Jurisdictional Wetland Delineation for Arcata Ridge Trail Project

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Prepared For:

The City of Arcata

Prepared by:

TransTerra Consulting

INTEGRATED ENVIRONMENTAL SERVICES

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REPORT SUMMARY

This report provides an assessment of the type and extent of jurisdictional wetlands and waters present in the proposed construction zone for the Arcata Ridge Trail project. The project area is located off Fickle Hill Road near Arcata in Humboldt County, California.

Jurisdictional resources considered for this report include wetlands and non-wetland "waters of the U.S." regulated by the U.S. Army Corps of Engineers (USACE); "waters of the State" regulated by the North Coast Regional Water Quality Control Board (NCRWQCB); and the bed, bank, and channel of all lakes, rivers, and/or streams (and associated riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW).

The jurisdictional delineation was completed by Tami Camper and Margaux Karp, of TransTerra Consulting March 2, 2020 using the USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). This field work followed a preliminary site visit in July 2019 to investigate biological resources and identify potential wetland areas. Verification of the wetland and waters boundaries was completed during a final site visit on March 11, 2020.

Wetland features were identified based on the USACE's three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and presence of wetland hydrology indicators. Because of the shallow and narrow morphologies for most of the stream channels in the project area, the limits of CDFW jurisdictional waters were identified as the top of bank rather than the ordinary high-water mark (OHWM).

The results of the study show that the project area includes 0.23 acres of jurisdictional wetland. The wetland is hydrologically connected to Grotzman Creek. Class II and III streams are present throughout the project area as well as a Class I stream in use as a domestic water supply.

Best management practices, recommended buffer zones, and any required mitigation will be determined in subsequent documentation as deemed necessary.

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Appendices

1.0 Introduction

1.1 Purpose and Need

This Jurisdictional Wetland Delineation report was prepared to provide baseline data about the type and extent of wetlands on the project parcel that would be under the jurisdiction of the U.S. Army Corps of Engineers (USACE), North Coast Regional Water Quality Control Board (NCRWQCB), and California Department of Fish and Wildlife (CDFW). The City of Arcata requested this study to address any possible impacts of the proposed trail on water quality or wetland habitat. This report is based on the fieldwork performed on various dates in 2019 and 2020.

The project will construct approximately 1,600 linear feet of new recreational trail and will include signage, vegetation removal, public access encroachment, and ongoing maintenance. The new trail segment will connect the Arcata Community Forest tract to the Sunnybrae Forest unit via a crossing at Fickle Hill Road and across the length of the subject parcel (Figure 1).

2.0 Regulatory Background for Wetlands and Water Quality

2.1 U.S. Army Corps of Engineers (USACE)

The USACE Regulatory Branch regulates activities that may discharge dredged or fill materials into "waters of the U.S." under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all "waters of the U.S." where the material (1) replaces any portion of a "waters of the U.S." with dry land or (2) changes the bottom elevation of any portion of any "waters of the U.S.". These fill materials include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters. The selection of disposal sites for dredged or fill material is done in accordance with guidelines specified in Section 404(b)(1) of the CWA, which were developed by the U.S. Environmental Protection Agency (USEPA).

2.2 Regional Water Quality Control Board (RWQCB)

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all "waters of the State" and to all "waters of the U.S.," including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance an activity with the potential for discharge into navigable waters will not violate water quality standards. Water Quality Certification must be based on findings that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives found in each of the nine RWQCBs' Basin Plans.

2.3 California Department of Fish and Wildlife (CDFW)

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the California Fish and Game Code sections 1600–1616. Activities of state and local agencies, as well as public utilities that are project proponents, are regulated by the CDFW under Section 1602 of the California Fish and Game Code. Because the CDFW includes streamside habitats under its jurisdiction that, under the federal definition, may not qualify as wetlands on a project site, its jurisdiction may be broader than that of the USACE. Riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA, and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated as a wetland. However, riparian forests are frequently included within CDFW regulatory jurisdiction under Section 1602 of the California Fish and Game Code.

In general, the CDFW extends jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or near a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

2.4 Additional Laws and Policies

In addition to state and federal policies described above, numerous other policies exist to protect wetlands, waters, and biological resources including the City of Arcata's regulations and policies for wetlands, California Environmental Quality Act (CEQA), California Endangered Species Act (CESA), and the Z'berg-Nejedly Forest Practice Act.

