Technical Memorandum

April 22, 2025

To	Darren Mierau, Project Director, CalTrout; and Katy Gurin, Project Manager, CalTrout	**Contact No.**	(707) 267-2207
From	Kerry McNamee, Environmental Planner, GHD	**Email**	kerry.mcnamee@ghd.com
Copied to	Andrea Hilton, GHD	**Project No.**	12624303
Project Name	Elk River Estuary (Planning Area 1) Restoration Project		
Subject	Agricultural Conversion Analysis – Elk River Estuary Restoration Project		

1. Introduction

This Agricultural Conversion Technical Memorandum identifies and analyzes agricultural resources within the Elk River Estuary Planning Area 1 (PA1) Restoration Project (Project) that may be subject to regulation by Humboldt County zoning code (i.e. Conditional Use Permit), the Williamson Act, Humboldt County General Plan, Humboldt Bay Area Plan Local Coastal Program (HBAP) and Coastal Act. Planning Area 1 encompasses approximately 867 acres (ac) including 5.3 miles of Elk River and Swain Slough channel length, located in the former estuary of the Elk River, which is now comprised of agricultural bottomland and slough channels in southern Eureka, California (**Appendix A, Figure 1 – Vicinity Map, and Figure 2 – Overview Planning Area 1**). The California Coastal Zone boundary bisects the Project Area, resulting in lands to the north of the boundary in the Coastal Zone, and lands south of the boundary outside of the Coastal Zone. All parcels within the Project Area are zoned Agriculture Exclusive and Agriculture General (see **Appendix A, Figure 3 – Zoning and Williamson Act Parcels**). There are 42 parcels in PA1 (**Figure 2 – Overview Planning Area 1**). Of the 42 parcels, participating landowners are listed in Table 1.

Table 1. Summary of Participating Landowners in Planning Area 1

APN	Landowner Name	Physical Address
302-181-008 302-181-026 305-021-003 305-181-004	Robert D Prior	PO Box 23 Eureka CA 95502
305-181-004	Wiyot Tribe	1000 Wiyot Drive Loleta, California 95551
304-191-001	Robert D & Lois H Prior	5752 Elk River Rd Eureka CA 95503
302-181-008 305-021-003 304-191-001	CalTrout	
302-181-012 305-031-010 305-031-011	California, State of	PO Box 3700 Eureka CA 95502
302-181-022	Randall D Younger	4866 Elk River Rd

APN	Landowner Name	Physical Address
302-181-029		Eureka CA 95503
302-181-028	Humboldt Community Services Dist.	PO Box 158 Cutten CA 95534
304-092-015 304-211-003 304-221-002 304-221-003 304-221-004	Eugene J & Betty L Senestraro	510 Valley View Rd Eureka CA 95503
304-171-001 304-171-002 304-181-002 304-181-005 304-191-002 305-021-009 305-021-010 305-021-011	Trueman E Vroman	2950 E St Eureka CA 95501
304-181-001 304-201-001 305-031-001 305-031-002 305-031-012 305-031-013 305-041-030 305-041-051 305-121-005 305-121-006	Shanahan Family LLC Co	PO Box 6514 Eureka CA 95502
304-211-006	Blake & Stephanie Alexandre	8371 Lower Lake Rd Crescent City CA 95531
305-021-006 305-021-007	Douglas & Patricia Frink	5385 Elk River Rd Eureka CA 95503
305-031-006 305-041-031 305-121-007	Humboldt Redwood Company LLC Co	PO Box 996 Ukiah CA 95482
305-031-007 305-031-008 305-031-009	Allpoints Outdoors Inc	3408 Jacobs Ave Eureka CA 95501

This analysis includes review of soil mapping data, agricultural productivity of the parcels and a determination of whether all or parts of PA1 meet the Prime Agricultural Land designation, which is a designation used in the Humboldt County General Plan. This analysis also compares Project actions and resulting agricultural land use conversions to regulations in the Humboldt County General Plan, Humboldt County Zoning Code, the Humboldt County Williamson Act Advisory Committee, HBAP, and the Coastal Act for consistency and to determine if Project actions are conditionally permitted and/or require special allowances. Project-specific vegetation mapping and wetland delineation data, communication with the Project team, and guidance from the California Department of Conservation (DOC), and Natural Resources Conservation Service (NRCS) Soil Survey mapping units were utilized to determine the baseline agricultural productivity and potential designation of lands as Prime Agricultural Lands within PA1. In total, PA1 contains approximately 653 acres of Prime Agricultural Land, which is further described in Section 4.

1.1 Purpose of this Memorandum

This analysis will be used to determine the regulatory status of potential agricultural resources within PA1 in accordance with the agricultural designation definitions utilized in the Humboldt County General Plan, Humboldt County Zoning Code, the Humboldt County Williamson Act Advisory Committee, HBAP, and the Coastal Act. This analysis provides analysis and a determination of the acreage of land that is considered Prime Agricultural Land (if any), and analysis of whether implementation of the Project would convert Prime Agricultural Land, and/or conflict with Humboldt County General Plan, Humboldt County Zoning Code, Williamson Act Advisory Committee guidelines or the HBAP, or Coastal Act.

1.2 Project Description

The Project is one phase of a transformative, watershed-scale effort to restore beneficial uses of water; improve water quality conditions; reduce nuisance flooding; rehabilitate habitat for focal fish species, including Coho Salmon, Chinook Salmon, steelhead, Coastal Cutthroat Trout, Tidewater Goby, and Longfin Smelt; expand riparian habitat; and improve overall ecosystem health in the Elk River. Detailed Project objectives were formulated with the Elk River community as part of the Elk River Watershed Stewardship Program, which include restoration of natural tidal marsh and estuarine functions, and protection of productivity and long-term sustainability of existing forestry and agricultural operations, among others.

Consistent nuisance flooding occurs within the Project Area due to abundant sediment inputs from the upper watershed that have flowed downstream and settled in the lower Elk River channels. This settling has reduced the downstream channel capacity which has increased the frequency of flooding in the lower watershed. The Elk River Recovery Assessment, conducted in 2014-19, assessed this severe sediment impairment, consequent nuisance flooding and habitat degradation and conducted detailed hydrodynamic and sediment modeling to evaluate alternative sediment remediation and habitat rehabilitation approaches. The Stewardship Program, initiated in 2019-22, held extensive meetings with Elk River adjacent landowners, including those whose properties are impacted and who would need to voluntarily participate in restoration efforts, to gain their support for Actions on their properties. These Actions and an associated regulatory compliance strategy were presented in the Elk River Recovery Plan (CalTrout 2022). In the Recovery Plan, the entire Program Area was broken into four Planning Areas, with each Planning Area undergoing planning and engineering design separately. Planning Area 1 is the current phase of the Project addressed in this Tech Memo.

Project Actions would restore natural tidal and fluvial (i.e. river or creek) drainage patterns over the 867-ac PA1. Project Actions are shown in **Appendix A, Figure 4 – PA1 Elements**, and include the following:

1) remove and/or upgrade drainage infrastructure;

2) reduce or remove levees;

3) breach an abandoned railroad grade;

4) restore tidal sloughs and tidal creek channels and their connectivity to mainstem channels;

5) create backwater features for seasonal waterfowl and winter salmonid rearing habitat (primarily for federally listed Coho Salmon);

6) manage invasive vegetation;

7) expand native plant communities; and

8) recontour portions of the floodplain to guide winter flood-flows across the floodplain and back into the slough channel network toward suitable aquatic habitat.

Restoration of PA1 is crucial to the ecological function of the Elk River watershed, to the re-establishment of salt marsh, and to the recovery of salmon, steelhead, and other state and federally listed fish and wildlife

populations. The lower Elk River is also vulnerable to sea level rise: conversion to salt marsh is occurring in unmaintained pastures, roads in this vicinity currently flood during king tides, and sea level rise will continue to threaten existing land uses (Laird 2007). CalTrout recently completed land acquisitions to facilitate this Project. These land acquisitions and restoration work in the estuary are part of a managed retreat strategy to enable local ranchers to move operations to higher ground while creating space to increase the resilience of the estuary ecosystem to climate change.

1.3 Existing Site Conditions

Planning Area 1 is comprised of tidal wetlands, agricultural lands naturally converting to tidal wetlands, and agricultural lands in the lower estuary spanning 0 to 50 feet in elevation above mean sea level (see **Appendix A, Figure 5 – Existing Land Uses**).

Three parcels totaling 100 acres in the northwest PA1 known as the Elk River Wildlife Area are owned by CDFW and managed for wildlife and tidal marsh habitat (APNs #4, #10, and #14). This area support a variety of salt- and brackish-tolerant vegetation species such pickleweed (*Sarcocornia pacifica)*, meadow barley (*Hordeum brachyantherum*), creeping bentgrass (*Agrostis stolonifera*), reed canarygrass (*Phalaris arundinacea*), California blackberry (*Rubus ursinus*), and Sitka spruce (*Picea sitchensis*) (CalTrout 2023).The CDFW owned parcels are not subject to the Humboldt County Conditional Use Permit and are excluded from this agricultural analysis. An additional privately owned ten-acre tidal wetland is located at the northern extent of PA1 and supports a forested wetland complex (APN #1 as shown in **Figure 2**).

Approximately 51 acres of agricultural lands converting to tidal wetlands exist in the northeastern portion of PA1. One of these parcels support two horses (APN #2), and the other two APNs are either open space (APN #5) or are utilized for water infrastructure by the Humboldt Community Services District (APN #6). The remainder of these lands (APNs #3 and #11) do not actively conduct agricultural operations. These lands were previously utilized for agriculture, predominantly via grazing, however sea level rise effects (i.e. increased tidal inundation and increased water table), in addition to the reduced channel capacity within Elk River from sedimentation discussed above, have caused increased flooding in these areas. CalTrout recently acquired lands located east of Elk River Road and south of Swain Slough (APN #3 and #11). These lands will be managed for wetlands restoration and watershed management into the future independent of this Project because they are considered retired from agriculture use due to land use conversions to tidal wetlands resulting from sea level rise.

There are two small parcels (APNs #13 and #15) that are residential and are not utilized for agriculture.

The remainder of PA1 consists of agricultural land owned by numerous landowners and is predominantly comprised of pasture grasses with mapped occurrences of Pacific silverweed (*Argentina egedii*) which is a hydrophytic plant species (i.e. typical wetland vegetation) in the central portion of PA1 (CalTrout 2023). Three parcels, located south and east of the tidal wetlands, are enrolled in Williamson Act contracts (APNs #16, #22, and #25). Grazing is conducted seasonally throughout PA1 from approximately June through November (or when conditions are dry enough to support agriculture), typically resulting in a six to nine month grazing season. Flooding consistently occurs throughout central PA1 which has limited grazing and the productivity of this area. Aerial imagery displays drainage patterns indicative of consistent perched water in this central area. Drainage infrastructure, including numerous tide gates, culverts and agricultural ditches, exists within PA1, however no irrigation infrastructure exists. Vegetation throughout the agricultural lands consists of the following pasture grasses: creeping bentgrass – tall fescue (*Agrostis stolonifera – festuca arundinacea)*, velvetgrass (*Holcus lanatus)*, perennial ryegrass (*Lolium perenne)*, and Kentucky bluegrass (*Poa pratensis)* (CalTrout 2023).

Three parcels comprise the Elk River riparian corridor (APNs #41, #42 and #28), are vegetated with woody species (willow [*Salix* sp.] dominant) until reaching the approximate northern boundary of APN #25 where it transitions to an herbaceous corridor of salt water tolerant vegetation. The upstream extent of Orton Creek in the southeast portion of the PA1 contains an isolated vegetated corridor of woody species before Orton

Creek is routed underground. A culvert conveys Orton Creek 1,500 feet underground to either another culvert or to a series of agricultural ditches that eventually drain to either the Elk River or Swain Slough (CalTrout 2023). As discussed above, per aerial imagery, meandering drainage patterns associated with Swain Slough in the central portion of PA1 are evident, indicating poor drainage and consistent flooding occurring in the area. Moving north, Swain Slough becomes more channelized west of Elk River Road and flows under Elk River Road to the northeast where it joins Martin Slough and flows west into the Elk River at the northern portion of PA1.

