Permanent Fire Station 5 Rebuild Project

Preliminary Delineation of Wetlands, Other Waters, and Jurisdictional Habitats

Prepared for:
City of Santa Rosa
Transportation and Public Works Department
Lisa Welsh
69 Stony Circle
Santa Rosa, California 95401
City Project ID: C02184

Prepared by:
MIG, Inc.
800 Hearst Avenue | Berkeley, California | 94710

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List of Abbreviated Terms

CFR	Code of Federal Regulations
CDFW	California Department of Fish and Wildlife
CNPS	California Native Plant Society
CS	Cross Section
CWA	Clean Water Act
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIE	Goulding cobbly clay loam
GPS	Global Positioning System
MIG	MIG, Inc.
NRCS	Natural Resource Conservation Service
OBL	Obligate
OHWM	Ordinary High Water Mark
Porter-Cologne	Porter-Cologne Water Quality Act
RWQCB	Regional Water Quality Control Board
SkE	Spreckles loam
UPL	Upland
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
WSP	Wetland Sample Point

Executive Summary

At the request of the City of Santa Rosa, MIG surveyed the Permanent Fire Station 5 Rebuild project site located near the intersection of Fountaingrove Parkway and Stagecoach Road in the City of Santa Rosa, California for wetlands and other waters potentially subject to regulation under Section 404 of the Clean Water Act (CWA) as administered by the United States Army Corps of Engineers (USACE). The survey also delineated the extent of waters of the state that may be subject to regulation by the Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act and under the Porter Cologne Water Quality Control Act. The survey also delineated jurisdictional habitats subject to regulation under Sections 1600-1607 of the California Fish and Game Code, which is administered by the California Department of Fish and Wildlife (CDFW). The survey area included the project boundary plus a 200-foot buffer.

In total, approximately 0.062 acre of potentially USACE and RWQCB jurisdictional features were identified in the survey area. These include approximately 0.025 acre of Sections 401 and 404 waters situated below the ordinary high water mark (OHWM) of in a perennial, unnamed tributary to West Fork of Paulin Creek. Section 401 waters of the state extend farther up to the top of the banks of the stream for an additional 0.025 acre of riparian habitat (mostly unvegetated). Additionally, Section 404 and 401 waters include approximately 0.022 acre of in-channel wetlands and a 0.015 acre potential wetland at a storm drain outlet.

CDFW jurisdictional features as defined by bed and bank topography (perennial stream) were identified in the project area and total 0.072 acre, including a perennial stream and in-channel wetlands.

1. Introduction

1.1 Project Area Description

The project site is located in a hillside neighborhood and is comprised of approximately 2 acres of mostly undeveloped land. Access to the site is provided by a gravel paved road that is located approximately 100 feet south of the intersection of Fountaingrove Parkway and Stagecoach Road in Santa Rosa, Sonoma County (Figure 1). The 2017 Tubbs Fire burned several trees within the project site that have since been removed. The project site has an irregular shape and includes a rectangular-shaped area at its western end adjacent to Fountaingrove Parkway and a narrow strip resembling a panhandle that follows parallel to Stagecoach Road. The proposed fire station will be located in the rectangular portion of the project site that includes a large pad area. There is a drainage that begins from a culvert opening from under Fountaingrove Parkway and flows approximately southwest to northeast before going underground of Stagecoach Road.

The project site is in a Mediterranean climate zone typical of central coastal California. This climate zone is characterized by cool, wet winters and hot, dry summers. Most of the rainfall typically occurs between October 1 and April 1. Influenced by marine air about 85 percent of the time, the region is generally protected from the hot weather of the Central Valley by the interior Coast Ranges. Although the Pacific Ocean helps moderate temperatures, they have a wider range than along the coast, occasionally exceeding 100 degrees Fahrenheit and sometimes falling as low as several degrees below freezing for several consecutive nights (ESA 2009). Climate conditions in the parcel include a 30-year average (1990 to 2020) of approximately 31.69 inches of annual precipitation with an average temperature range from 46.6ºF to 71.3ºF (NOAA 2020a).

The survey took place at during the 2020-2021 wet season. Relative to the 30-year climate normal, precipitation in the study area was within the low end of normal range prior to the delineation. Total precipitation recorded in the area from August 2020 through November 2020 was 2.24 inches, which is approximately 44% of the 30-year average (1990-2020) (NOAA 2020a). Fieldwork was conducted during drought conditions that were categorized as moderate drought on the Palmer Drought Severity Index (NOAA 2020b).

The entire City of Santa Rosa is located within the Santa Rosa Creek watershed, which originates from Hood Mountain in the Mayacamas Mountains to the east and discharges to Laguna de Santa Rosa, a large wetland complex downstream of the Santa Rosa urban area. Tributary basins to Santa Rosa Creek that lie primarily in the city are Brush Creek, Matanzas Creek, Paulin Creek, Roseland/Colgan Creek, and Piner/Peterson Creek. All of these tributaries ultimately drain through to the Laguna de Santa Rosa which drains into the Russian River and on out to the Pacific Ocean (ESA 2009).

A hill occupies much of the project site and slopes downward from the southern border of the site to Stagecoach Road (northern border), ranging from 528 to 454 feet. The only relatively level portion of the site is the northwest corner where the new fire station is proposed. The

unnamed stream flows downward from the western side of the site at 502 feet east to Stagecoach Road at 454 feet.

The western portion of the project site where the unnamed stream is located is mapped as GIE- Goulding cobbly clay loam, 15 to 30 percent slopes (NRCS 2020a). The eastern portion of the site where the storm drain outlet is located is mapped as SkE- Spreckles loam, 15 to 30 percent slopes (NRCS 2020a) (Figure 2).

The National List of Hydric Soils was reviewed to determine if the soils within the project site are hydric. Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anoxic conditions in the upper part. GIE- Goulding cobbly clay loam, 15 to 30 percent slopes is listed as a hydric soil under Criteria 2 according to the National List of Hydric Soils (NRCS 2020b). Criteria 2 applies to certain map unit components that: (a) based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or (b) show evidence that the soil meets the definition of a hydric soil. SkE- Spreckles loam, 15 to 30 percent slopes is not listed as a hydric soil.

The U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) map of the project area is depicted in Figure 3. The unnamed stream does not appear in the NWI (NWI 2020). NWI maps are based on interpretation of aerial photography, limited verification of mapped units, and/or classification of wetland types using the classification system developed by Cowardin et al. (1979). These data are available for general reference purposes and do not necessarily correspond to the presence or absence of jurisdictional waters.

