRP) has been prepared for the project described below in conformance with California Environmental Quality Act (CEQA) Section 21081.6 and CEQA Guidelines Section 15097, which require adoption of a MMRP for projects in which the lead agency has adopted mitigation to avoid environmental effects.

PROJECT TITLE:	**McKinleyville Community Services District 4.5 Million Gallon Water Storage Reservoir**
LEAD AGENCY:	McKinleyville Community Services District (MCSD)
CONTACT:	Patrick Kaspari, General Manager 1656 Sutter Rd. McKinleyville, CA 95519 Phone: (707) 839-3251 Email: pkaspari@mckinleyvillecsd.com
PROJECT LOCATION:	Cochran Road, McKinleyville, Humboldt County, CA
ASSESSOR'S PARCEL NUMBER:	509-021-046 and 509-021-045

PURPOSE: The purpose of this MMRP is to ensure that the mitigation measures adopted in connection with project approval are effectively implemented. The MMRP describes the procedures the project applicant will use to implement the mitigation measures adopted in connection with the approval of the project, and the methods of monitoring and reporting on such actions. A MMRP is necessary only for impacts which would be potentially significant if not mitigated.

ENFORCEMENT: In accordance with CEQA, the primary responsibility for making a determination with respect to potential environmental effects rests with MCSD as the lead agency. As such, MCSD is identified as the primary enforcement agency for this MMRP. The District shall ensure that language assuring compliance shall be incorporated into design and contract documents prepared for the project.

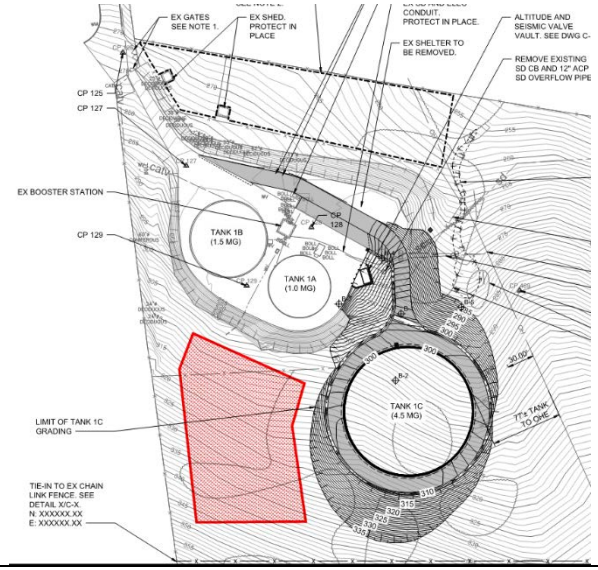
MMRP IMPLEMENTATION TABLE: To assure that this MMRP is effectively implemented the table on the following pages establishes the framework that MCSD and others will use to implement the adopted mitigation measures and the monitoring and/or reporting of such implementation.

Mitigation Measure	Timing for Implementation	Responsible Parties
BIO-1: Sensitive Habitat Demarcation. In advance of any clearing and grubbing and/or other construction-related disturbance within the proposed project area, the contiguous perimeter of California Sensitive Natural Communities will be clearly staked and flagged by a qualified biologist as a special treatment zone (see IS/MND Figure 7 – included below for reference). Temporary access within such areas is limited to the minimum necessary to complete respective construction tasks including construction of the above-grade pipeline with supportive footings and pipeline outfall. Immediately following task completion, staking and flagging will be revised to re-establish the efficacy of respective protective buffers. All flagging and staking should be removed upon conclusion of final restoration activities or earlier if determined appropriate by a qualified biologist. Additionally, if there is removal of vegetation near the existing trailing black currant occurrence, a qualified biologist will be onsite to ensure adequate protection of the existing and any potential new occurrences of the species. 	Before and during active construction.	Implementation: Qualified Biologist Confirming Completion: MCSD

Mitigation Measure	Timing for Implementation	Responsible Parties
BIO-2: Pre-Construction Survey for Humboldt Mountain Beaver. No more than one week prior to the initiation of vegetation removal and/or ground disturbance within 50 feet of Humboldt mountain beaver habitat, a qualified biologist shall preform a pre-construction survey for the presence of active Humboldt mountain beaver burrows. Should any signs of beaver activity be observed in close proximity to construction areas, an appropriately sized "no-entry" buffer zone will be clearly staked and flagged. If deemed necessary during the pre-construction survey, a qualified biological monitor will also be utilized during construction.	Prior to construction activities in habitat area.	Implementation: Qualified Biologist Confirming Completion: MCSD
BIO-3: Pre-Disturbance Surveys for Nesting Birds. Vegetation clearing and other ground-disturbance activities associated with construction shall occur, if possible, during fall and/or winter months outside the bird nesting season (February-August). If such work cannot be confined to outside the nesting season a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area. Nesting bird surveys should focus on the footprint of the action area and include a 100-foot radius around its perimeter (where breeding habitat exists). Should active bird nesting be confirmed, species appropriate "no entry" buffers will be clearly staked and flagged by a qualified biologist. The size of such protective buffers should be developed in consultation with the California Department of Fish and Wildlife and should take into account the nature and intensity of the offending disturbance to ensure they are appropriately sized in order to prevent nest failure. In cases where such focused surveys are performed, a qualified biologist may be able to provide a more precise breeding and corresponding seasonal restriction period for the species being considered.	Prior to construction activities.	Implementation: Qualified Biologist Confirming Completion: MCSD
BIO-4: Pre-Disturbance Surveys for Amphibian and Reptile Species of Concern. No more than one week prior to commencement of construction activities, the active construction site within 50 feet of suitable habitat shall be surveyed by a qualified biologist for the presence of northern red-legged frog, foothill yellow-legged frog, and western pond turtle. Should any of these species be observed, the qualified biologist shall relocate any individuals found to nearby suitable habitat away from active construction areas and a barrier, such as wildlife exclusion fencing, shall be placed around the excavation area to prevent these species from moving into work areas. If any of the above species are observed during the pre-construction survey, CDFW shall be consulted to determine the best way to avoid impacts.	Prior to construction activities.	Implementation: Qualified Biologist Confirming Completion: MCSD