Pacific Gas and Electric Company (PG&E) power and gas utility lines, abandoned railroad, and a Humboldt Community Service District water line occur in PA1. Agricultural infrastructure occurs in the southeastern corner of PA1, including barns, garages, roadways and a pond, utilized for dairy and ranch operations (see **Appendix A, Figure 4**).

Zoning throughout PA1 consists of Agriculture Exclusive (AE) or Agriculture General (AG), with various combination zones (see **Appendix A, Figure 3**). Zoning associated with each parcel number is shown on **Table 2**.

Table 2. Parcel Numbers and Associated Zoning within Planning Area 1

Assessor Parcel Number	Zoning	Interpretation
302-181-012	AE/W, F	Agricultural Exclusive with Streamside Management Areas and Wetlands (W), and Flood Hazard Area (F) combining zones
302-181-022; 302-181-029; 302-181-028; 305-031-010; 305-021-003; 305-031-001; 305-031-011; 305-031-012; 305-031-013; 305-121-006; 305-121-005	AE-60/F, T	Agricultural Exclusive with a minimum lot area of 60-acres with Flood Hazard Area (F), and Manufactured Home (T) combining zones
302-181-008	AE-60/F, T; RS-5-M/F,R	Agricultural Exclusive with a minimum lot area of 60-acres with Flood Hazard Area (F), and Manufactured Home (T) combining zones. Residential Single Family with a minimum lot size of 5,000 square feet with manufactured homes (M), with Flood Hazard Area (F), and Streams and Riparian Corridor Protection (R) combining zones.
305-181-004	AE/A, F, T	Agricultural Exclusive with Archaeological Resources (A), Flood Hazard Area (F) and Manufactured Home (T) combining zones.

Assessor Parcel Number	Zoning	Interpretation
304-191-001	AG-B-5(5)-Q; AE-60/F+	Agriculture General with a Special Building Site (B) of at least 5 acres, and a Qualified (Q) combining zone; Agriculture Exclusive with a minimum lot size of 60 acres, and Flood Hazard Area combining zone (F)
304-201-001; 305-041-030	AE; AE-60/F, T	Agricultural Exclusive; and Agricultural Exclusive with a minimum lot area of 60-acres with Flood Hazard Area (F), and Manufactured Home (T) combining zones
305-041-051	AE; AG; AE-40/W, R	Agricultural Exclusive; Agricultural General; Agricultural Exclusive with a minimum lot area of 40-acres with Streamside Management Areas and Wetlands (W) and Streams and Riparian Corridor Protection (R) combining zones
304-221-003; 304-221-004; 304-211-006	AE	Agricultural Exclusive
304-221-002; 304-211-003	AG-B-5(5)-Q	Agriculture General with a Special Building Site (B) of at least 5 acres, and a Qualified (Q) combining zone

1.4 Proposed Site Conditions

Under proposed Project actions, approximately 135-acres of agricultural land would actively convert to a natural landscape comprised of APNs #18 and #27. A 12-acre corridor would convert to riparian conditions comprised of portions of APNs #34, #35, #38, #32, and #30 (see **Appendix A, Figure 6 – Proposed Land Uses**). Passive conversion to tidal wetlands is anticipated to continue in areas shown as “Agricultural Lands Naturally Converting to Tidal Wetlands” on **Appendix A, Figure 5**. These areas of passive conversion are not considered in this analysis because this conversion would occur independent of Project Actions. Areas anticipated to actively convert out of agricultural production due to Project Actions are shown on **Appendix A, Figure 6**, and further described below.

1.4.1 APN #18 and #27

These areas were delineated as predominantly wetlands. APN #18, which was recently transferred to Wiyot Tribe ownership, contains estuarine and palustrine emergent wetlands, with the estuarine wetlands occurring along Elk River and the western boundary, and the palustrine emergent wetlands occurring in the central portion of the parcel. There is an area of one parameter wetlands in the south and small corridors of

uplands along the western boundary (Stillwater Sciences 2022). APN #27, which was recently transferred to CalTrout ownership for ultimate transfer to CDFW ownership as part of the Elk River Wildlife Area, contains mostly palustrine emergent wetlands comprised of herbaceous ground cover, mostly agricultural grasses, with a corridor of uplands along Elk River Road to the east (Stillwater Sciences 2022). These areas consistently flood and these parcels have recently changed ownership as a component of this Project due to the limited grazing and productivity of the parcels. This proposed land use changes would improve drainage in adjacent areas of PA1 due to the improved flood water retention capacity in these 135-acre areas, which is anticipated to improve the workability and productivity of adjacent lands. This land use conversion would improve land use compatibility. Updated and improved land use compatibility is necessary in the sediment-impaired Elk River estuary, which is located in Humboldt Bay, an area experiencing the fastest rate of relative sea level rise on the west coast of the United States (Anderson 2018).

1.4.2 Multiple APN Restored Orton Creek Corridor

This 12-acre corridor would become the Orton Creek riparian corridor and channel. Under existing conditions Orton Creek terminates at the western extent of the woody corridor on APN #34, where it flows subsurface through an approximate 1,500-foot culvert into either another culvert or an agricultural ditch, which then flows into numerous other agricultural ditches and potentially another culvert before flowing into Elk River or Swain Slough. This area can experience seasonal flooding due to the undersized capacity of the existing Orton Creek culvert and agricultural ditches, and difficulty in maintaining this culvert. Periodically this culvert will become clogged, which can cause localized flooding.

The proposed daylighting of Orton Creek would improve drainage throughout PA1 because Orton Creek would be restored to flow into Swain Slough, which would more effectively convey flow volume from the upper watershed and localized area as compared to a series of culverts and ditches that require maintenance and upkeep to avoid overland flooding. The reconnection of Orton Creek with Swain Slough would mimic a natural drainage pathway and would improve conveyance of flow off of adjacent agricultural lands to increase the productivity of surrounding agricultural lands.

2. Regulatory Setting

The following policies or laws provide regulatory protections to agricultural resources. Regulatory text is divided between Coastal Zone policies and Inland policies. California Environmental Quality Act (CEQA) agricultural impact analysis questions are not included in this analysis because this Project qualifies under the State Exemption for Restoration Projects and is considered exempt from CEQA.

2.1 Coastal Zone Policies

The approximate northern half of PA1 is located in the Coastal Zone. Within this section of PA1, active waterways and adjacent buffers are within the State or Appeal jurisdiction, which is subject to the Coastal Act, or the HBAP, and appealable to the Coastal Act, respectively. Areas outside of active waterways and adjacent buffers are considered within the Local jurisdiction which is subject to the HBAP (see **Appendix A, Figure 3**).

2.1.1 California Coastal Act

The California Coastal Act (CCC 2022) refers to the definition of Prime Agricultural Land (Government Code Section 51201(c)). All five subdivisions are applicable under the Coastal Act, i.e. if lands meet one of the five subdivisions of Gov. Code 51201(c) it is considered Prime Agricultural Land as described below.

Government Code Section 51201(c)

"Prime agricultural land" means any of the following:

(1) All land that qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability classifications.

(2) Land which qualifies for rating 80 through 100 in the Storie Index Rating.

(3) Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture.

(4) Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars ($200) per acre.

(5) Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars ($200) per acre for three of the previous five years.

Independent of agricultural designations, the following section from the Coastal Act provides guidance on when lands may be converted out of agricultural production.

Section 30241. *The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following:*

a. *By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.*

b. *By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.*

c. *By permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250* (which relates to the location of new development)

d. *By developing available lands not suited for agriculture prior to the conversion of agricultural lands.*

e. *By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.*

f. *By assuring that all divisions of prime agricultural lands, except those conversion approved pursuant to subdivision (b), and all development adjacent to prime agricultural lands shall not diminish the productivity of prime agricultural lands.*

Section 30242 Lands suitable for agricultural use; conversion

All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (l) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250 (which relates to the

location of new development). *Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.*

2.1.2 Humboldt Bay Area Plan Local Coastal Program

Both Sections 30241 and 30242 from the Coastal Act (Section 2.1.1) are also listed in the HBAP, however there is a slight difference in Section 30241 within the HBAP which does not include mention of (f) which states that development adjacent to prime agricultural lands shall not diminish the productivity of said lands. There is no development proposed under the Project and thus subsection (f) is moot. Both Sections 30241 and 30242 are listed below for continuity.

Section 3.34 Agriculture

Section 30241. *The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy and conflicts shall be minimized between agricultural and urban land uses through all of the following:*

a. *By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.*

b. *By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of the lands would complete a logical and viable neighborhood and contribute to a stable limit to urban development.*

c. *By developing available lands not suited for agriculture prior to the conversion of agricultural lands.*

d. *By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.*

e. *By assuring that all divisions of prime agricultural lands, except those conversion approved pursuant to subdivision (b), and all development adjacent to prime agricultural lands shall not diminish the productivity of prime agricultural lands.*

Section 30242. *All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development with Section 30250* (which relates to the location of new development). *Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.*

B. Compatible Uses

1. *The zoning of all agricultural lands shall not permit any use that would impair the economic viability of agricultural operations on such lands; and* ***a conditional use permit shall be required of any proposed use not directly a part of agricultural production of food or fiber on the parcel****; except that on parcels of 60 acres or larger, a second house for parents or children of the owner-operator shall be considered a direct part of agricultural production.*

   Other uses considered compatible with agricultural operations include*:*

   a. ***Management for watershed***

   b. ***Management for fish and wildlife habitat***

2.2 Policies Applicable to Agricultural Lands Outside the Coastal Zone

2.2.1 Humboldt County General Plan

The following policies and standards from the Humboldt County General Plan regulate agricultural land use.

AG-P5. Conservation of Agricultural Lands.

Agricultural lands shall be conserved and conflicts minimized between agricultural and non-agricultural uses through all of the following:

A. By establishing stable zoning boundaries and buffer areas that separate urban and rural areas to minimize land use conflicts.

B. By establishing stable Urban Development, Urban Expansion and Community Planning Areas and promoting residential in-filling of Urban Development Areas, with phased urban expansion within Community Planning Areas.

C. By developing lands within Urban Development, Urban Expansion and Community Planning Areas prior to the conversion of agricultural resource production lands (AE, AG) within Urban Expansion Areas.

D. By not allowing the conversion of agricultural resource production lands (AE, AG) to other land use designations outside of Urban Expansion Areas.

E. By assuring that public service facility expansions and non-agricultural development do not inhibit agricultural viability, either through increased assessment costs, degradation of the environment, land fragmentation or conflicts in use.

F. By increasing the effectiveness of the Williamson Act Program.

G. By allowing historical structures and/or sensitive habitats to be split off from productive agricultural lands where it acts to conserve working lands and structures.

H. By allowing lot-line adjustments for agriculturally designated lands only where planned densities are met and there is no resulting increase in the number of building sites.

AG-P6. Agricultural Land Conversion - No Net Loss.

Lands planned for agriculture (AE, AG) shall not be converted to non-agricultural uses unless the Planning Commission makes the following findings:

A. There are no feasible alternatives that would prevent or minimize conversion;

B. The facts support an overriding public interest in the conversion; and

C. For lands outside of designated Urban Development Boundaries, sufficient off-setting mitigation has been provided to prevent a net reduction in the agricultural land base and agricultural production. This requirement shall be known as the "No Net Loss" agricultural lands policy. "No Net Loss" mitigation is limited to one or more of the following:

1. Re-planning of vacant agricultural lands from a non-agricultural land use designation to an agricultural plan designation along with the recordation of a permanent conservation easement on this land for continued agricultural use; or

2. The retirement of non-agricultural uses on lands planned for agriculture and recordation of a permanent conservation easement on this land for continued agricultural use; or

3. Financial contribution to an agricultural land fund in an amount sufficient to fully offset the agricultural land conversion for those uses enumerated in subsections a and b. The operational details of the land fund, including the process for setting the amount of the financial contribution, shall be established by ordinance.

AG-S7. Prime Agricultural Land.