2. Proposed Project

The project involves designing a new permanent fire station that will meet or exceed the latest design standards including current fire safety standards in the wildland urban interface to provide for maximum resiliency to the future threats of wildland fire. Non-combustible or fire-resistive construction is essential, with defensible space surrounding the facility. The building will be fully compliant with Accessibility Requirements of the California Building Code, meeting all qualifications for a public access building. It will have three (3) drive through apparatus bays for a minimum one (1) Type-1 structural fire engine, one (1) Type-3 wildland fire engine, and one (1) utility vehicle/ hazardous materials response unit.

The inside living space of the station will include six (6) dorm rooms to allow sleeping area for three (3) firefighters on duty, and the ability to upstaff the station to six (6) firefighters during times of emergency. It will also include a kitchen, dining area, living/day room, gym facility, an office space with three (3) workstations, and a public lobby area with a community meeting room/training room. The training room is to have the capabilities to be used as a forward command post to manage emergencies in the northern area of the city. There will also be a fuel tank and emergency generator housed in a small separate structure. Other features will include an above-ground fuel storage tank for fueling fire apparatus, a hose drying rack, station security fence/gates, and an exhaust removal system.

3. Project Purpose

The purpose of the field survey was to identify the extent and distribution of potentially jurisdictional waters, such as wetlands and other waters, and other jurisdictional habitats occurring within the project boundary plus a 200-foot buffer under conditions existing at the time of the December 9, 2020 survey. The results of the field survey in combination with aerial imagery and topographic data were used to map potential jurisdictional features in the project area. The delineation will be used to inform project design, environmental review and the permitting process (if needed).

4. Survey Methods

Prior to conducting the delineation, MIG biologists reviewed the USFWS NWI maps (NWI 2020) and color aerial photographs (both recent and past) of the project area and surrounding area (Google, Inc. 2020). We also reviewed City documents regarding regional hydrology and watersheds, including the Draft Environmental Impact Report for the Santa Rosa General Plan 2035 (ESA 2009) and the Santa Rosa Citywide Creek Master Plan (City of Santa Rosa et al. 2013). In addition, a soil survey of the project area from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2020a) was reviewed. The biologists also reviewed all relevant background reports associated with the project.

On December 9, 2020, MIG biologists Megan Kalyankar, M.S. and Melinda Mohammed, M.S. performed a technical delineation of wetlands and other waters in the project site plus a 200-foot buffer, in accordance with the *Corps of Engineers 1987 Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987). Additionally, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West (Version 2.0) (Regional Supplement*) (USACE 2008a) and *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b) were followed to document site conditions relative to hydrophytic vegetation, hydric soils, and wetland hydrology. The extent and distribution of wetlands and other waters of the U.S. were mapped. These include wetlands and waters that may be subject to regulation under Section 404 of the CWA, and waters of the state that may be subject to regulation under Section 401 of the Clean Water Act (CWA) or the Porter Cologne Water Quality Control Act (Porter-Cologne), which is administered by the Regional Water Quality Control Board (RWQCB). MIG biologists also surveyed for aquatic and riparian habitat that may be subject to regulation under Sections 1600-1607 of the California Fish and Game Code, which is administered by the California Department of Fish and Wildlife (CDFW).

4.1 Identification of Jurisdictional Waters

The vegetation, soils, and hydrology in the project area were mapped according to the Routine Determination Method outlined in the Corps Manual (Environmental Laboratory 1987), using updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators

developed for the Regional Supplement (USACE 2008b). This three-parameter approach to identifying wetlands is based on the presence of a prevalence or dominance of hydrophytic vegetation, hydric soils, and wetland hydrology.

This report was prepared in accordance with guidance provided in *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016a) and *Information Requested for Verification of Corps Jurisdiction* (USACE 2016b). These documents list the information that must be submitted as part of a request for a jurisdictional determination, including:

- Project location map/ USGS quadrangle sheet (Figure 1)
- Soils map (Figure 2)
- National Wetlands Inventory map (Figure 3)
- Vegetation communities map (Figure 4)
- Delineation map (Figure 5)
- Current soil survey report (Appendix A)
- Plant species observed (Appendix B)
- Wetland Determination Data Forms and OHWM Datasheets (Appendix C)
- Written rationale for sample point choice (Section 7.2)
- Color photos (Appendix D)

During the survey, the project area was examined for topographic features, drainages, alterations to hydrology or vegetation, and recent significant disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field survey. In the field, the techniques used to identify wetlands included observing the vegetation growing near the soil sample points and characterizing the current surface and subsurface hydrologic features present near the sample points through both observation of indicators and direct observation of hydrology. Features meeting wetland vegetation, soil, and hydrology criteria were then mapped in the field. Geospatial data were collected using a tablet with an Arrow 100 submeter GPS receiver and a geo-spatial mobile-device application.

4.2 Identification of Section 404 Wetlands (Special Aquatic Sites)

Vegetation, soils, and hydrology parameters were recorded where wetland field characteristics were present using the Routine Determination Method outlined in the Corps Manual (Environmental Laboratory 1987) and the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the Regional Supplement (USACE 2008b).

Hydrophytic Vegetation. Plants that can grow in soils that are saturated or inundated for long periods of time and contain little or no oxygen when wetted, are considered adapted to those soils, and are called hydrophytic. There are different levels of adaptation, as summarized in Table 2. Some plants can only grow in soils saturated with water (and depleted of oxygen), some are mostly found in this condition, and some are found equally in wet soils and in dry soils. Plants observed at each of the sample points were identified to species, where possible, using The Jepson Manual, Vascular Plans of California, Second Edition (Baldwin et al. 2012). The wetland indicator status of each species was obtained from the *Arid West 2016*

Regional Wetland Plant List (Lichvar et al. 2016). Wetland indicator species are designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67 to 99 percent in wetlands is designated a facultative wetland indicator species. The wetland indicator groups, indicator symbol, and the frequency of occurrence of species, provided as a percentage, within wetlands are shown in Table 1.