3.0 Environmental Setting

3.1 Location

The project area is a 6.17-acre parcel located off Fickle Hill Road in Arcata of Humboldt County, California (Figure 1). The legal location is Section 34, T6N, R1E, Humboldt Meridian, of the U.S. Geological Survey's (USGS) Arcata South 7.5-minute quadrangle map. The trail crossing begins approximately 1.5 miles east of the intersection of Fickle Hill and Park Avenue, and about 2 miles from Highway 101 as measured to the nearest off-ramp at 14th Street.

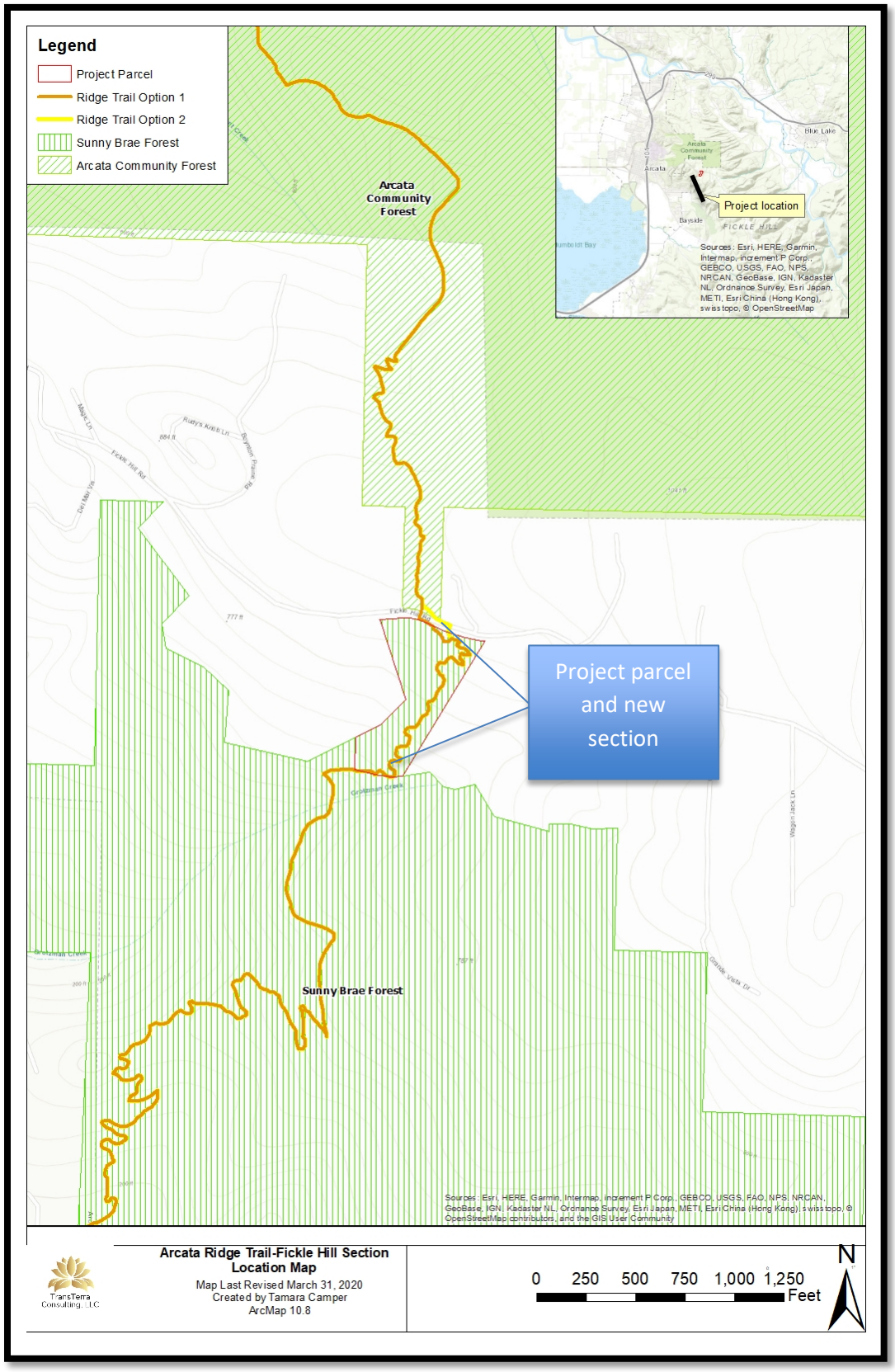

Figure 1. Project location.