Prime Agricultural land per California Government Code Section 51201 (c) means: (listed above in Section 2.1.1)

2.2.2 Humboldt County Zoning Code

The parcels within the PA1 are zoned AE in the Coastal Zone, and AE and AG in the inland zone, each with various combining zones (see **Table 2**, and **Appendix A – Figure 3**). Excerpts of the Humboldt County Zoning Code (2022) that are applicable to the Project include the following:

Coastal Zone Zoning Code

313-7: AE: AGRICULTURE EXCLUSIVE

Uses Permitted with a Use Permit:

- Fish and wildlife management, watershed management, wetland restoration, coastal access facilities.

Inland Zoning Code

314-7.1: AE: AGRICULTURE EXCLUSIVE

Uses Permitted with a Use Permit:

- Fish and wildlife habitat management, watershed management, wetland restoration.

314-7.2: AG: AGRICULTURE GENERAL

Fish and wildlife habitat, watershed management and/or wetland restoration is not mentioned in the Agriculture General zoning code, as either principally or conditionally permitted.

2.2.3 Humboldt County Williamson Act Advisory Committee Guidelines

The Humboldt County Williamson Act Advisory Committee Guidelines (2016) state that "*the majority of the land area of any property under contract must be devoted to agricultural pursuits consistent with the purpose of the preserve in which the property is located*."

The Guidelines include various classes of preserves which require either Prime Agricultural Land or Non-Prime Agricultural Land (which references subdivisions one through five of Government Code 51201 [c]) including:

Class A Prime Land Preserve and Contract. *In order to qualify for a Class A preserve and contract, land shall comply with the following requirements:*

3) *Prime Agricultural Land. The land within the preserve shall be prime agricultural land and shall qualify therefore pursuant to any of the following categories:*

   i) *All land that qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability classifications.*

   ii) *Land which qualifies for rating 80 through 100 in the Storie Index Rating.*

   iii) *Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture.*

   iv) *Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing*

period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars ($200) per acre.

v) Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars ($200) per acre for three of the previous five years.

*B) **Class B Grazing Land Preserve and Contract**. In order to qualify for a Class B preserve and contract, land shall comply with the following requirements:*

3) Non-Prime Agricultural Land. Land within the preserve shall be non-prime agricultural land of statewide or local significance.

*C) **Class C Cropland Preserve and Contract.** In order to qualify for a Class C preserve and contract, land shall comply with the following requirements:*

3) Prime or Non-Prime Agricultural Land. Land within the cropland preserve shall consist of prime land or tillable non-prime land of statewide or local significance.

D) Class D Unique Farmland and Dairy Agricultural Preserve and Contract

2) Prime Agricultural Land. The land within the preserve shall be prime agricultural land as defined in Section 51201(c) of the Government Code and Section 1A(3) of these Guidelines.

3) Non-Prime Agricultural Land of statewide of local significance which consists of tillable soils (see General Provisions, Sections 1.F(5) and 1F(6)).

i) The land is shown in an "agricultural" designation on the Humboldt County General Plan and is zoned for agricultural use.

ii) The income standard in Section 1F(7) would be met for each "ownership" unit (i.e. one or more parcels under the same ownership, or individual parcels under separate ownership) as it exists at time of entry into the Preserve and Contract.

iii) The proposed zoning and contract would prohibit any parcel divisions.

iv) Residential development rights beyond one single family residence for each ownership unit in the preserve would be conveyed to the County for the life of the Contract.

v) Not more than twenty five percent (25%) of the land area within the preserve is zoned Timberland Production Zone (TPZ).

F) General Provisions

5) "Non-prime agricultural lands of state or local significance" as used in these Guidelines shall mean lands, including grazing lands, which are not prime agricultural land as defined in Section 51201 (c) of the Government Code, that are designated for agricultural use in the General Plan, and which are in agricultural use, have present or future potential for significant agricultural production, or provide for compatible open space use consistent with the purposes of the Williamson Act.

2.3 NRCS Prime Farmland

The NRCS Prime Farmland designation is distinct from the Prime Agricultural Land designations. The term Prime Farmland is used in CEQA and for federal NRCS purposes, however, it is not used in the Humboldt County General Plan, HBAP and state resource codes (rather Prime Agricultural Land is utilized in these references). Therefore, details on Prime Farmland are not included in this Technical Memo because there is no nexus for its use given this memo supports the Humboldt County Conditional Use Permit which references the Humboldt County General Plan and HBAP. However, it should be noted that according to

the NRCS, PA1 contains portions of Prime Farmland if the area were irrigated and drained. No sophisticated drainage systems exist onsite with the exception of dysfunctional culverts and agricultural ditches.

3. Methods

3.1 Desktop Analysis

Gov. Code Section 51201 (c) was utilized to determine whether Prime Agricultural Land is present in PA1, which is the definition that the Humboldt County General Plan references (Standard AG-S7). Additional agricultural designation resources include the California Farmland Mapping and Monitoring Program (FMMP), which produces maps of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance by County across California, however this program has not yet produced maps for Humboldt County (DOC 2022). Therefore, in accordance with Public Resources Code Section 21060.1, which provides guidance for determining the agricultural designation of lands which haven't been mapped by the FMMP, the Gov. Code Section 51201(c) was utilized. Soil types within PA1 were determined utilizing the NRCS Web Soil Survey soil report, which is included in this Tech Memo as **Appendix B**. See **Appendix A, Figure 7 – NRCS Soils** for NRCS soil mapping units and parcel boundaries.

3.2 Field Investigations

Numerous field studies have been prepared for the Elk River Estuary Restoration Project, including the Draft 10% Design Report (CalTrout 2023), Draft Wetland Delineation Report (Stillwater Sciences 2022), and soil borings (Stillwater Sciences 2023). These references were reviewed for relevant data pertaining to agricultural resources, such as vegetation assemblages, wetlands presence, and soil types with particular attention given to the 147-acre area of PA1 that would convert from agricultural use to either a natural landscape or to Orton Creek and its associated riparian corridor (see **Appendix A, Figure 6**). A large portion of this area (135 acres) is already converting to wetlands (Stillwater Sciences 2022) but is still considered agricultural land due to the recent agriculture use of the properties.

4. Results

4.1 NRCS Soil Survey Results

The following NRCS soil mapping units are present in PA1, and are shown in **Appendix A, Figure 7**. The NRCS mapping does not represent current conditions, given approximately 110 acres in northwest PA1 have converted to tidal wetlands and a portion of this area is still classified as the same soil type as the agricultural lands.

4.1.1 Weott, 0 to 2 Percent Slopes

Weott soils comprise the majority of PA1 at 720 acres (83 percent). The Weott soil unit has a land capability classification of 5w. The parent material is alluvium derived from mixed sources. Weott soil occurs in backswamps, depressions, and flood-plain steps. The soil consists of very poorly drained silt loam with the soil surface 0-4 inches from the water table. Weott soil is hydric and has high available water capacity, and salinity content ranging from non-saline to very slightly saline. The Hydrologic Soil Group B/D indicates that the Weott soils onsite may have a moderate infiltration and water transmission rate if drained but have a very slow rate of infiltration and transmission in their natural condition.

4.1.2 Canalschool, 0 to 2 Percent Slopes

Canalschool soils comprise 58 acres (6.7 percent) of PA1. The Canalschool soil unit has a land capability classification of 2w for irrigated or non-irrigated lands. The parent material is alluvium derived from mixed sources. Canalschool soil occurs on floodplain steps and on backslopes. The soil consists of somewhat poorly drained silt loam in every horizon (0 to 60 inches below ground surface). The depth to water table is approximately 10 to 20 inches below ground surface. Canalschool soil is not hydric and has high available water capacity, and salinity content ranging from non-saline to very slightly saline. The Hydrologic Soil Group B/D indicates that the Canalschool soils onsite may have a moderate infiltration and water transmission rate if drained but have a very slow rate of infiltration and transmission in their natural condition.

4.1.3 Swainslough, 0 to 2 Percent Slopes

Swainslough soils comprise 45 acres (5.2 percent) of PA1. The Swainslough soil unit has a land capability classification of 5w for irrigated or non-irrigated lands which means it's less suitable for agricultural productivity. The parent material is alluvium derived from mixed sources. Swainslough soil occurs on floodplain steps, depressions, backswamps and salt marshes. The soil consists of very poorly drained silty clay loam in every horizon (3 to 65 inches bgs) except the top horizon which is comprised of decomposed plant matter. The depth to water table is shallow at approximately 0 to 4 inches bgs. Swainslough soil is hydric and has high available water capacity, and salinity content ranging from non-saline to slightly saline. The Hydrologic Soil Group C/D indicates that the Swainslough soils onsite will have a slow infiltration and water transmission rate if drained and have a very slow rate of infiltration and transmission in their natural condition.

4.1.4 Water and Fluvents, 0 to 2 Percent Slopes

Water and fluvents comprise 22 acres (2.5 percent) of PA1. The water and fluvents soil unit has a land capability classification of 5w. The parent material is alluvium derived from mixed sources. Water and fluvents soil occurs in point bars on channels, and at the base or toe of slopes. The soil consists of somewhat excessively drained gravelly fine sandy loam, underlain by extremely gravelly sandy loam. The water table is typically at the surface (at 0 inches). Water and fluvents soil is hydric and has low available water capacity, and salinity content ranging from non-saline to very slightly saline.

4.1.5 Lepoil-Espa-Candymountain complex, 15-50 Percent Slopes

Lepoil-Espa-Candymountain complex soils comprise 12 acres (1.4 percent) of PA1. The Lepoil-Espa-Candymountain complex unit has a land capability classification of 6e for nonirrigated lands, meaning it is unsuitable for agriculture, and is not specified for irrigated lands. The parent material is mixed marine deposits derived from sedimentary rock. This soil complex occurs on backslope and side slopes. The soil consists of well drained loam in upper horizons (0 to 35 inches below ground surface), underlain by clay loam (35 to 67 inches). The depth to water table is approximately 49 to 59 inches below ground surface. Lepoil-Espa-Candymountain soil is not hydric and has high available water capacity, and salinity content ranging from non-saline to very slightly saline. The Hydrologic Soil Group C indicates that the Lepoil-Espa-Candymountain soils onsite may have a slow infiltration and water transmission rate if drained, and a slow rate of infiltration and transmission in their natural condition.

4.1.6 Hookton-Tablebluff complex, 2 to 9 Percent Slopes

Hookton-Tablebluff complex soils comprise 5 acres (0.6 percent) of PA1. The Hookton-Tablebluff complex unit has a land capability classification of 2e for irrigated or nonirrigated lands. The parent material is eolian deposits over mixed alluvium. This soil complex can be considered erosion remnants and occurs on summits and side slopes. The soil consists of somewhat poorly drained loam in upper horizons (0 to 15

inches below ground surface), underlain by clay loam (15 to 60 inches). The depth to water table is approximately 10 to 20 inches below ground surface. Hookton-Tablebluff soil is not hydric and has high available water capacity, and salinity content ranging from non-saline to very slightly saline. The Hydrologic Soil Group C/D indicates that the Hookton-Tablebluff soils onsite may have a slow infiltration and water transmission rate if drained and have a very slow rate of infiltration and transmission in their natural condition.

4.1.7 Salmoncreek-Tepona-Rootcreek complex, 30-50 Percent Slopes

Salmoncreek-Tepona-Rootcreek complex soils comprise 4 acres (0.5 percent) of PA1. The Salmoncreek-Tepona-Rootcreek complex unit has a land capability classification of 6e for nonirrigated lands, meaning it is unsuitable for agriculture, and is not specified for irrigated lands. The parent material is colluvium derived from siltstone. This soil complex occurs on hillslopes, backslopes, summits and side slopes. The soil consists of poorly drained silt loam in the upper horizon (0 to 7 inches below ground surface), underlain by silty clay loam (7 to 59 inches), and silt loam (59 to 79 inches). The depth to water table is approximately 4 to 10 inches below ground surface. Salmoncreek-Tepona-Rootcreek complex soil is considered hydric and has high available water capacity, and salinity content ranging from non-saline to very slightly saline. The Hydrologic Soil Group C/D indicates that the Salmoncreek-Tepona-Rootcreek soils onsite may have a slow infiltration and water transmission rate if drained and have a very slow rate of infiltration and transmission in their natural condition.