Table 1. Classification of Wetland-Associated Plant Species

Indicator Category	Symbol	Frequency (Percent) of Occurrence in Wetlands[1]
Obligate	OBL	>99 (Almost always is a hydrophyte, rarely in uplands)
Facultative wetland	FACW	67 – 99 (Usually a hydrophyte but occasionally found in uplands)
Facultative	FAC	34 – 66 (Commonly occurs as either a hydrophyte or non-hydrophyte)
Facultative upland	FACU	1 – 33 (Occasionally is a hydrophyte, but usually occurs in uplands)
Upland[2]	UPL	<1% (Rarely is a hydrophyte, almost always in uplands)
Non-indicator	NI	Considered to be an upland species unless otherwise noted

Obligate and facultative wetland indicator species are hydrophytes that occur "in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicators when found growing in hydric soils that experience periodic saturation. Plant species that are not on the regional list of wetland indicator species are considered upland species. A complete list of the vascular plants observed in the project area, including their current indicator status, is provided in Appendix B.

Hydric Soils. Up to 18 inches of the soil profile were examined for hydric soil indicators. The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as one formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper 12 inches of soil (NRCS 2010). Hydric soils include soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. In general, evidence of a hydric soil includes characteristics such as organic soils (histosols), reducing soil conditions, gleyed soils, soils with bright mottles and/or low matrix chroma, soils listed as hydric by the U.S. Department of Agriculture (USDA) on the National Hydric Soils List (NRCS 2020b), and iron and manganese concretions. Reducing soil conditions can also include circumstances where there is evidence of frequent ponding for long or very long duration. A long duration is defined as a period of inundation for a single event that ranges from 7 days to a month and very long is greater than one month (Environmental Laboratory 1987).

Munsell Soil Notations (Munsell 2009) were recorded for the soil matrix of each soil sample. The Munsell color system is based on three color properties: hue, value, and chroma. A brief

[1] Based on information contained in the Corps Manual.

description of each component of the system is described below, in the order they are used in describing soil color (i.e., hue/value/chroma):

1. **Hue**. The Munsell Soil Color Chart is divided into five principal hues: yellow (Y), green (G), purple (P), blue (B), and red (R), along with intermediate hues such as yellow-red (YR) and green-yellow (GY). Example of commonly encountered hue numbers include 2.5YR, 10YR, and 5Y.
2. **Value.** Value refers to lightness, ranging from white to grey to black. Common numerical values for value in the Munsell Soil Color Chart range from 2 for saturated soils to 8 for faded or light colors. Hydric soils often show low-value colors when soils have accumulated sufficient organic material to indicate development under wetland conditions but can show high-value colors when iron depletion has occurred, removing color value from the soil matrix. Value numbers are commonly reported as 8/, 2.5/, and 6/.
3. **Chroma**. Chroma describes the purity of the color, from "true" or "pure" colors to "pastel" or "washed out" colors. Chromas commonly range from 1 to 8 but can be higher for gleys. Soil matrix chroma values that are 1 or less, or 2 or less when mottling is present, are typical of soils that have developed under anaerobic conditions. Chroma numbers are listed, for example, as /1, /5, and /8.

The NRCS Web Soil Survey (NRCS 2020a) was consulted to determine which soil types have been mapped in the project area (Figure 2). Detailed descriptions of these soil types are provided in Appendix A.

Wetland Hydrology. Wetland hydrology is defined as an area that is inundated either permanently or periodically at mean water depths less than 6.6 feet, or where the soil is saturated at the surface at some time during the growing season of the prevalent vegetation. The period of inundation or soil saturation varies according to the hydrologic/soil moisture regime and occurs in both tidal and non-tidal situations.

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Wetland hydrology indicators provide evidence that the project area has a continuing wetland hydrologic regime. Primary indicators might include visual observation of surface water (A1), high water table (A2), soil saturation (B1), water-stained leaves (B9), and hydrogen sulfide odor (C1). Secondary indicators might include riverine drift deposits (B3), drainage patterns (B10), and a passing score for the FAC-neutral test (D5). Each of the sample points was examined for positive field indicators (primary and secondary) of wetland hydrology, following the guidance provided in the Regional Supplement.

Potential Section 404 wetlands were identified in the project area.

4.3 Identification of Section 404 Jurisdictional Other Waters

"Other waters" includes lakes, slough channels, seasonal ponds, tributary waters, non-wetland linear drainages, and salt ponds. Such areas are identified by the (seasonal or perennial) presence of standing or running water and generally lack hydrophytic vegetation. In non-tidal or

muted tidal waters U.S. Army Corps of Engineers (USACE) jurisdiction extends to the ordinary high water mark (OHWM) which is defined in 33 CFR Part 328.3 as “the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris.”

Potential Section 404 other waters were identified in the project area.

5. Identification of Waters of the State

The Porter-Cologne Water Quality Control Act (Porter-Cologne) broadly defines waters of the state as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Because the Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California’s jurisdictional reach overlaps and may exceed the boundaries of waters of the U.S. For example, Water Quality Order No. 2004-0004-DWQ states that “shallow” waters of the state include headwaters, wetlands, and riparian areas. Where forested habitat occurs, the outer canopy of any riparian trees rooted within top of bank may be considered jurisdictional as these trees can provide nutrients and carbon (allochthonous) input to the channel below.

Potential waters of the state were identified in the project area.

6. Identification of CDFW Jurisdiction

Ephemeral and intermittent streams, rivers, creeks, dry washes, sloughs, blue line streams on USGS maps, and watercourses with subsurface flows fall under CDFW jurisdiction. Canals, aqueducts, irrigation ditches, and other means of water conveyance may also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. A stream is defined in Title 14, California Code of Regulations §1.72, as “a body of water that follows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. Jurisdiction does not include tidal areas such as tidal sloughs unless there is freshwater input. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.” Using this definition, CDFW extends its jurisdiction to encompass riparian habitats that function as a part of a watercourse. California Fish and Game Code §2786 defines riparian habitat as “lands which contain habitat which grows close to and which depends upon soil moisture from a nearby freshwater source.” The lateral extent of a stream and associated riparian habitat that would fall under the jurisdiction of CDFW can be measured in several ways, depending on the situation and the type of fish or wildlife at risk. At a minimum, CDFW would claim jurisdiction over a stream’s bed and bank.

Potential CDFW jurisdictional habitats were identified in the project area.

7. Survey Results and Discussion

The following vegetation, land use types, and habitats were mapped in the project area: Developed/Mediterranean Scrub and Grassland Formation, California Bay Forest and Woodland, Coast Live Oak (seven trees), and Valley Oak (one tree) (Figure 4).