3.2 Soil, Topography, Hydrology

The property is located in the Eureka Plain Watershed. Elevations are approximately 720-880 feet above sea level and slopes range from 15 to 30%. The regional climate is Mediterranean in nature with warm summers and cool, mild winters.[1]

Two soil types are mapped in the project areas on the Web Soil Survey.[2] The property area is primarily composed of Coppercreek-Tectah-Slidecreek complex, 9 to 30 percent slopes (map ID 580) and Coppercreek-Slidecreek-Tectah complex, 30 to 50 percent slopes (581). These soils are not considered hydric and consist of very deep, moderately well drained soils formed in colluvium and residuum from various rock sources including schist, sandstone, and mudstone.

The Coppercreek series consists of very deep, well drained soils that formed in colluvium and residuum from schist, sandstone, and mudstone. Coppercreek soils are on mountain slopes and broad ridgetops with slope gradients of 9 to 75 percent. Soil formation is associated with mean annual precipitation of 2160 mm and mean annual temperature of 11 degrees C. This series is found at elevations around 15 to 874 m with medium to high runoff and produces moderately high saturated hydraulic conductivity.

The Tectah series consists of very deep, well drained soils formed in colluvium and residuum derived from sandstone, mudstone, and metasedimentary rocks. Tectah soils are found on broad ridges and mountain slopes with slopes of 0 to 50 percent. Elevational ranges are 24 to 702 m with medium to exceedingly high runoff and moderately low to low saturated hydraulic conductivity. The soil is associated with mean annual precipitation of 2160 mm and mean annual temperature of 11 degrees C.

The Slidecreek series consists of very deep, well drained soils that formed in colluvium and residuum weathered from sandstone and mudstone. Slidecreek soils are found on mountain sides in highly dissected terrain and slopes of 9 to 75 percent. This series has high to exceedingly high runoff with moderately high to moderately low saturated hydraulic conductivity. They are found at broad elevations ranges of 24 to 768 m. Associated mean annual precipitation is 2160 mm and mean annual temperature is 11 degrees C.

The project area contains various unnamed tributaries that drain to Grotzman Creek. No wetlands are mapped on the property according to the National Wetland Inventory (NWI, and Humboldt GIS Portal (databases. However, the data available through these sources are not spatially refined enough to accurately depict smaller streams and wetland areas, and therefore field evaluations are required to verify the presence or absence of these features.

The project area is mapped as possessing moderate to high levels of instability. The area has a National Earthquake Hazards Reduction Program (NEHRP) soil geological unit rating of C, meaning the soils will propagate high shear-wave velocities during earthquakes. The project area is located on the pressure

[1] Humboldt County GIS Desktop (Accessed via http://webgis.co.humboldt.ca.us/HCEGIS2.0/)

[2] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. (Accessed via https://websoilsurvey.sc.egov.usda.gov/.)

ride of the Fickle Hill fault, which is part of the Mad River Fault Zone[3]. The area is not prone to liquefaction or lateral spreading but would be prone to landslides. The area is listed as having a high fire hazard severity but shows no documented fires in this area within the last two decades.

3.3 Vegetation

The primary natural vegetation community (Holland, 1986) of the project area is North Coast Coniferous Forest[4]. The dominant tree canopy is *Sequoia sempervirens* (Coast redwood) with scattered *Picea sitchensis* (Sitka spruce), *Abies grandis* (Grand fir), *Acer macrophyllum* (Bigleaf maple), *Alnus rubra* (Red alder), *Notholithocarpus densiflorus* (Tanoak), and *Pseudotsuga menziesii* (Douglas fir). The understory is fairly open with patches of shrubs including *Vaccinium ovatum* (Evergreen huckleberry), *V. ovatum* (Red huckleberry), *Gaultheria shallon* (Salal), *Rubus spectabilis* (Salmonberry), *Athyrium filix-femina* (Lady fern), *Polystichum munitum* (Sword fern). The herb layer in the project area is mostly sparse and dominated by *Oxalis organa* (redwood sorrel), *Iris douglasiana* (Douglas iris), *Lathyrus* sp. (Peavine), *Trillium ovatum* (Trillium), *Asarum caudatum* (Wild ginger) and various grasses. Denser vegetation including *Cortaderia jubata* (Pampas grass), *Cotoneaster* sp. (Cotoneaster), and *Hedera helix* (English ivy) occurs where the ground has been previously been disturbed and along the roadsides.