4.2 Field Investigations

Vegetation mapping by Stillwater Sciences found the agricultural lands are comprised of the following pasture grass associations: creeping bentgrass – tall fescue (*Agrostis stolonifera – festuca arundinacea)*, velvetgrass (*Holcus lanatus)*, perennial ryegrass (*Lolium perenne)*, and Kentucky bluegrass (*Poa pratensis)* (CalTrout 2023). Areas in central PA1 with poor drainage, including the 100-acre parcel proposed for conversion, include extensive populations of Pacific silverweed (*Argentina egedii* [formerly known as *Potentilla anserina*]), which is a hydrophytic plant. Notably along the eastern edge of PA1 there is a mixture of the following woody species associations: California blackberry (*Rubus ursinus)*, shining willow (*Salix lucida*), and Hooker's willow (*Salix hookeriana*). Herbaceous wetland plant associations occur to the north including: rush (*Juncus* sp.), panicled bulrush (*Scirpus microcarpus*), and common eelgrass (*Zostera marina*) association. Vegetation types within the tidal marsh areas in the northwest PA1 include the following brackish species associations: pickleweed, meadow barley, creeping bentgrass, reed canarygrass (*Phalaris arundinacea*), California blackberry, and Sitka spruce (*Picea sitchensis*).

The majority of PA1 was delineated as a wetland: approximately 664 acres of three-parameter wetland, and 47 acres of one-parameter wetland (Stillwater Sciences 2022).

4.3 Prime Agricultural Land

As described in Section 2.1.1, an area is considered Prime Agricultural Land if it meets one of the five subdivisions in Gov. Code 51201(c). NRCS soils info and field investigation data were utilized to analyze whether lands in PA1 meet any of the Prime Agricultural Land definitions. Each subdivision of Gov. Code 51201(c) is described below, and a summary of all Prime Agricultural Land is presented in **Table 3** at the end of this section.

> *1) All land that qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability classifications.*

Canalschool and Hookton-Tablebluff complex soils contain a land use capability classification of 2w and 2e, and total 63 acres. Therefore, these lands can be considered Prime Agricultural Lands.

> *(2) Land which qualifies for rating 80 through 100 in the Storie Index Rating.*

Canalschool soils are considered Grade 2 (80-90) in the Storie Index Rating, which is 58 acres. This area is already considered Prime Agricultural Land per the land capability classification above.

> *(3) Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre* (AU) *as defined by the United States Department of Agriculture.*

Agricultural Lands in Active Use

Grazing actively occurs on lands owned by Shanahan, Vroman and Alexandre/Senestraro (Gurin pers. comm 2025). Acreage includes the portion of the parcel within the PA1 boundary.

– Shanahan, 200 acres, APNs #19, #30, #16, #25, #22, #29, #42, #31;
– Vroman, 76 acres, APNs: #24, #26, #20, #21, #23, #12, #17;
– Alexandre/Senestraro, 115 acres, APNs: #32, #36, #33;
– Humboldt Redwood Company, 3 acres, APN #40

APN #40 is a remnant parcel from railroad and is assumed to be utilized for agriculture due to its location between Williamson Act parcels (APN #16). These parcels listed above are seasonally grazed for six to nine months, depending on weather conditions. Assuming a six to nine-month grazing season, each parcel would need to carry at least 1.5 to 2 times the number of animals to meet the one animal unit per acre carrying capacity. It is conservatively assumed that these lands typically meet this carrying capacity and can therefore be considered Prime Agricultural Land, totaling 394 acres.

Agricultural Lands in Previous Use

Within the last five years grazing has occurred on the following lands, however it is unlikely that grazing will continue on these lands beyond 2025 due to change in ownership (Gurin pers. comm. 2025). Changes in ownership, acreage and associated APNs are noted below. Acreage includes the portion of the parcel within the PA1 boundary.

– CalTrout (previously owned by Prior), 100 acres, APN #27, predominantly in the Coastal Zone;
– Wiyot Tribe (previously owned by Prior), 35 acres, APN #18, entirely in the Coastal Zone;

These parcels have been seasonally grazed for the last five years; however, grazing will not continue. These lands are assumed to have met the subdivision (3) definition within the last five years meaning at least one animal unit per acre was supported. Therefore this 135-acre area meets this definition and is considered Prime Agricultural Land.

Agricultural Lands Assumed to be in Use

The remaining agricultural lands are assumed to currently be used for agriculture production. Acreage includes the portion of the parcel within the PA1 boundary.

– Senestraro, 93 acres, APNs: #35, #39, #38, #34;
– Shanahan, Lane & Delong, 18 acres, APN #37;
– Northcoast Regional Land Trust, 14 acres, APN #8;

Without stocking data, it is conservatively assumed that this 124-acre area meets the one animal unit per acre requirement of subdivision (3) and can be considered Prime Agricultural Land.

Agricultural Lands Assumed to Not Be in Use

The following parcels are assumed to not be in agricultural use, predominantly because they occur within parcels where a waterway occurs or are being used as residences. Acreage includes the portion of the parcel within the PA1 boundary.

– Humboldt Redwood Company, 11 acres, APNs: #28, #41

– Frink, 2 acres, APNs: #13, #15

Due to the absence of agricultural use, this 13-acre area is not considered Prime Agricultural Land.

Tidal Wetlands

The following parcels are tidal wetlands and are therefore not in agricultural use. However, these parcels support agricultural use due to the drainage they provide at the watershed level which improves adjacent agriculture lands. CDFW parcels are not mentioned because they are not subject to the County's Conditional Use Permit. Acreage includes the portion of the parcel within the PA1 boundary.

– Prior, 5 acres, APN #1
– Chamberlain, 1 acre, APN #9

Due to the absence of agricultural use, this 6-acre area is not considered Prime Agricultural Land.

Agricultural Lands Naturally Converting to Tidal Wetland

As mentioned in Section 1.3, APNs #5 supports two horses, but does not provide agricultural productivity beyond this use, i.e. no additional grazing or hay production occurs. The use of this area for horses is not considered agricultural because the horses are not being used for agricultural productivity, rather can be considered pets. Adjacent APN #6 is owned and operated by the Humboldt Community Services District for water and water functioning. The remaining agricultural lands that are naturally converting to tidal wetlands do not support agricultural productivity due to the saturated conditions and unsuitable forage. Therefore, in total, this 51-acre area is not considered Prime Agricultural Land.

> *(4) Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars ($200) per acre.*

No lands within PA1 are planted with fruit- or nut-bearing trees, vines, bushes, or crops and therefore do not meet this criteria for Prime Agricultural Land.

> *(5) Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars ($200) per acre for three of the previous five years.*

For purposes of this analysis, hay is assumed to be valued at $150/ton. This value is somewhat conservative and attempts to compensate for the volatility of a product whose price varies due to a variety of factors such as shipping costs, climate, weather conditions and demand. In order for agricultural lands to meet the Prime Agricultural Land value under section (5), it must produce in excess of 1.34 tons per acre per year over the course of three of the last five years to result in $200 per acre of hay produced.

As measured in pounds/acre/month, this equates to 447 pounds/acre of dry matter being produced monthly and fully utilized six months out of the year for three of the last five years, achieving a per acre value of $201. If hay were to be produced nine months out of the year, this value would become 298 pounds/acre per month. This is a generous evaluation of the true status of pasture and its productivity in such a dynamic environment. First, it assumes a dry weight matter value that is typically measured in terms of hay as a delivered product. Second, it assumes that the material is dry, which is not always true given PA1 is in an area characterized by foggy summers and ample precipitation. Third, due to the window of productivity within PA1, which is typically six to nine months of agricultural productivity, it is unlikely that landowners are producing this amount of hay consistently for six to nine months because they are typically grazing their lands during this period. Therefore, no land within PA1 meets the subdivision (5) definition, and no areas are considered Prime Agricultural Land under this definition.

4.3.1 Prime Agricultural Land Summary

Areas need to meet at least one subdivision of Gov Code 51201(c) to be considered Prime Agricultural Land, therefore areas of overlap that meet more than one subdivision have been removed to avoid double counting. **Table 3**, below, summarizes the amount of Prime Agricultural Land in PA1.

Table 3. Prime Agricultural Land in PA1

Govt Code 51201(c) Subdivisions	Acreage that meets definition	Removal of Areas of overlap	Final Area of Prime Agricultural Land
(1) – LCC	63 acres	-63 acres (accounted for in [3])	0 acres
(2) – Storie Index	58 acres	-58 acres (already in [1, 3])	0 acres
(3) – Grazing with One AU	653 acres	0 acres	651 acres
(4) – Crops	0 acres	N/A	0 acres
(5) – Hay	0 acres	N/A	0 acres
Total Prime Agricultural Land:			**653 acres**

5. Project Actions and Land Use Conversion

Following Project implementation, most parcels within PA1 will remain under their existing land uses, either for agricultural productivity, agriculture lands naturally converting to tidal wetlands, or as tidal wetlands for watershed management, with the exception of 147 acres that will convert from agricultural lands to a natural landscape or riparian corridor. As shown on **Figure 6**, the entirety of APNs #18 and #27 would become natural landscape, and a corridor comprising multiple APNs would become a riparian corridor. The entire 147-acre area proposed for conversion is considered Prime Agricultural Land.

This technical memorandum provides analysis of the proposed Project actions and resulting land uses that would occur under the Project as compared to the agricultural protections required by various regulatory documents. Given the majority of land uses would remain the same following Project implementation, Section 5 provides analysis of the parcels comprising the 147-acre area that would convert land uses following Project implementation. No analysis is given to the parcels comprising the 720 acres where land uses would remain the same following Project implementation because these areas would not require a Conditional Use Permit from Humboldt County, however, parcels adjacent to Elk River and Swains Slough may require a Streamside Management Permit from Humboldt County. Due to the different guiding documentation by location, the Project is broken out as within Coastal Zone and outside of the Coastal Zone (i.e. Inland Zone).

5.1 Coastal Zone Parcels

Project activities within Coastal Zone parcels would maintain and reconnect the floodplain and marsh plains to Elk River and tidal slough channels and enhance the tidal slough and creek drainage network which have been deemed necessary for the rehabilitation of the Elk River watershed (CalTrout, Stillwater Sciences, and NHE 2023), create an upper Swain Slough channel network. In total, 136 acres of historical agricultural land within the Coastal Zone would become a natural landscape or riparian corridor under the

Project (see **Appendix A, Figure 6**). These actions would occur in APN #18, #27, and within one acre of APN #30. Protections to agricultural resources are considered in relation to Humboldt County Zoning Code, the Williamson Act, HBAP and California Coastal Act below. The Humboldt County General Plan does not apply in the Coastal Zone and is therefore not included in this analysis.

5.1.1 Humboldt County Zoning Code

The zoning of all Coastal Zone lands within PA1 is Agriculture Exclusive, which conditionally allows fish and wildlife management, watershed management, wetland restoration, and coastal access facilities. Therefore, implementation of the Project would require a Conditional Use Permit from Humboldt County for this proposed land use. The proposed actions in APNs #18, #27, and #30 result in a natural landscape or riparian corridor would therefore be conditionally allowed.

5.1.2 Williamson Act

Actions occurring on Williamson Act contract parcels include planting of native vegetation along the eastern bank of Elk River APN #25, and the relocation of approximately 1,000 feet of existing slough channel between APNs #16 and #19 to be aligned immediately west of its current location (**Figure 4 – Project Elements**). These actions would not result in a loss of agricultural land because the proposed planting area is not currently grazed due to its proximity to the Elk River, and the slough channel would be relocated resulting in the existing slough channel becoming agricultural land. These actions would create brackish riparian conditions which would improve both terrestrial and aquatic wildlife habitat adjacent to the Elk River and would support improved drainage via providing hydrologic connectivity in an area where flow is naturally draining towards.

The Williamson Act specifically defines “agricultural land” to include, among other items, “a wildlife habitat area, a salt pond, a managed wetland, or a submerged area.” (Gov. Code, Section 51205.) This conclusion is additionally independently supported by the fact The Williamson Act also names three factors for determining whether a use is compatible with a contract, namely that:

1. The use will not significantly compromise the long–term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
2. The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.
3. The use will not result in the significant removal of adjacent contracted land from agricultural or open–space use. (Gov. Code, Section 51238.1.)