The parcel is located within the San Francisco Bay Area Subregion of the Central Western Californian Region, both of which are contained within the larger California Floristic Province (Baldwin et al. 2012). Vegetation communities were mapped according to the Classification of the Vegetation Alliances and Associations of Sonoma County, California (CDFW and CNPS 2015), where applicable. A total of four sample points were examined to identify jurisdictional features (Wetland Sample Points 1 to 4, Figure 5).

In total, approximately 0.062 acre of potentially USACE and RWQCB jurisdictional features were identified in the survey area. These include approximately 0.025 acre of Sections 401 and 404 waters situated below the ordinary high water mark (OHWM) of in a perennial, unnamed tributary to West Fork of Paulin Creek. Section 401 waters of the state extend farther up to the top of the banks of the stream for an additional 0.025 acre of riparian habitat (mostly unvegetated). Additionally, Section 404 and 401 waters include approximately 0.022 acre of in-channel wetlands and a 0.015 acre potential wetland at a storm drain outlet. CDFW jurisdictional features as defined by bed and bank topography (perennial stream) were identified in the project area and total 0.072 acre, including the perennial stream and in-channel wetlands.

A summary of jurisdictional waters and habitats within the project area is provided in Table 2.

Table 2. Summary of Jurisdictional Waters and Habitats within the Project Area

Potentially Jurisdictional Waters and Habitats	Acres [1]
USACE Jurisdictional Total	**0.062**
Section 404 Other Waters	
Perennial Stream	0.025
Section 404 Wetlands	
Freshwater Wetlands	0.037
RWQCB Jurisdictional Total	**0.087**
Perennial Stream	0.025
Channel banks (largely unvegetated)	0.025
Freshwater Wetlands	0.037
CDFW Jurisdictional Total	**0.072**
Perrenial Stream	0.025
Channel Banks (largely unvegetated)	0.025
Freshwater Wetlands	0.022

[1]Note: Values are approximate due to rounding.

Information assembled during this investigation and pertinent to the identification of jurisdictional wetlands and other waters is presented in the four appendices of this report:

- Appendix A—Soil Reports for the Project Area
- Appendix B—Plants Observed in the Survey Area
- Appendix C—USACE Arid West Wetland Data Forms and OHWM Datasheets
- Appendix D—Photographic Documentation of the Survey Area

7.1 Project Area Conditions and Observations

Normal Circumstances. The survey took place during the 2020-2021 wet season. Seasonal conditions were considered when assessing the biotic habitats present in the project area. Also, during the December 2020 site visit, normal circumstances were present in the project area and the boundaries of waters and wetlands remained clear owing to the presence of hydrology, hydric soil indicators, and hydrophytic vegetation.

7.2 Rationale for Sample Points

Wetland sample points 1 to 4 were selected to examine areas that appeared to have wetland vegetation (Figure 5).

Wetland Sample Point (WSP) 1 was located in the storm drain outlet on the northeastern border of the site (Appendix C; Appendix D Photo 1). This sample point had one dominant species in the herb stratum (and no tree, shrub, or vine stratum) which was curly dock (*Rumex crispus,* FAC). This sample point did not have hydric soil indicators; however, we were only able to get a soil sample to a depth of 6 inches because the soil was very rocky. The color of the soil at this sample point was 100% was 10R 2.5/2 and the soil texture was loam. This sample point had primary hydrology indicators including a high water table and water-stained leaves; and secondary hydrology indicators including drift deposits (riverine) and saturation visible on aerial imagery. This sample point did not have saturated soils but the soil was moist.

WSP 2 was located was located next to the stream adjacent to where it flows under the existing chain link fence to the southern side of the fence (Appendix C, Appendix D Photo 2). This sample point had one dominant species in the shrub stratum and one dominant species in the herb stratum (and no tree or vine stratum), Himalayan blackberry (*Rubus armeniacus,* FAC) and tall flatsedge (*Cyperus eragrostis*, FACW), respectively. However, only tall flatsedge was dominant across all stratums in terms of absolute cover (70% as opposed to 2% for Himalayan blackberry). This sample point had did one hydric soil indicator at a depth of 6 to 18 inches, redox dark surface. The color of the soil was 100% 10YR 3/1 from 0 to 6 inches, and 90% 10YR 3/2 from 6 to 18 inches; the 10% redox features was 5YR 5/8 from 6 to 18 inches. The texture of the entire soil sample was clay. This sample point had primary hydrology indicators including a high water table, saturated soils, and water-stained leaves; and secondary hydrology indicators including drift deposits (riverine) and saturation visible on aerial imagery.

WSP 3 was located adjacent to the culvert on the east side of the existing access road that crosses the site in the northwest corner (Appendix C; Appendix D Photo 3). This sample point had only one dominant species in the herb stratum (and no tree, shrub, or vine stratum), tall flatsedge (FACW). This sample point did not have hydric soil indicators; however, we were only able to get a soil sample to a depth of 12 inches because the soil was very rocky. The color of the soil at this sample point was 100% was 10YR 3/2 and the soil texture was clay. This sample point had primary hydrology indicators including a high water table, saturated soils, and water-stained

leaves; and secondary hydrology indicators including drift deposits (riverine) and saturation visible on aerial imagery.

WSP 4 was located adjacent to the culvert on the west side of the existing access road that crosses the site in the northwest corner (Appendix C; Appendix D Photo 4). This sample point had had only one dominant species in the herb stratum (and no tree, shrub, or vine stratum), tall flatsedge (FACW). This sample point had one hydric soil indicator at a depth of 0 to 12 inches, redox dark surface. We were only able to get a soil sample to a depth of 12 inches because the soil was very rocky. The color of the soil was 80% 10YR 3/1, 10% 10YR 2/1 and 10% 10YR 3/4, all at a depth of 0 to 12 inches. The color of the 2% redox features was 5YR 10/8. The texture of the entire soil sample was clay. This sample point had primary hydrology indicators including a high water table, saturated soils, and water-stained leaves; and secondary hydrology indicators including drift deposits (riverine) and saturation visible on aerial imagery.

Cross Section (CS) 1 was located in the storm drain outlet on the northeastern border of the site (Appendix C; Appendix D Photo 5). Many portions of the site had been mulched and/or weed whacked. The dominant plant species was curly dock (*Rumex crispus,* FAC). At the time of the December 2020 delineation, there was no water in the storm drain outlet. Field indicators for the edge of the active floodplain included a change in total vegetation cover, a change in overall vegetation maturity, and a change in dominant species present. The sediment in the flood plain was cobbly loam.