4.0 Methods

4.1 Wetland and Waters Delineation

Site visits were conducted during periods of normal conditions for temperature and precipitation for the area[5] during July 2019 and March 2020. On July 19, 2019, TransTerra Associate Biologists Margaux Karp and Megan Nibbelink completed a preliminary investigation to evaluate biological resources and identify areas of potential wetlands in the project area. The jurisdictional wetland delineation was completed by TransTerra Consulting Principal Tami Camper, M.A., and Associate Biologist Margaux Karp on March 2, 2020. The delineation followed the guidelines of the USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). A third site visit was conducted by Tamara Camper and Margaux Karp on March 11, 2020 to finalize the wetlands and waters boundaries.

Two field observation points were established to aid in the field delineation of the only observable wetland near the trail alignment. Point 1, the wetland observation point, was chosen based upon obvious hydrology and distinct vegetation. A pit was excavated as close to standing water as possible while still being dry enough to obtain a good core sample. The area was contained hydrophytic vegetation including *Juncus effuses* ssp. *pacificus* (Common rush), *Petasites fridgidus* (Palmate coltsfoot),

3 Hart, E.W., compiler, 1999, Fault number 13, Mad River fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults,

4 From Holland, 1986, Preliminary Descriptions of the Terrestrial Natural Communities of California <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=75893&inline>

5 https://w2.weather.gov/climate/getclimate.php?wfo=eka

Struthiopteris spicant (Deer fern), *Claytonia siberica* (Candy flower). Point 2 represented the closest, undisturbed upland area to Point 1, supporting typical non-hydrophytic vegetation consistent with the environment. See Appendix for notes on field observations.

It was evident from field observations that the soils, vegetation, and hydrology in some areas of the wetland had been disturbed historically. What had originally been the headwaters of a small Class III drainage was likely filled via road construction or natural erosion. Therefore, a modified methodology incorporating visible estimates of hydrological drainage patterns, geomorphic position, and vegetation transitions was used to determine the boundaries between wetland and upland.

Avenza was used for GPS points and tracking, and ArcMap was used to create the maps of the wetland boundaries and buffers. These new maps were compared to previous maps generated by City of Arcata staff and Timberland Resource Consultants, as well as with maps from historical reports for a timber harvest plan.

Streams were mapped in the field using Avenza. For this project, most stream channels were mapped at the streambed instead of the top of bank or Ordinary High-Water Mark (OHWM) because of the shallow and narrow stream morphology (~1-3 ft deep and wide) and sections of subterranean flow. The exception was the stream channel closest to the trail and wetland. In that area the top of bank was used to measure the extent of the stream to establish more accurate proximity of trails to the stream.

5.0 Results and Discussion

5.1 Jurisdictional Wetland and Waters

The field data show that the project area contains 0.23 acres of Palustrine Forested Wetland. It is likely that the wetland is hydrologically connected to the unnamed tributaries flowing into Grotzman Creek. The wetland may have previously been associated with the headwaters of a Class III drainage which was subsequently cut or filled during logging operations. Drainage in the wetland area is restricted by an impervious clay layer approximately 16-20" below the surface. A small trail currently bisects the area.

The vegetation in the wetland area was unique in that it contained the obligate wetland (OBL) plant *Stachys ajugoides* (Hedgenettle); the facultative wetland (FACW) plants *Petasites frigidus* (Palmate coltsfoot) and *Juncus effuses* (Spreading rush); and the facultative (FAC) species *Claytonia siberica* (Candyflower) and *Struthiopteris spicant* (Deer fern). The area met the wetland criteria for hydrophytic vegetation by dominance (66.7%) as well as prevalence (2.5). There was a matrix of bare ground, small woody debris, and surface water. During the survey, the surface water was limited to small depressions that were only 1-2 inches deep and 2-3 feet in diameter.