Therefore, the proposed uses of land under the Project are consistent with allowable Williamson Act land uses.

5.1.3 California Coastal Act

Per Gov. Code 51201 (c), there are 389 acres of existing Prime Agricultural Land in the Coastal Zone of PA1. Section 30241 of the Coastal Act states that *the maximum amount of prime agricultural land shall be maintained in agricultural production and conflicts shall be minimized between agricultural and urban land uses,* and Section 30242 states that *all other lands suitable for agriculture use shall not be converted to nonagricultural uses unless continued or renewed agricultural use is not feasible*. The draft wetland delineation report (Stillwater Sciences 2022) indicates that the majority of land within PA1 is wetlands, which includes both Prime Agricultural Lands and agricultural lands. The proposed freshwater and slough

channels and swales, ponds, eco levees, bank recontouring, and vegetation enhancement actions would predominantly occur within existing agricultural lands that are also delineated as wetlands, to improve drainage and agricultural productivity within PA1 while also creating instream wildlife habitat within the proposed features. The agriculture productivity onsite would improve because of the Project.

As discussed above, 136 acres of Prime Agricultural Lands (APN #18, #27 and one acre within #30). These proposed actions would substantially improve drainage on adjacent parcels due to the natural landscape (including wetlands and riparian corridor) that would be created. This would convey water more efficiently and retain water in wetland areas more effectively. Collectively these actions would create drier conditions in adjacent agricultural lands resulting in more suitable conditions for grazing throughout the year. It is anticipated that grazing season would more consistently increase to be nine months following implementation of this Project. If this Project were not implemented, the agricultural productivity in these areas would continue to decline, which upholds that the continued agricultural use of these areas is not feasible without intervention. Furthermore, Section 30242 states *that any permitted use shall be compatible with continued agricultural use on surrounding lands*. The proposed conversion of these areas would improve drainage in surrounding areas of PA1 not proposed to convert, which is anticipated to benefit the surrounding agricultural lands, operations and local economy. Therefore, Project activities, particularly the proposed conversion of 136-acres of Prime Agricultural Land, does not conflict with the Coastal Act.

5.1.4 Humboldt Bay Area Plan

The Humboldt Bay Area Plan contains Sections 30241 and 30242 and further elaborates within the Compatible Uses section stating that the following land uses compatible with agricultural operations include: *management for watershed,* and *management for fish and wildlife habitat*. The HBAP further states that and that a *conditional use permit shall be required of any proposed use not directly a part of agricultural production*. As discussed, it is not feasible to keep all lands in agricultural production because of consistent flooding and rising sea level. Parcels in the lower estuary that are naturally converting to tidal wetlands are proposed for active restoration to improve drainage and increase agricultural productivity on surrounding parcels. Therefore, the Project is consistent with the Humboldt Bay Area Plan.

Based upon these regulations, acquisition of the County Conditional Use Permit would not conflict with the HBAP because the proposed Project includes management for watershed function and for fish and wildlife habitat which is considered compatible with agricultural operations.

5.2 Inland Parcels

Project activities outside of the Coastal Zone (and within the inland zoning area) predominantly include bank recontouring in Elk River to improve sediment transport into Humboldt Bay and reduce flood overtopping onto adjacent lands, installation of floodplain swales to direct out-of-bank flows away from agricultural fields and back to the Elk River or the new upper Orton Creek channel complex. Existing, dysfunctional culverts originally intended to improve agricultural drainage and convey backwater into fields during higher flow events contribute to agricultural flooding. The Project will remove these culverts and essentially re-plumb PA1 to route overbank flows back into the Elk River or the new Orton Creek channel complex, reducing flood-related impacts to agricultural lands. These Project activities will also improve drainage throughout the site by improving conveyance downstream and increase in tidal salt marsh. The Elk River is a sediment impaired waterway and improved sediment transport in the lower estuary under the Project would support the water quality goals and objectives listed in the Upper Elk River Sediment Total Maximum Daily Load (NCRWQCB 2016).

In total, 11 acres of Prime Agricultural Land within the inland area, which totals 1% of PA1, would become Orton Creek and the Orton Creek riparian corridor, which flows into the site from the east (see **Appendix A, Figure 6**). As previously stated, Orton Creek is routed subsurface via a series of agricultural ditches at the

western extent of the wooden corridor in the southeast portion of PA1. Project actions would daylight Orton Creek and restore its natural flow pathway to Swain Slough and the mainstem Elk River.

Project actions occurring in the inland area of PA1 are analyzed for their compliance with the Humboldt County Zoning Code and Humboldt County General Plan regarding protections to agricultural resources below. The California Coastal Act and Humboldt Bay Area Plan do not apply outside the Coastal Zone and are therefore not included in this analysis. There are no Williamson Act affiliated parcels and therefore the Williamson Act is not discussed in this analysis.

5.2.1 Humboldt County Zoning Code and General Plan

The zoning of inland area lands within PA1 is AE, which conditionally allows fish and wildlife management, watershed management, wetland restoration, and coastal access facilities, and AG, which does not mention these land uses. Therefore, a Conditional Use Permit is required for proposed Project activities with AE zoning, and a determination from Humboldt County Zoning Administrator or Planning Commission is anticipated to be required for proposed Project activities in the AG zoning area. The Project meets subsections (a) and (b) of General Plan Policy AG-P6. Agricultural Land Conversion – No Net Loss (listed in Section 2.2.1), and it is anticipated that subsection (c) would need to be met for the Planning Commission to approve the Project. AG-P6 (a) is met by the Project because the agricultural productivity in PA1 would continue to decline if this Project were not implemented due to the state of the Elk River watershed, i.e. the sedimentation of lower watershed channels, resulting in less channel capacity for water, which causes increased frequency and magnitude of flooding. Subsection AG-P6 (b) is met by the Project because implementation of this Project would reduce the frequency of flooding which is in the public's interest. Additionally, the Project will enhance drainage of agricultural lands adjacent to the Elk River and the restored Orton Creek channel complex, resulting in an overall net increase in the quality and productivity of inland agricultural lands in PA 1. Therefore, if this Project were not implemented, conversion of this agricultural land would occur by natural processes, i.e. increased flooding and saturation. The vast majority of land within PA1 outside the Coastal Zone will remain in agricultural productivity, therefore the allowance of wetlands and waterway features (i.e. Orton Creek) to occur in AG-zoned properties would be a minor component of this overall land use. Therefore, the proposed Project, specifically activities located outside the Coastal Zone, are considered consistent with the Humboldt County Zoning Code and General Plan.

6. Conclusion

The purpose of this evaluation was to identify the areas in the Project that are anticipated to convert out of agricultural production due to Project activities, and to determine whether these actions are allowable by regulatory documents or if special allowances or permits may be required. The Project would require a Coastal Development Permit for Project actions in the Coastal Zone, a Conditional Use Permit for Project actions (i.e. construction) and resulting land use conversions for AE-zoned lands and a special allowance from the Humboldt County Planning Commission for proposed Project actions and resulting land use conversions for AG-zoned lands. As evidenced by landowners, vegetation community assessments, wetland delineation and aerial imagery, the parcels proposed for conversion to natural landscape, including riparian corridor, are necessary for water conveyance and retention because parcels in the central portion of PA1 are losing their agricultural productivity due to poor drainage, more frequent flooding, growth of less suitable forage, and less suitable lands for grazing animals. The conversion of these lands to a natural landscape and riparian corridor will improve drainage of the surrounding area and increase agricultural productivity. This compatible land use approach is stated as acceptable in all regulatory documents.

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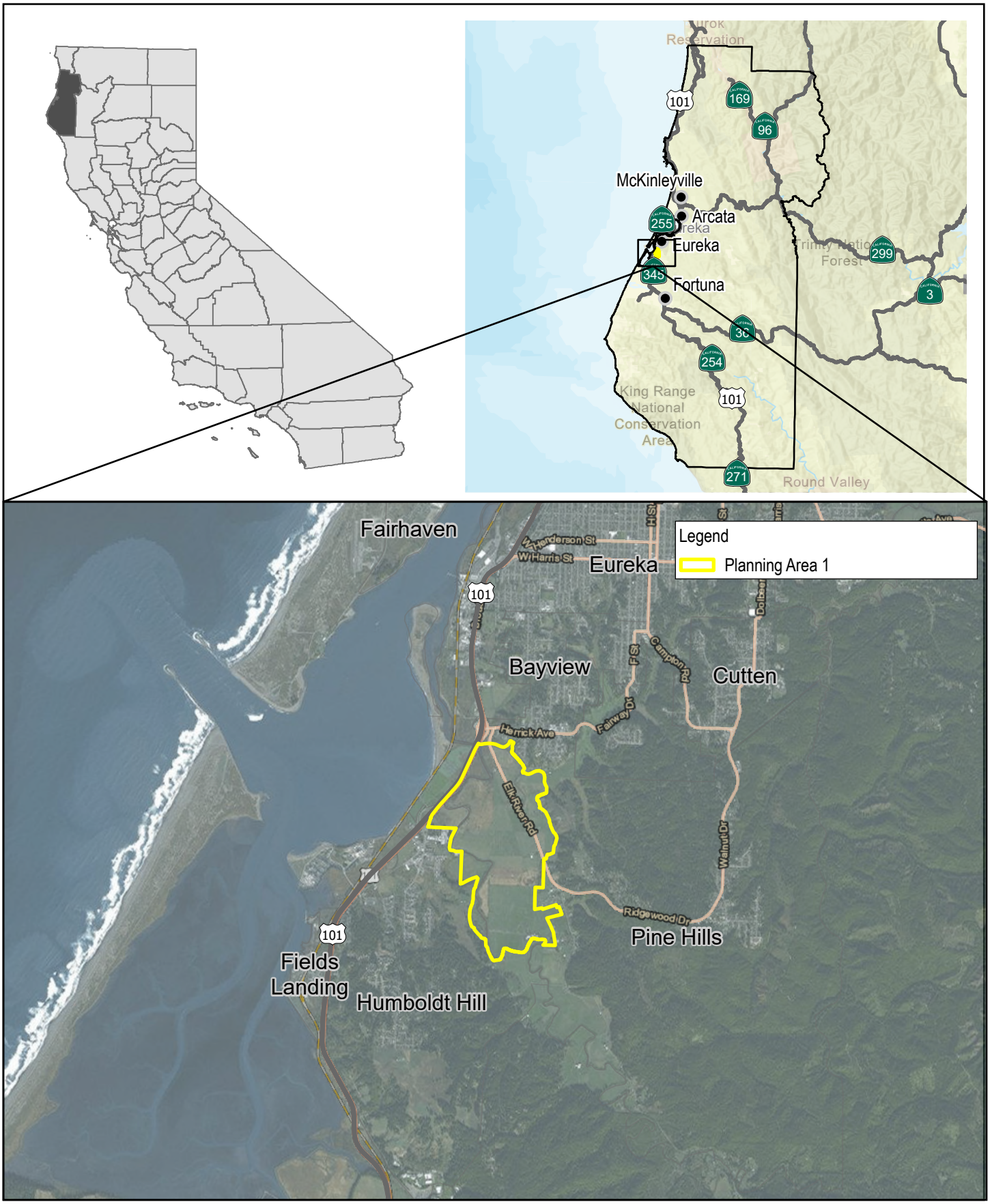
Appendices

Appendix A

Figures



Paper Size ANSI A

0 2

Miles

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

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California Trout
Elk River Estuary
Restoration Project

Project Vicinity

Project No. **12624303**
Revision No. **-**
Date **Mar 2025**

FIGURE 1

N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_002_FIG1_Vicinity Print date: 27 Mar 2025 - 10:32