CS 2 was located on the unnamed stream within the project boundary east of the access road (Appendix C; Appendix D Photo 6). This site is representative of the portion of the stream that is relatively level and flows at the base of hill through open grassland habitat. The dominant plant species were curly dock (FAC), and nonnative annual grasses (UPL). Field indicators for the edge of the active floodplain included a change in total vegetation cover, a change in overall vegetation maturity, a change in dominant species present, and the presence of a channel bed and bank. The sediment in the flood plain was cobbly clay.

CS 3 was located on the unnamed stream ouside the project boundary west of the access road (Appendix C; Appendix D Photo 7). This site is representative of the portion of the stream near Fountaingrove Parkway that flows downhill through shaded woodland habitat. The dominant plant species were coast live oak (*Quercus agrifolia*, UPL) and nonnative annual grasses (UPL). Field indicators for the edge of the active floodplain included a change in total vegetation cover, a change in overall vegetation maturity, a change in dominant species present, a change in sediment texture, and the presence of a channel bed and bank. The sediment in the flood plain was cobbly clay.

7.3 Photo Points

Photo point labels, coordinates, and rationale for the photos are include in Table 3. Photos are included in Appendix D and photo points are shown in Figure 5.

Table 3. Coordinates and Rationale for Photo Points

Label	Latitude	Longitude	Rationale
Photo 1	38.290900°	-122.422927°	WSP1- Wetland vegetation in storm drain outlet
Photo 2	38.290746°	-122.423762°	WSP 2- Wetland vegetation in unnamed stream
Photo 3	38.290635°	-122.423812°	WSP 3- Wetland vegetation in unnamed stream
Photo 4	38.290581°	-122.423884°	WSP 4- Wetland vegetation in unnamed stream
Photo 5	38.290876°	-122.422966°	CS 1- Floodplain in storm drain outlet
Photo 6	38.290788°	-122.423750°	CS 2- Level grassland part of unnamed stream
Photo 7	38.290544°	-122.423993°	CS 3- Hilly woodland part of unnamed stream

7.4 Identification of Section 404 Potentially Jurisdictional Waters

Approximately 0.025 acre and 624 linear feet of Section 404 other waters (perennial stream) were mapped in the project area up to the OHWM (Figures 5). The stream on the project site is a tributary to the West Fork of Paulin Creek. Paulin Creek (with its tributary Poppy Creek) forms the main tributary to Piner Creek. Starting in the fir covered hillsides of Hidden Valley, the Paulin Creek drops 680 feet in elevation to Mendocino Avenue in the first half of its journey and, after disappearing under Highway 101, loses only an additional 60 feet in elevation before entering Piner Creek west of Marlow Road (City of Santa Rosa et al. 2013). Piner Creek flows into Santa Rosa Creek downstream of its confluence with Paulin Creek.

The stream on the project site is unnamed and is not shown on the National Wetland Inventory (Figure 3) or on creek maps in the Santa Rosa Citywide Creek Master Plan (City of Santa Rosa et al. 2013). The unnamed stream flows from south to north across the northwest corner of the project site before flowing into a culvert under Stagecoach Road and connecting to the West Fork of Paulin Creek downstream of the site. The unnamed stream is approximately one to two feet wide and one foot deep. It appears to be perennial, based on a flowing condition observed in November and December 2020 after months with little rain and no recent rainstorms.

Water was present in the stream during the December 2020 delineation and it was at a level approximately at the OHWM. Geomorphic and vegetative field indicators included:

- Natural line impressed on the bank by water flow
- Changes in character of the soil
- Presence of litter and debris caused by water flow
- Vegetation matted down, bent, or absent as a result of water flow
- Sediment sorting as a result of water flow
- Bed and banks

- Change in plant community

MIG biologists did three cross sections of aquatic features on the site (CS1 to CS3, Appendix C), one at the storm drain outlet, one on the portion of the stream northeast of the access road, and one on the portion of the stream southwest of the access road. Changes in vegetation and sediment were observed from the lowest part of the floodplain to the active flood plain boundary (Appendix C).

7.5 Identification of Section 404 Potentially Jurisdictional Wetlands

Approximately 0.037 acre of potential Section 404 wetlands were observed at four sample points. One potential wetland is at the storm drain outlet, and the other three wetlands are within the perennial stream.

Based on vegetation, soils, and hydrology, it is our professional judgement that all four areas sampled are potential wetlands. Although only WSP 2 and 4 had all three wetland indicators- hydrophytic vegetation, hydric soil, and hydrology- soils were very rocky and we were unable to get a soil sample at least 18 inches deep in all but one soil sample (WSP 2). Hydric soil indicators may have been present at WSPs 1 and 3 too if deeper soil samples had been possible.

There is some indication that the area at WSP 1 may not be a wetland. The feature sampled with WSP 1 appears to be a storm drain outlet, whereas the other wetland sample points are in features associated with the perennial stream on site. WSP 1 had different dominant vegetation (curly dock, a FAC species, instead of tall flat sedge, a FACW species) as well as different hydric indicators (soils moist but not saturated, no surface water at or near sample point) than the other wetland sample points, indicating that it may be wet less frequently than the other sample points. Wetland Sample Point 1 also has a different soil type (SkE) according to the Web Soil Survey (NRCS, 2020) than the other sample points, which is not on the USDA Hydric Soils List whereas the soil type at wetland sample points 2 to 4 (GIE) is on the Hydric Soils List.

7.6 Identification of Potentially Jurisdictional Waters of the State

The extent of Section 401 waters of the state (RWQCB jurisdiction) in the project area includes a total of 0.087 acre, including areas within Section 404 jurisdiction as described above and riparian habitat up to the top of the bank of the unnamed tributary to Paulin Creek. In the field, the top of bank was determined by mapping the first significant topographic break in slope. Waters of the state within the project area include all potential waters of the U.S., and cover approximately, 0.05 acre of perennial stream habitat, 0.037 acre of wetlands (Figure 5). Characteristics of waters of the U.S., including wetlands are described above in Sections 7.4 above. The top of bank was very close to the OHWM in many places and the banks were largely unvegetated. The current practice of the San Francisco RWQCB is to claim all areas up to the top of bank.