Primary hydrologic indicators based on the USACE manual included Surface Water (A1), Saturation (A3), Sparsely Vegetated Concave Surface (B8), Oxidized Rhizospheres along Living Roots (C3). Secondary hydrologic indicators included Drainage Patterns (B10), Geomorphic position (D2), and FAC-Neutral Test (D5).

The field mapping showed that sections of the streams were subterranean as a result of historical grading, erosion, or burial by debris. Some lower gradient areas of the streams were flat and dominated by *Lysichiton americanus* (Skunk cabbage) and *Carex obnupta* (Slough sedge). Because these communities were confined within a distinct bed, bank, and channel they were mapped as streams rather than as wetlands. From the field observations, it is estimated that most streams in the field area are likely intermittent perennial streams and would be classified as Class II streams. The stream along the northwestern border of the parcel is classified as a Class I stream because it is a domestic water supply for the adjacent residence

5.2 Potential Impacts

If not avoided, potential direct and indirect impacts to the wetland and streams could occur. Impacts include modification of hydrology, increased sedimentation, and other sources of pollution, as well as impacts to wetland species. Currently the trail alignment is approximately 23.5 feet from the wetland area and 14.5 feet from the observable channel of the watercourse. Temporary impacts to these areas during trail construction could include vegetation removal and disturbed and compacted ground. Permanent impacts could include pollution or disturbance from human and pet use.

Other streams in the area appeared to be far enough away from the proposed trail alignment that impacts would not occur. Though the area demonstrated historic disturbance, active erosion and or soil movement was not observed. The small and large woody debris, in addition to vegetation is expected to filter any trail runoff if current standards for erosion control are implemented during construction.