Mitigation Measure	Timing for Implementation	Responsible Parties
BIO-5: Survey for Western Bumble Bee. Between mid-March to mid-April, conduct a survey for Western Bumble Bee prior to any excavation and/or grading during the period to assess for the presence of this California State Candidate Endangered species at the site. If this species is not detected, no seasonal constraints specific to this insect are warranted. If Western Bumble Bee is detected at the site, ground excavation and/or grading should commence during the period between when it can be determined that the majority of queen Western Bumble Bee emergence has occurred and the majority of new colony initiation has not yet begun.	Prior to construction activities.	Implementation: Qualified Biologist Confirming Completion: MCSD
BIO-6: Wetland Identification and Demarcation. Prior to construction related disturbance within the project area, the perimeters of protective wetland habitat areas will be clearly staked and flagged by a qualified biologist as a special treatment zone (see mitigation measure BIO-1 and associated figure). Exceptions to allow temporary access within the wetland feature is restricted to the minimum limits of access required to complete respective construction tasks including: - Open-trenching across the wetland feature to remove and replace the existing overflow drain infrastructure with the new overflow drain pipeline; and - Construction access across the wetland feature between the various construction elements and the proposed staging area below the existing tanks, accessed from Hilltop Lane. Immediately following task completion, staking and flagging will be revised to re-establish the efficacy of respective protective buffers. All flagging and staking should be removed upon conclusion of final restoration activities or earlier if determined appropriate by a qualified biologist.	Before construction near wetland areas.	Implementation: Qualified Biologist Confirming Completion: MCSD
BIO-7: Open-Trenching Construction and Restoration. Where open-trenching occurs within wetland areas, the top 6-12 inches of excavated material (i.e. topsoil) will be stockpiled separately from deeper material and kept moist for use during backfilling to aid in rapid revegetation of the trench footprint and maintain pre-construction soil texture and drainage properties. This surface layer will not be compacted and may be filled 1-2 inches above grade to allow for natural settling. The overflow drain pipeline will be backfilled with native material except where engineered material is required by design constraints. Excess spoils from construction will be placed in a manner that will prevent discharge into wetland areas and if spread out onsite, will only be broadcast to a thickness of 2.54cm (1 inch). Any remaining spoils will be disposed of at approved offsite locations. Should	During construction.	Implementation: Contractor Confirming Completion: MCSD

Mitigation Measure	Timing for Implementation	Responsible Parties
trench conditions indicate significant potential for redirection of groundwater along the trench alignment, transverse baffles will be installed periodically as needed to prevent such redirection.		
BIO-8: Stormwater Pollution Prevention Plan. Prior to construction, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the project consistent with State Water Resources Control Board regulations. The SWPPP will include erosion and sediment control measures, and dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. A Qualified SWPPP Practitioner will oversee implementation of the Project SWPPP.	Before active construction.	Implementation: Qualified SWPPP Practitioner & Contractor Confirming Completion: MCSD
BIO-9: Construction Monitoring. During construction, a qualified biologist shall be engaged to periodically monitor the construction process, evaluate implementation of adopted mitigation measures during construction, and provide recommendations as necessary to ensure the protection of biological and wetland resources.	At least once a month during construction.	Implementation: Qualified Biologist Confirming Completion: MCSD
BIO-10: Post-Construction Restoration and Revegetation. After completion of construction activities, the project area will be restored to pre-project grades and contours, where possible (with the exception of the new reservoir footprint, its access route, and associated cut and fill slopes). In areas where significant soil compaction has occurred, the soil will be disked or scarified in an effort to restore pre-project surface infiltration and drainage characteristics. All disturbed areas will be promptly revegetated in accordance with the project planting plan with locally-sourced, regionally appropriate species to the extent possible.	Post-construction.	Implementation: Contractor Confirming Completion: MCSD
HYD-1: Detailed Design for Onsite Stormwater Runoff Capture. Detailed project design will include a stormwater drainage system that will capture natural stormwater runoff from newly created impervious surfaces for onsite irrigation and infiltration. The system will be designed to meet the County's MS4 permit standards which requires that post-project runoff shall not exceed the estimated pre-project flow rate for the 2-year, 24-hour storm. Design elements may include, but are not limited to, Low Impact Development (LID) features such as rain gardens, bioswales, bioretention features, and on-site infiltration basins.	Prior to construction activities.	Implementation: Project Engineer Confirming Completion: MCSD

Mitigation Measure	Timing for Implementation	Responsible Parties
HYD-2: Permanent Onsite Storage of Excavated Soils. In the event excavated soil is permanently stored onsite, the storage area will be limited to the slope directly south of the existing water storage reservoirs and west of the proposed reservoir as shown in IS/MND Figure 9 (included below for reference). Soils will be graded to match existing slopes and hydroseeded with a native grass seed mix. Straw wattles will be kept in place around the storage area in accordance with BMPs for stormwater management until such a time the area has been revegetated and is considered stable. 	During and post-construction.	Implementation: Contractor Confirming Completion: MCSD