7.7 Identification of CDFW Potentially Jurisdictional Habitats

The project area contains a perennial stream channel with bed and bank topography, as defined by CDFW. Streambed features were mapped by the top of bank (which can extend beyond the OHWM that is used to measure the extent of waters of the U.S.). The top of bank was

delineated in the field as the first distinct topographic break in bank slope. Approximately 0.05 acre of the perennial stream in the survey area is identified as likely within CDFW jurisdiction. There is no woody riparian vegetation on the streambanks, so the area within CDFW jurisdiction extends only to the top of bank. Additionally, the approximately 0.022 acre of freshwater wetlands within the stream channel are likely within CDFW jurisdiction (Figure 5).

7.8 Areas Not Meeting the Regulatory Definition of Section 401/404 Wetlands and Waters and Areas Not Subject to CDFW Jurisdiction

The following vegetation communities and land use types did not meet the regulatory definition of Section 401/404 wetlands and waters, are not subject to regulation under Sections 1600-1607 of the California Fish and Game Code (Figure 4).

Developed/Mediterranean Scrub and Grassland Formation. Developed land includes commercial and industrial land uses and paved and dirt parking lots, driveways, and access roads. These areas are generally devoid of vegetation or are very sparsely vegetated.

Interspersed with developed areas, including access roads and driveways, is Mediterranean scrub and grassland formation as defined by the Classification of the Vegetation Alliances and Associations of Sonoma County, California (CDFW and California Native Plant Society (CNPS), 2015). Most of the project site is Mediterranean Scrub and Grassland Formation, which typically includes species belonging to the genuses: Adenostoma, Arctostaphylos, Ceanothus, Quercus, Artemisia, Eriodictyon, Heterotheca, Baccharis, Gaultheria, Toxicodendron, Eschscholzia, Lasthenia, Plagiobothrys, Elymus, Nassella, Avena, Brassica, Centaurea, Cynosurus, among many others.

NatureServe Explorer describes, “Mediterranean scrub and grassland includes sclerophyllous scrub and herbaceous vegetation, which develops in Mediterranean climates (moderately dry, warm-temperate, maritime climates with little or no summer rain). Sclerophyll-leaved growth forms prevail, but facultatively drought-deciduous "soft chaparral" forms may also occur. Mixed annual and perennial grasslands and non-grass "forblands" may also occur, with only scattered scrub. Shrub growth forms range from low, open subshrubs (<1 m) to arborescent (2 to 5 m tall) shrubs with a closed canopy, in response to moisture, fire and other factors. Dominant plants are affected by frequent fires. Sclerophyll woodlands and forest are excluded from this classification of Mediterranean Scrub & Grassland. Grasslands are a mix of annual and perennial growth forms” (2020).

California Bay Forest and Woodland. Coast live oak (*Quercus agrifolia*) alliance stands in Sonoma County cover the range from mesic woodlands (in which coast live oak mixes with *Umbellularia* and *Arbutus*), to relatively dry, open woodlands with grassy understories. The alliance typically occurs in alluvial benches, streamsides, valley bottoms, coastal bluffs, inland ridges, steep north-facing slopes, and rocky outcrops and in soils that are shallow to deep, sandy to clay loams (CNPS 2020).

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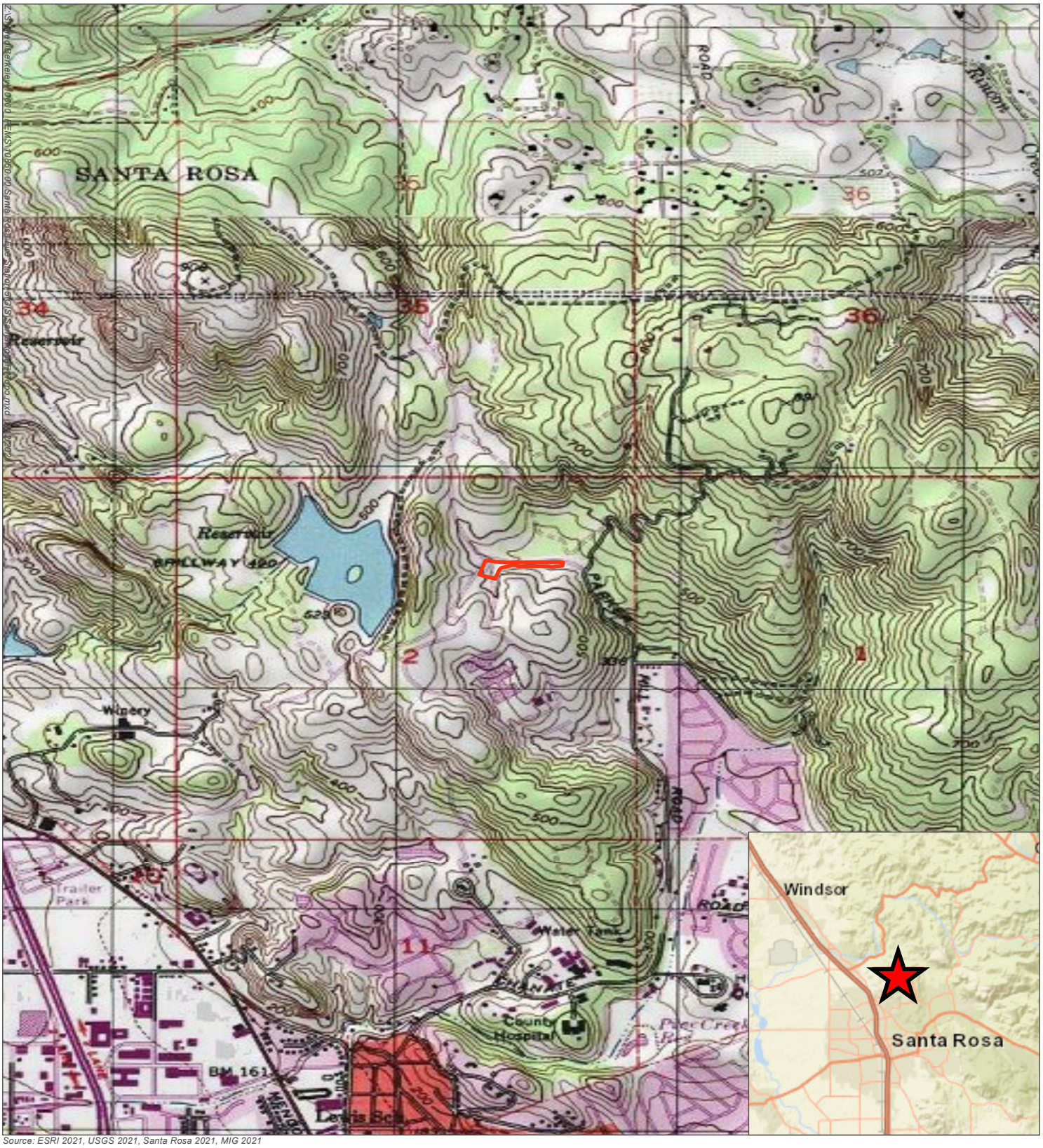
Figures