Label #	APN Number
1	302-181-026
2	302-181-022
3	302-181-008
4	302-181-012
5	302-181-029
6	302-181-028
7	305-031-010
8	302-161-003
9	302-151-019
10	305-031-007
11	305-021-003
12	305-021-010
13	305-021-006
14	305-031-011
15	305-021-007
16	305-031-001
17	305-021-011
18	305-181-004
19	304-181-001
20	304-181-002
21	304-181-005
22	305-031-013
23	304-191-002
24	304-171-001
25	305-031-012
26	304-171-002
27	304-191-001
28	305-031-006
29	305-121-005
30	304-201-001
31	305-121-006
32	304-211-006
33	305-041-030
34	304-092-015
35	304-211-003
36	304-221-004
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38	304-221-003
39	304-221-002
40	305-031-002
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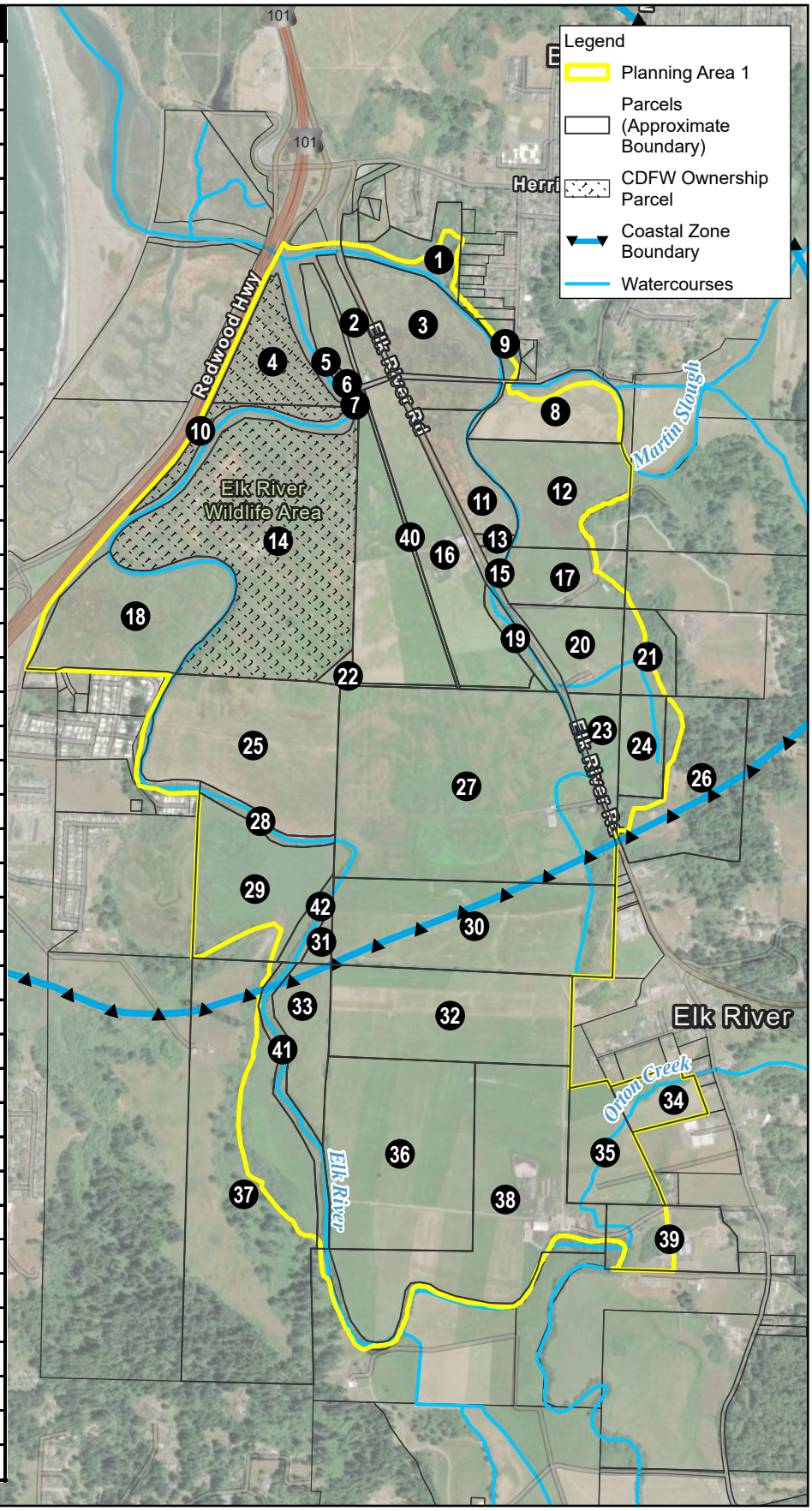
42	305-121-007



Paper Size ANSI A

0 500 1,000 1,500

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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California Trout
Elk River Estuary
Restoration Project

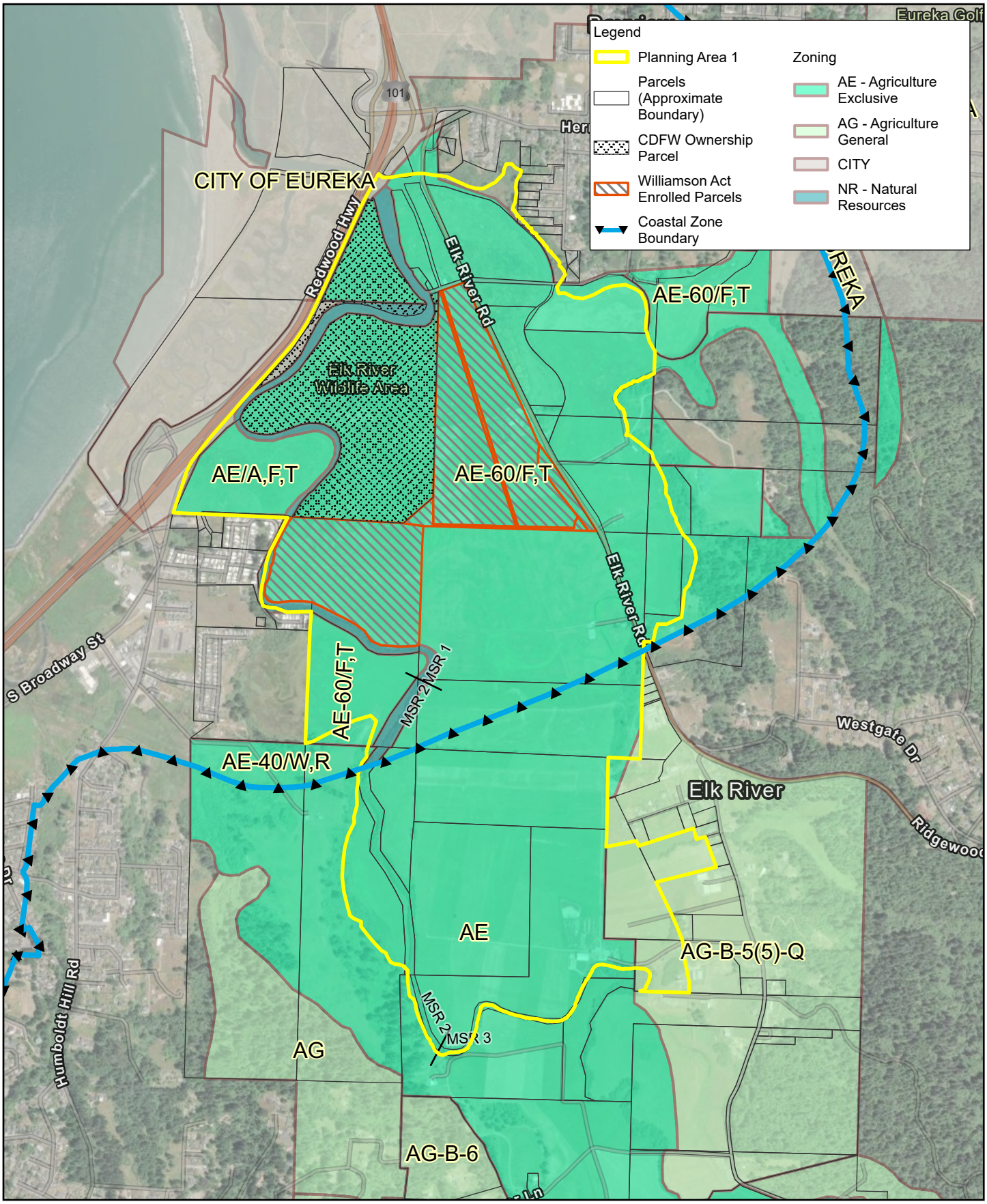
Overview
Planning Area 1

Project No. **12624303**
Revision No. **-**
Date **April 2025**

FIGURE 2

N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_003_Fig2_PlanningArea1_Overview_revD
Print date: 22 Apr 2025 - 09:25

Data source: Hybrid Reference Layer: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS
World Imagery: Earthstar Geographics. Created by: jlopez4



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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California Trout
Elk River Estuary
Restoration Project

Zoning and Williamson Act Parcels

Project No. **12624303**
Revision No. **-**
Date **April 2025**

FIGURE 3

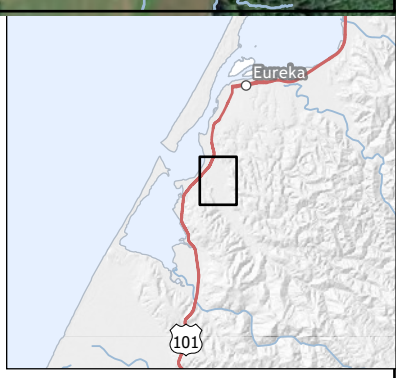
N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_001_Fig3_ZoningWilliamsonAct_revB
Print date: 11 Apr 2025 - 16:26

Data source: Hybrid Reference Layer: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS
World Imagery: Maxar. Created by: jlopez4

Tidal marsh enhancement
A1
I
B
C (no actions)
A
D
Off-channel habitat enhancement
G
Mainstem corridor enhancement upper
Off-channel habitat enhancement
F
E
Tributary restoration
Sediment re-use
Floodplain connectivity and recontouring
H
Humboldt Hill Rd
101
S Broadway St
Elk River Rd
Ridgewood Dr

Planning Area 1 Enhancement Actions

- PA 1 boundary
- Elk River and Swain Slough
- Tidal marsh & wetland enhancement
- Tidal marsh enhancement Swain Slough
- Tidal marshplain enhancement
- Brackish marsh - tidal pond
- Slough channel
- Floodplain swale
- Natural shoreline
- Eco levee
- Bank recontouring
- Vegetation enhancement
- Levee and ditch removal
- Sediment reuse
- Orton Creek restoration
- Orton Island
- Demolish structure
- New ag storage
- New crossing
- Culvert modification
- Tide gate modification
- Waterline modification
- Agricultural ditch fill
- Pasture swale - Orton Creek
- Orton Creek low flow
- Tidal creek channels
- Stream
- New farm road