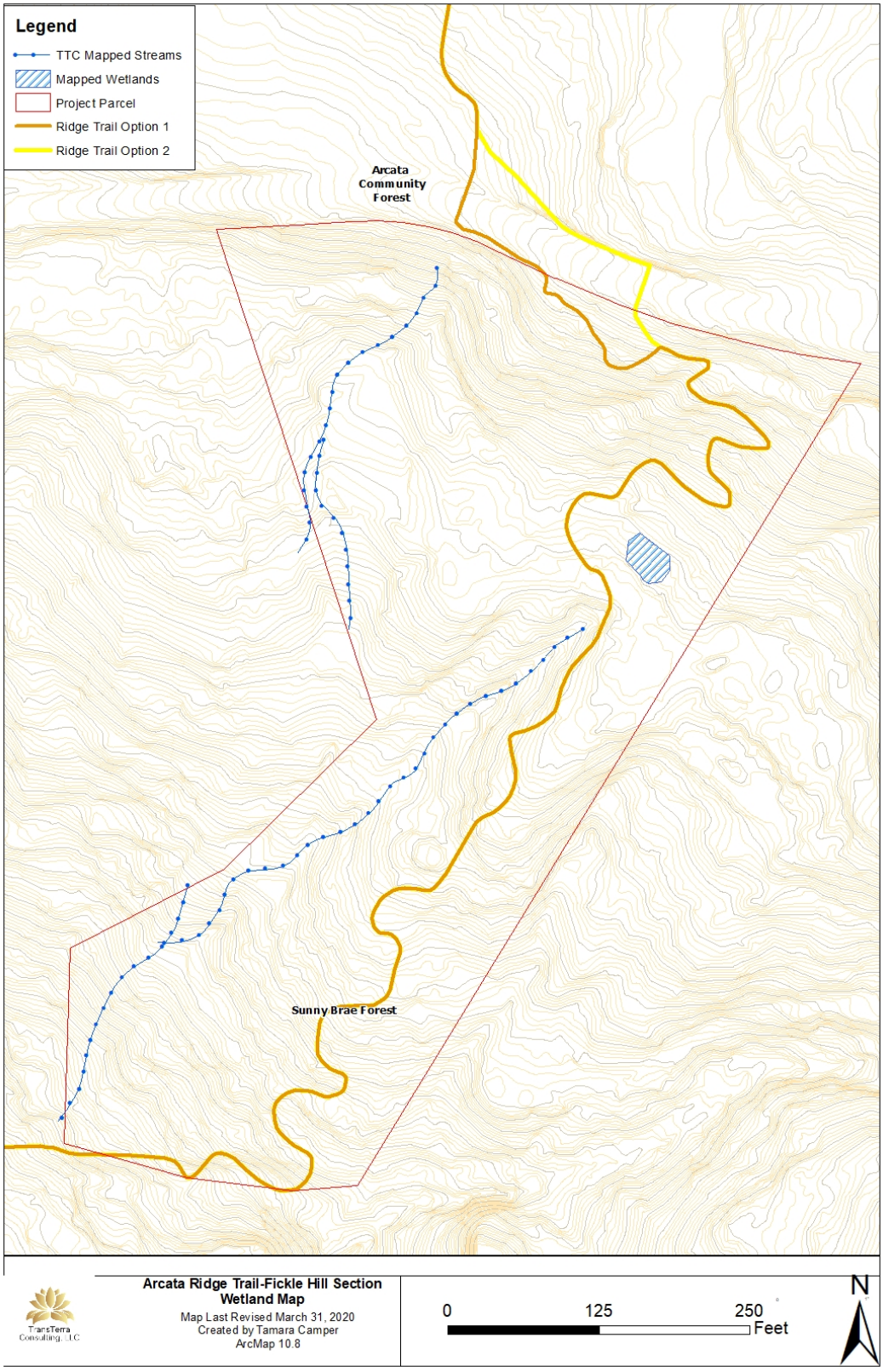

Figure 2. Location of wetland areas and streams as mapped in the field in project area.