Source: ESRI 2021, USGS 2021, Santa Rosa 2021, MIG 2021

Legend

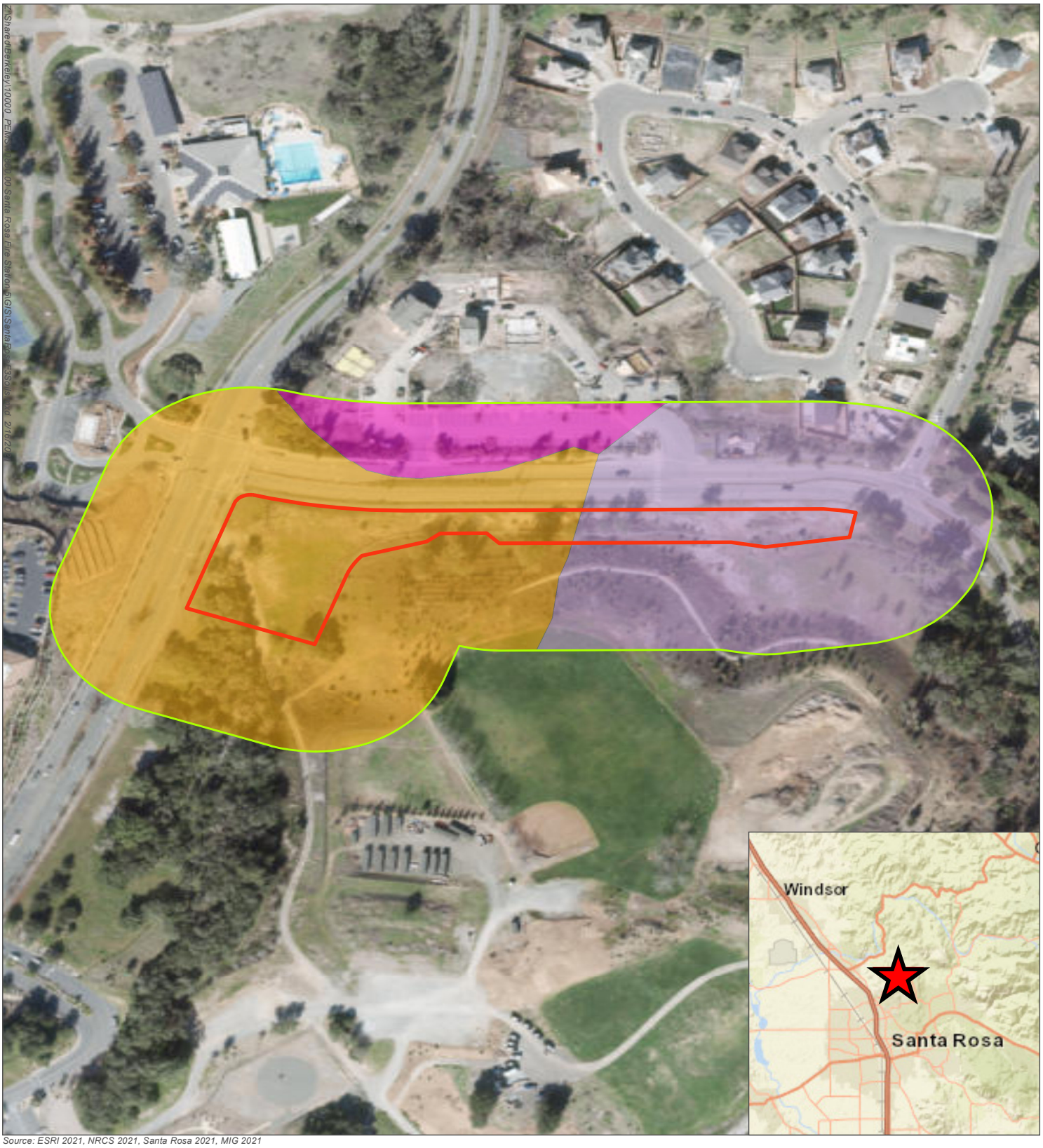
Project Boundary

0 1,050 2,100 4,200 Feet

N

Figure 1. Project Location Map
Preliminary Jurisdictional Delineation
Santa Rosa Fire Station 5

MIG



Source: ESRI 2021, NRCS 2021, Santa Rosa 2021, MIG 2021

Legend

- Project Boundary
- Survey Area (200-foot Buffer of Project Boundary)

NRCS Soils

- Goulding cobbly clay loam, 15 to 30 percent slopes (approx. 1.5 acres within Project Boundary)
- Goulding cobbly clay loam, 30 to 50 percent slopes (0 acres)
- Spreckels loam, 15 to 30 percent slopes (approx, 0.6 acres)

0 135 270 540 Feet

N

Figure 2. Soils Map

Preliminary Jurisdictional Delineation

Santa Rosa Fire Station 5

MIG

Source: ESRI 2021, USFWS NWI 2021, Santa Rosa 2021, MIG 2021

Legend

- Project Boundary
- Potential NWI Wetlands

0 450 900 1,800 Feet

N

Figure 3. USFWS National Wetlands Inventory Map
Preliminary Jurisdictional Delineation

Santa Rosa Fire Station 5

MIG

Source: Sonoma County 2018, ESRI 2020, MIG 2020

Legend

Project Boundary

Vegetation Communities

- Developed/Mediterranean Scrub & Grassland Formation (1.87 ac)
- California Bay Forest and Woodland (0.15 ac)
- Coast Live Oak (7 individual trees, 0.06 ac)
- Valley Oak (1 tree, 0.02 ac)

0 0.01 0.02 0.04 Miles

N

MIG

Figure 4. Vegetation Map
Preliminary Jurisdictional Delineation
Santa Rosa Fire Station 5

Source: Sonoma County 2018, ESRI 2020, MIG 2020

Legend

- Project Boundary = PB
- Survey Area = SA (200-foot Buffer of Project Area)

Potential Jurisdictional Areas

- Streambed (Below OHWM; 0.025ac, 624lf withinin SA; 0.018ac, 374lf within PB)
- Top Bank (0.025ac, 626lf within SA; 0.018ac, 375lf with PB)
- Potential Wetlands (1=0.015ac, 2=0.012ac, 3=0.007ac, 4=0.003ac, Total=0.037ac)