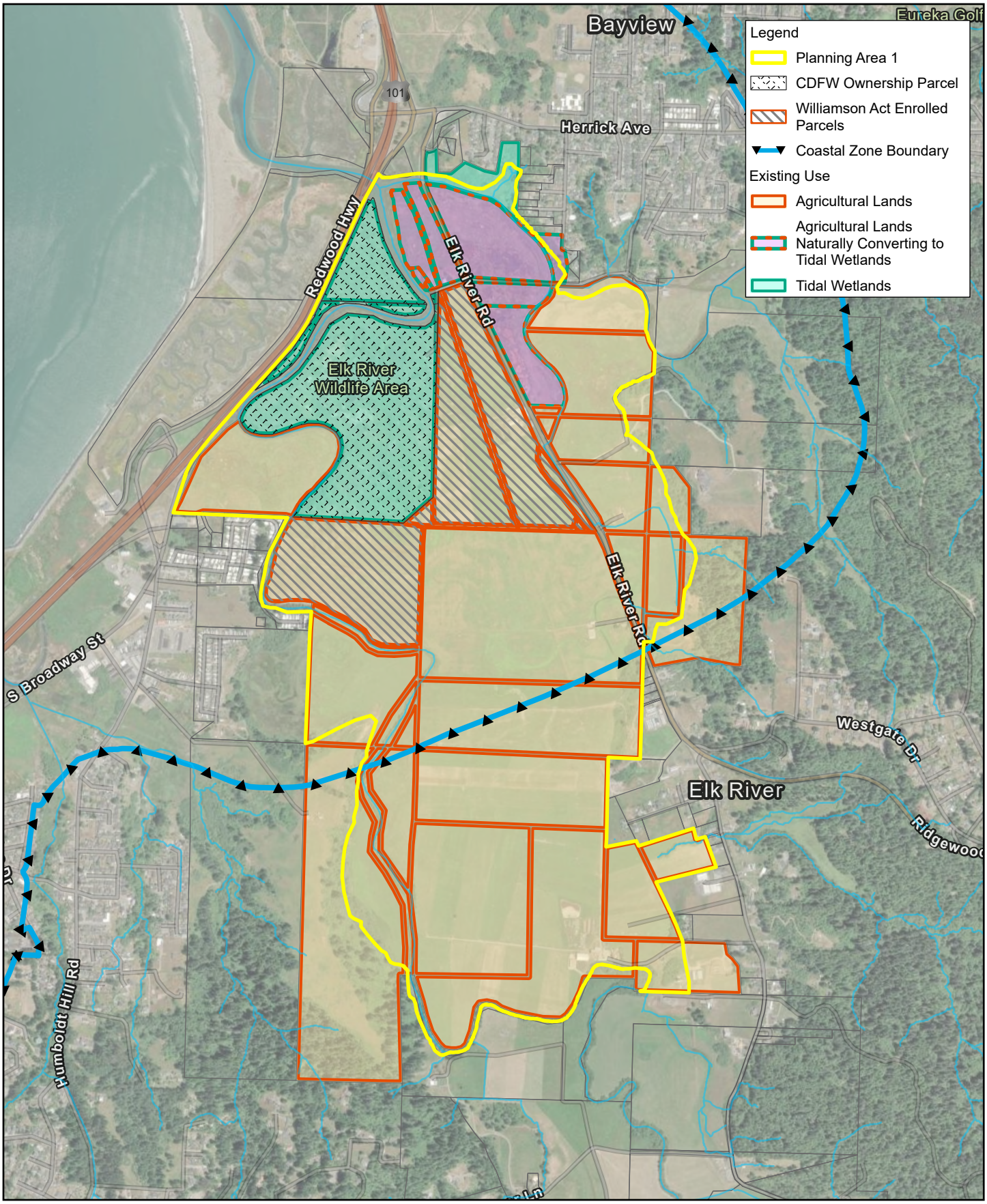


N
0 150 300 600 Meters
0 500 1,000 2,000 Feet

CALIFORNIA TROUT
Northern Hydrology & Engineering
Stillwater Sciences
GHD

Figure 4: Project Elements

Map Sources: NHE 30%-65% interim Design, SWS, CalTrout, ESRI, NAIP
Notes: cdavis@caltrout.org 4/14/2025



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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California Trout
Elk River Estuary
Restoration Project

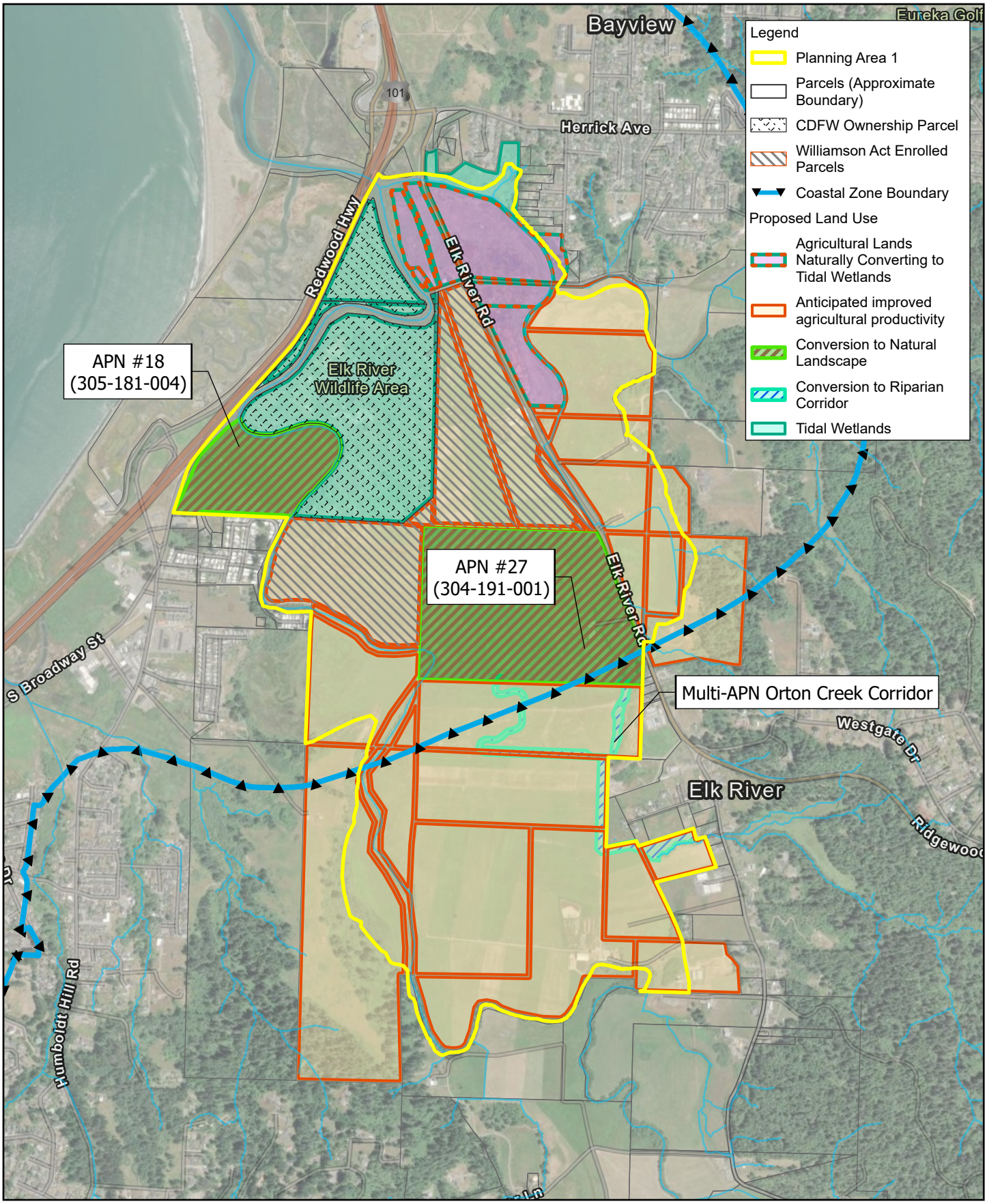
Project No. **12624303**
Revision No. **-**
Date **April 2025**

Existing Land Uses

FIGURE 5

N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_006_Fig5_ExistingLandUses_revD
Print date: 22 Apr 2025 - 09:54

Data source: Hybrid Reference Layer: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS
World Imagery: Maxar. Created by: jlopez4



Paper Size ANSI A

0 500 1,000 1,500

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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California Trout
Elk River Estuary
Restoration Project

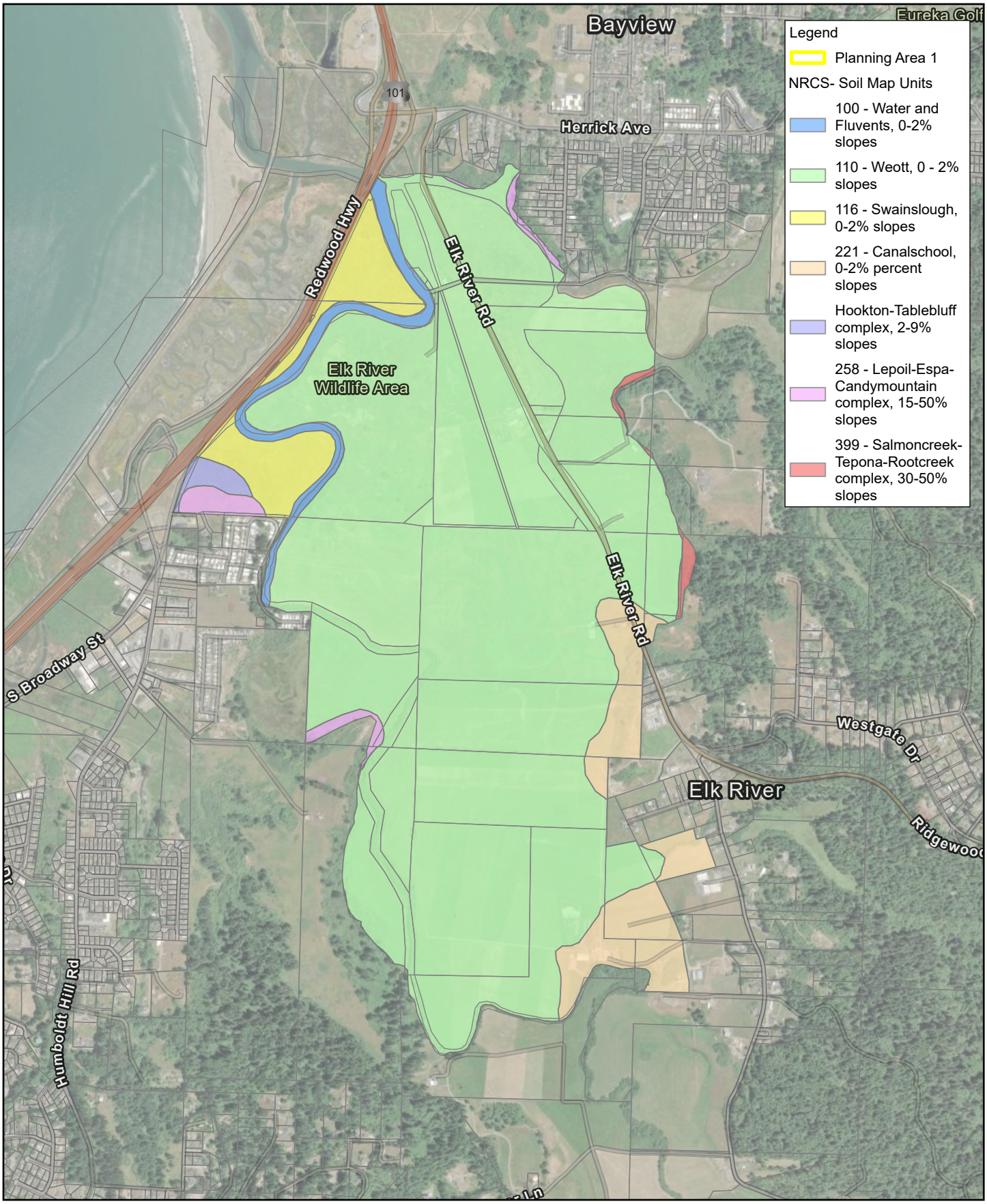
Project No. **12624303**
Revision No. **-**
Date **April 2025**

Proposed Land Uses

FIGURE 6

N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_007_Fig6_ProposedLandUses_revA
Print date: 22 Apr 2025 - 14:18

Data source: Hybrid Reference Layer: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS
World Imagery: Maxar. Created by: jlopez4



Paper Size ANSI A

0 500 1,000 1,500

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

California Trout
Elk River Estuary
Restoration Project

Planning Area 1
NRCS Soil Map Units

Project No. **12624303**
Revision No. **-**
Date **April 2025**

FIGURE 7

N:\US\Azure\EastUS\12624303\GIS\Maps\Deliverables\12624303_Ag_Analysis.aprx - 12624303_005_Fig7_NRCS_Soils_revA
Print date: 14 Apr 2025 - 14:07

Data source: Hybrid Reference Layer: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS
World Imagery: Maxar. Created by: jlopez4

Appendix B

NRCS Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Humboldt County, Central Part, California