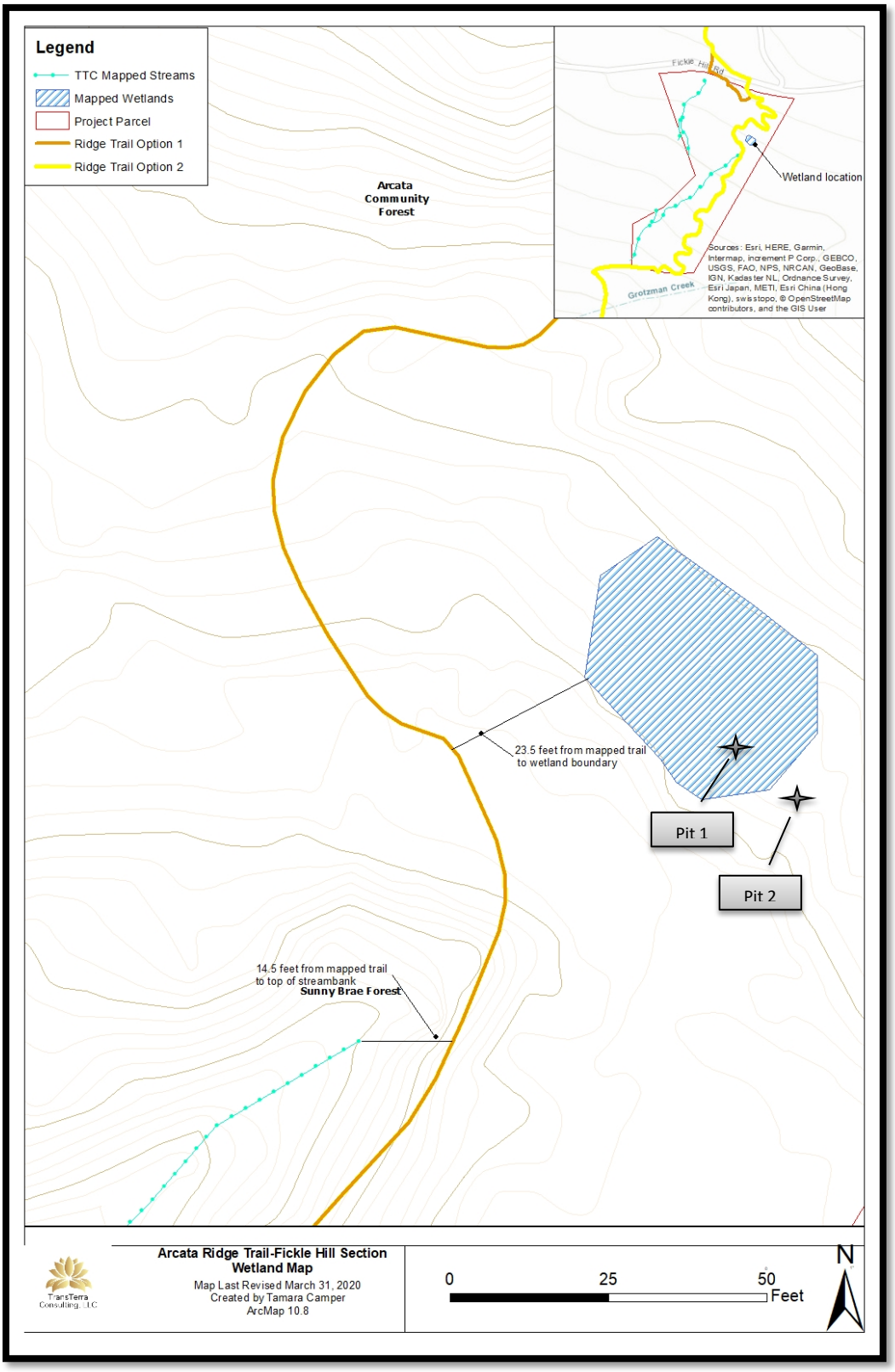

Figure 3. Approximate distance of wetland and Class III drainage near proposed trail alignment.

5.3 Recommendations

Recommendations for the project site include the following measures:

- Avoid placing the trail in wetland and stream areas. The current project appears to avoid wetlands and streams.
- Minimize the trail width near wetlands and streams.
- Use proper erosion control during trail construction. Natural fiber (jute) wattles are preferred over plastic netting to avoid wildlife entrapment.
- Minimize ground disturbance and vegetation removal near wetland and streams.
- Use additional, natural, pervious surfaces on trail sections near wetlands and streams
- Construct the trail during dry months (typically April through October).
- Place barriers such as a hedge of native vegetation or split rail fence with signage to avoid impacts to wetlands during and after trail construction.
- Conduct pre-construction meetings to educate all trail crews about wetland avoidance.
- Report any observed erosion, fill, or water quality issue to appropriate agency personnel.
- Conduct periodic monitoring during and after construction to ensure that the trail is not impacting wetlands.
- If impacts to wetland or streams are observed, create, and implement Mitigation and Monitoring Plan using consultation with appropriate agencies.
- Currently, construction work within wetland and stream areas is not expected. If trail construction is modified and may potentially affect streambeds or wetlands, obtain necessary permits, licenses, and certifications (e.g. CDFW LSAA/1600 or USACE 404)

Follow all recommendations outlined by existing agency policies for minimizing impacts to natural resources and incorporate technical assistance to determine the possible extent of impacts to listed resources and appropriate mitigation measures.

Please contact me with any comments or concerns regarding this memorandum or future work required for your project. I can be reached at tami@trans-terra.com or (707) 840-4772. I have included my project experience as an attachment to this memorandum as it is often requested by agency personnel reviewing work of this nature. (Appendix B)

6.0 References

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Appendix A: Field Photos


Typical upland habitat


Wetland area


Redox features in soil sample


Ponding and small drainage features in wetland area.

Wetland vegetation within stream channel

Higher gradient channels

Transition to subterranean flow

Undercutting of soil by subsurface flow

Appendix B: Principle Investigator Qualifications

Tamara Camper
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Education

December 2007-M.A. Biology, HUMBOLDT STATE UNIVERSITY
December 1999-B.S. Environmental Science, WESTERN WASHINGTON UNIVERSITY
RICHARD CHINN 40 HR WETLAND TRAINING DECEMBER 2003

Experience

May 2018-Present-Principle-Environmental Scientist, TRANSTERRA CONSULTING LLC
Principal Owner at TransTerra Consulting. Providing Environmental Consulting Services including Biological Assessments, Rare Species Surveys, Vegetation and Habitat Typing/Mapping, Stream and Wetland Surveys, Environmental Impact Assessments, Permitting, Land Use/Planning, and CEQA/NEPA Documents

November 2011-May 2018-Associate Environmental Planner, CALTRANS
Promoted through increasingly responsible positions based on performance and experience in Humboldt, Del Norte and Mendocino. Served as Coastal Liaison, Restoration Specialist and CEQA/NEPA Coordinator. Developed programmatic interagency guidelines, workload coordination, permit process training, budgets, contracts, and internal process efficiency. Wrote and reviewed environmental documents including EAs and IS-MNDs, BAs, Section 7 and 10 consultations, oversaw and conducted biological/wetland surveys, mitigation and monitoring work and reporting.