ELK RIVER WATERSHED RECOVERY PROJECT

March 26, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

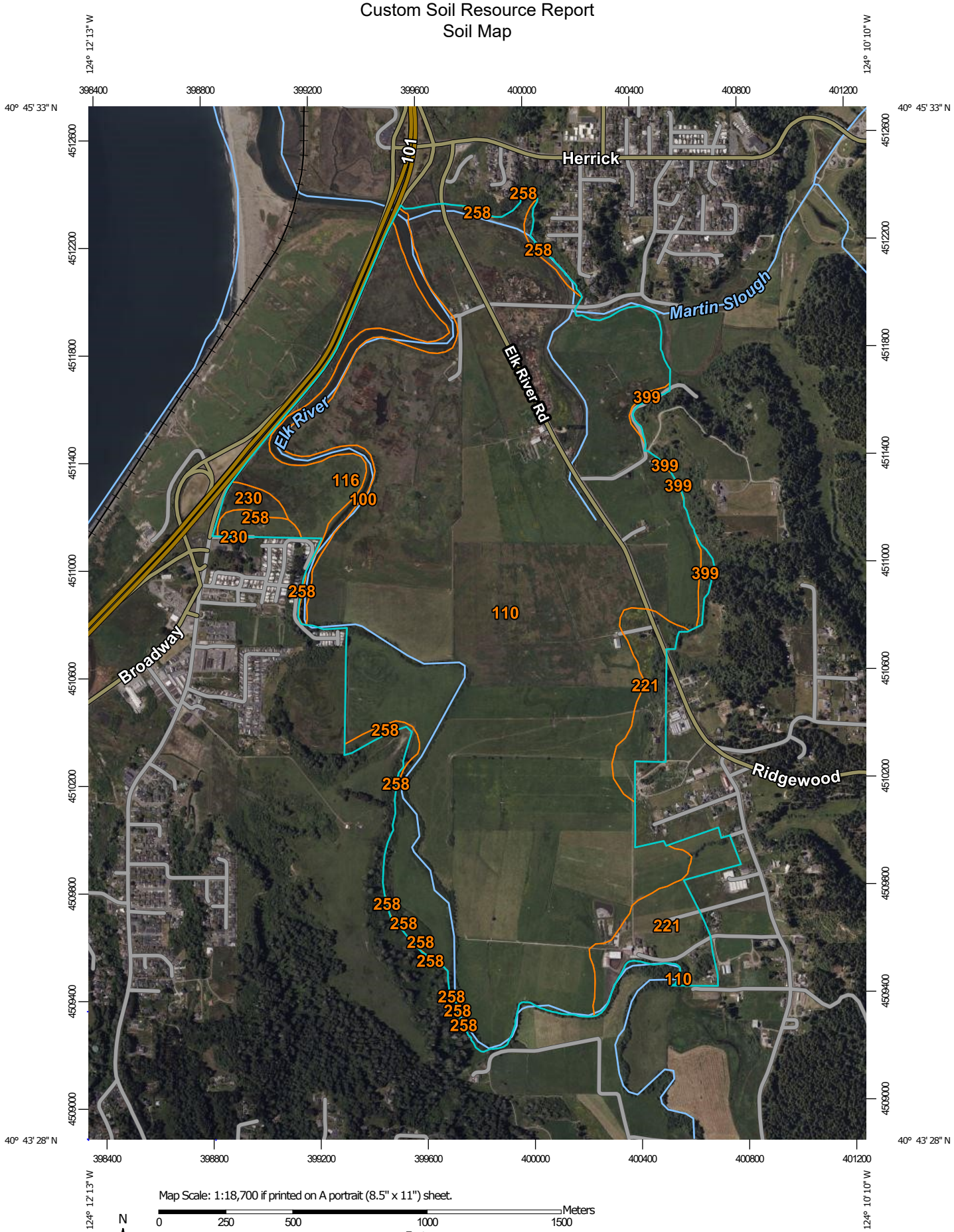
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:18,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 250 500 1000 1500

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 11, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2022—Jun 19, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100	Water and Fluvents, 0 to 2 percent slopes	21.9	2.5%
110	Weott, 0 to 2 percent slopes	719.9	83.0%
116	Swainslough, 0 to 2 percent slopes	45.2	5.2%
221	Canalschool, 0 to 2 percent slopes	58.0	6.7%
230	Hookton-Tablebluff complex, 2 to 9 percent slopes	5.3	0.6%
258	Lepoil-Espa-Candymountain complex, 15 to 50 percent slopes	12.4	1.4%
399	Salmoncreek-Tepona-Rootcreek complex, 30 to 50 percent slopes	4.1	0.5%
Totals for Area of Interest		**866.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Humboldt County, Central Part, California

100—Water and Fluvents, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1l9dm
Elevation: 10 to 50 feet
Mean annual precipitation: 40 to 75 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 300 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 60 percent
Fluvents and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Rivers on channels
Down-slope shape: Linear, concave
Across-slope shape: Linear

Description of Fluvents

Setting

Landform: Point bars on channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex, concave
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

A - 0 to 13 inches: gravelly fine sandy loam
C - 13 to 59 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R004BK200CA - Riparian

Other vegetative classification: Riparian & Wetland Vegetation (RNPR001CA)
Hydric soil rating: Yes

Minor Components

Typic udifluvents
Percent of map unit: 4 percent
Landform: Meandering channels
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rock outcrop
Percent of map unit: 1 percent
Landform: Channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

110—Weott, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hs3l
Elevation: 0 to 150 feet
Mean annual precipitation: 35 to 80 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 275 to 330 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition
Weott and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weott

Setting
Landform: Flood-plain steps, depressions, backswamps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from mixed sources

Typical profile
Ap - 0 to 12 inches: silt loam

Bg1 - 12 to 26 inches: silt loam
Bg2 - 26 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: Occasional
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R004BA205CA - Marshlands
Hydric soil rating: Yes

Minor Components

Worswick

Percent of map unit: 5 percent
Landform: Flood-plain steps, natural levees
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Swainslough

Percent of map unit: 4 percent
Landform: Salt marshes, flood-plain steps, depressions, backswamps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Arlynda

Percent of map unit: 3 percent
Landform: Flood-plain steps, depressions, backswamps, meander scars
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Ferndale

Percent of map unit: 3 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

116—Swainslough, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hs3n
Elevation: 0 to 160 feet
Mean annual precipitation: 35 to 80 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 275 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Swainslough and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swainslough

Setting

Landform: Flood-plain steps, depressions, backswamps, salt marshes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from mixed sources

Typical profile

Oi - 0 to 3 inches: slightly decomposed plant material
A - 3 to 12 inches: silty clay loam
Bg1 - 12 to 20 inches: silty clay loam
Bg2 - 20 to 29 inches: silty clay loam
Bg3 - 29 to 38 inches: silty clay loam
Bg4 - 38 to 65 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: Occasional
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C/D
Ecological site: R004BA205CA - Marshlands
Hydric soil rating: Yes

Minor Components

Wigi, occasionally flooded
Percent of map unit: 4 percent
Landform: Salt marshes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Arlynda
Percent of map unit: 3 percent
Landform: Flood-plain steps, depressions, backswamps, meander scars
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Weott
Percent of map unit: 2 percent
Landform: Flood-plain steps, depressions, backswamps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Loleta
Percent of map unit: 1 percent
Landform: Fan remnants, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

221—Canalschool, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hs2k
Elevation: 10 to 160 feet
Mean annual precipitation: 35 to 80 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 275 to 330 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Canalschool and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canalschool

Setting

Landform: Flood-plain steps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

Ap - 0 to 10 inches: silt loam
Bw - 10 to 16 inches: silt loam
Bg - 16 to 26 inches: silt loam
Ab - 26 to 55 inches: silt loam
Bgb - 55 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 10 to 20 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F004BI100CA - Fluventic, salt-affected, rarely flooded, alluvial floodplains
Hydric soil rating: No

Minor Components

Russ

Percent of map unit: 5 percent
Landform: Natural levees
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Swainslough

Percent of map unit: 4 percent
Landform: Salt marshes, flood-plain steps, depressions, backswamps

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Ferndale

Percent of map unit: 3 percent
Landform: Flood-plain steps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Weott

Percent of map unit: 3 percent
Landform: Flood-plain steps, depressions, backswamps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

230—Hookton-Tablebluff complex, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2ljdr
Elevation: 30 to 820 feet
Mean annual precipitation: 41 to 53 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 270 to 330 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hookton and similar soils: 45 percent
Tablebluff and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hookton

Setting

Landform: Erosion remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A1 - 0 to 4 inches: loam
A2 - 4 to 15 inches: loam
Bt - 15 to 27 inches: clay loam
Bw1 - 27 to 39 inches: clay loam
Bw2 - 39 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 10 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: R004BA203CA - Riparian
Hydric soil rating: No

Description of Tablebluff

Setting

Landform: Erosion remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over mixed alluvium

Typical profile

Ap1 - 0 to 6 inches: silty clay loam
Ap2 - 6 to 11 inches: silty clay loam
AB - 11 to 16 inches: silt loam
Bt1 - 16 to 20 inches: silty clay loam
Bt2 - 20 to 29 inches: silty clay loam
Bt3 - 29 to 42 inches: silty clay loam
Bt4 - 42 to 49 inches: silty clay loam
Bt5 - 49 to 73 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F004BI101CA - Low elevation marine and floodplain terraces
Hydric soil rating: No

Minor Components

Urban land, residential

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Cannonball

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

Megwil,

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F004BX120CA - Redwood-Sitka spruce/California huckleberry-salmonberry/western swordfern-deer fern, marine terraces, loam
Hydric soil rating: No

258—Lepoil-Espa-Candymountain complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2p9zd
Elevation: 10 to 600 feet
Mean annual precipitation: 35 to 90 inches
Mean annual air temperature: 50 to 54 degrees F

Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Lepoil and similar soils: 35 percent
Espa and similar soils: 30 percent
Candymountain and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lepoil

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed marine deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: loam
AB - 8 to 19 inches: loam
Bt1 - 19 to 35 inches: loam
Bt2 - 35 to 67 inches: clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 49 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

Description of Espa

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed marine deposits derived from sedimentary rock

Typical profile

A - 0 to 16 inches: loam
BA - 16 to 22 inches: loam
Bt - 22 to 41 inches: loam
BC - 41 to 60 inches: fine sandy loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 39 to 49 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

Description of Candymountain

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed marine deposits derived from sedimentary rock

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 11 inches: fine sandy loam
Bw - 11 to 54 inches: fine sandy loam
C - 54 to 68 inches: fine sand

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

Minor Components

Hutsinpillar
Percent of map unit: 5 percent
Landform: Drainageways, marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Cannonball
Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

399—Salmoncreek-Tepona-Rootcreek complex, 30 to 50 percent slopes

Map Unit Setting
National map unit symbol: 2ljdt
Elevation: 80 to 1,070 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 275 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition
Salmoncreek and similar soils: 32 percent
Tepona and similar soils: 30 percent
Rootcreek and similar soils: 28 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salmoncreek

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Colluvium derived from siltstone and/or residuum weathered from siltstone

Typical profile

A - 0 to 7 inches: silt loam
Bt1 - 7 to 20 inches: silty clay loam
Bt2 - 20 to 31 inches: silty clay loam
Bt3 - 31 to 43 inches: silty clay loam
Btg1 - 43 to 59 inches: silty clay loam
Btg2 - 59 to 79 inches: silt loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 4 to 10 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C/D
Ecological site: F004BI104CA - Fog-influenced, upper elevation mountain slopes
Hydric soil rating: Yes

Description of Tepona

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Marine deposits derived from mixed

Typical profile

A - 0 to 7 inches: fine sandy loam
ABt - 7 to 20 inches: fine sandy loam
Bw1 - 20 to 33 inches: fine sandy loam
Bw2 - 33 to 49 inches: fine sandy loam
Bw3 - 49 to 59 inches: fine sandy loam
C - 59 to 71 inches: fine sandy loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A/D
Ecological site: F004BI101CA - Low elevation marine and floodplain terraces
Hydric soil rating: No

Description of Rootcreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, center third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear, convex, concave
Parent material: Colluvium derived from siltstone and/or residuum weathered from siltstone

Typical profile

A - 0 to 7 inches: silt loam
Bt1 - 7 to 12 inches: silt loam
Bt2 - 12 to 20 inches: silty clay loam
Bt3 - 20 to 33 inches: silt loam
Bt4 - 33 to 59 inches: silt loam
Bt5 - 59 to 65 inches: silt loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BI104CA - Fog-influenced, upper elevation mountain slopes

Hydric soil rating: No

Minor Components

Cannonball

Percent of map unit: 5 percent
Landform: Erosion remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Scoutcamp

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

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