October 2008-November 2011-Biologist/Environmental Planner, STREAMLINE PLANNING CONSULTANTS
Provided natural resource and policy expertise for a wide range of public and private projects affecting natural resources. Conducted stream/riparian assessments, botanical surveys, wetland delineation, impact assessments and mitigation/monitoring reports in accordance with CEQA, FPR, ESA, NEPA, the Water Quality Act, Coastal Act, and other relevant laws for private landowners. Assisted with consultation, coordination, and permit applications for listed species. Developed alternatives and mitigation design and negotiated sensitive and complex issues with multiple stakeholders.

March 2003-November 2008-Owner-Biologist, CAMPER CONSULTING
Provided botanical/wildlife surveys, wetland delineation, impact assessments and mitigation reports in accordance with CEQA and other relevant laws for private landowners. Extensive experience working on commercial and private timberlands for THP/NTMP work.

January 2001-March 2003-Wildlife Technician, CAMPBELL TIMBERLAND MANAGEMENT
Developed a botanical program including the coordination and conduction of botanical surveys, impact assessments, mitigation reports, monitoring studies. Maintained public relations and relationships with state and federal agency personnel. Developed and maintained GIS and other databases for survey findings. Assisted with NSO, anadromous fish and amphibian monitoring, surveying, and habitat analysis.

March 2000-October 2000-Fisheries Technician, MENDOCINO REDWOOD COMPANY
Conducted anadromous fish and amphibian monitoring, surveying, and habitat analysis. Utilized dive counts, electrofishing, sediment sampling, fish trapping, insect sampling and water quality monitoring to assess impacts to salmonids and other aquatic species in conjunction with the Department of Fish and Wildlife.

May 1998-January 1999-Botanical Propagation Specialist, SKAGIT ROSE FARMS
Identified, propagated, and maintained an inventory of native plants of the Northwest Coastal Region. Researched and developed interpretive gardens of native plant ecosystems

Tami Camper
Owner-Founder

Tami is the founder of TransTerra Consulting LLC. She obtained a B.S. in Environmental Science from Western Washington University and M.S. in Biology from Humboldt State University. She has worked on publications including a rare plant guide for timberlands of Mendocino County published by MCRCD. She has worked as a professional biologist and planner for over 20 years, specializing in wetland/stream surveys, wildlife/vegetation mapping, rare species surveys, biological assessments, impact assessments, mitigation and monitoring plans, CEQA/NEPA and land-use planning. Though she has worked as an independent consultant for most of her career, she has also worked for HSU, Caltrans, Mendocino Redwood Company, and Streamline Planning (now SHN) to round out her experience. Her desire is to implement her diverse background and passion for the natural world to aid clients through the environmental process. She also is also a member of the Arcata Sunrise Rotary Club, California Native Plant Society, The Wildlife Society, The Society of Wetland Scientists and other local non-profits and professional organizations.

Margaux received her Bachelor's Degree in Molecular Biology from the California State University of Monterey Bay in 2018. She grew up in Humboldt and is very familiar with the unique geological and political landscape. Her experience encompasses restoration, environmental education, and lab techniques. She strives to utilize her molecular background to share an in depth understanding of the environmental field to promote policy and preservation.

Margaux Karp
Biologist/Planner

Holly Vadurro
Biologist/Botanist

Holly earned a Bachelor's degree in Biology from College of Charleston, in 1996. She came to Humboldt State University through the student exchange program and knew she had found her home. During her first years here, her job enabled her to explore the expanse of Humboldt County and perform various biological field surveys including botanical, fishery, mollusk, amphibian, bryophyte and migratory birds. She also performed landslide analyses. Later on, she worked at Winzler and Kelly Consulting Engineers (now GHD) as an Environmental Scientist and conducted wetland delineations, botanical surveys, and collected and analyzed water quality data.

Megan received her Bachelor's degree in Botany from Humboldt State University in 2019. She will be returning to HSU to pursue her Master's degree in Biology with a thesis focusing on fossil plants from the lower Devonian of Québec, Canada. Her previous work experience includes curation and care of an extensive living collection of plants from around the world, state-of-the-art biological lab facility and research equipment maintenance, and education. Currently, she is working on a diversity survey of ancient plants and will be presenting an oral paper at the Botanical Society of America conference this summer.

Megan Nibbelink
Botanist

Appendix C: Field Forms

ATTACHED