- Wetland Sample Points
- Survey Transects
- Photo Points

0 0.015 0.03 0.06 Miles

N

MIG

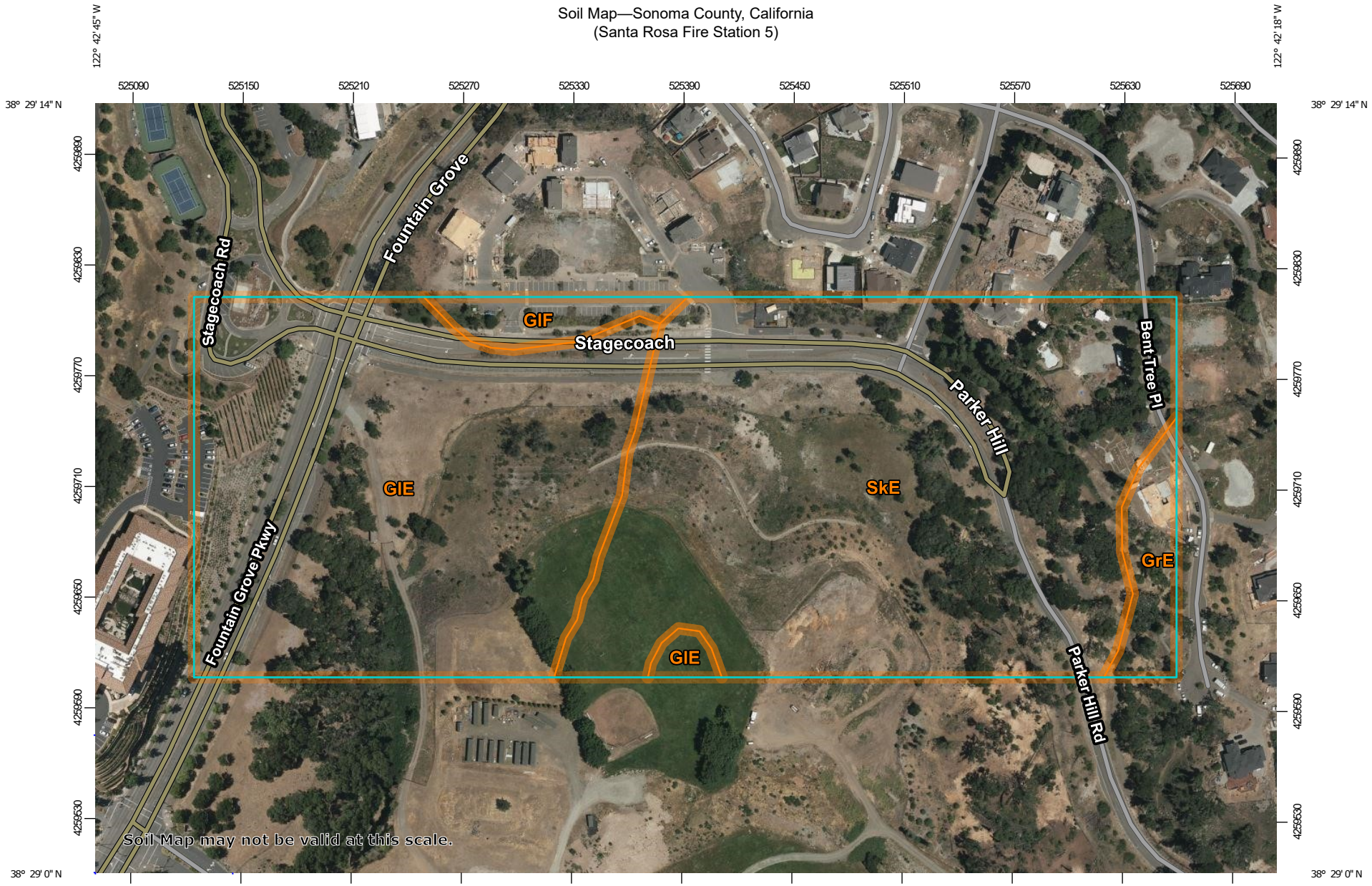
Figure 5. Potential Jurisdictional Waters Map

Jurisdictional Delineation Report

Santa Rosa Fire Station 5

Appendix A: Soil Report for the Project Area

Soil Map—Sonoma County, California
(Santa Rosa Fire Station 5)



Map Scale: 1:2,940 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

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 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Sonoma County, California
Survey Area Data: Version 14, May 29, 2020

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

Date(s) aerial images were photographed: Jun 1, 2020—Jun 5, 2020

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
GlE	Goulding cobbly clay loam, 15 to 30 percent slopes	11.3	41.3%
GlF	Goulding cobbly clay loam, 30 to 50 percent slopes	0.7	2.5%
GrE	Guenoc gravelly silt loam, 5 to 30 percent slopes	0.9	3.2%
SkE	Spreckels loam, 15 to 30 percent slopes	14.5	53.0%
Totals for Area of Interest		**27.4**	**100.0%**

Sonoma County, California

GIE—Goulding cobbly clay loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfdc
Elevation: 1,500 to 5,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 220 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Goulding

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 9 inches: cobbly clay loam
H2 - 9 to 18 inches: very gravelly clay loam
H3 - 18 to 24 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XD129CA - SHALLOW LOAMY UPLANDS
Hydric soil rating: No

Minor Components

Toomes
Percent of map unit: 4 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 4 percent
Hydric soil rating: No

Spreckels
Percent of map unit: 3 percent
Hydric soil rating: No

Boomer
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Drainageways
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 14, May 29, 2020

Sonoma County, California

SkE—Spreckels loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfjr
Elevation: 100 to 800 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 210 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Spreckels

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 18 inches: clay loam
H3 - 18 to 37 inches: clay
H4 - 37 to 60 inches: cemented

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD115CA - CLAYPAN
Hydric soil rating: No

Minor Components

Felta
Percent of map unit: 3 percent
Hydric soil rating: No

Suther
Percent of map unit: 3 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 3 percent
Hydric soil rating: No

Toomes
Percent of map unit: 3 percent
Hydric soil rating: No

Laniger
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 14, May 29, 2020

Appendix B: Plants Observed in the Survey Area

Common Name	Scientific Name	Wetland Indicator Status[1]
Black mustard	*Brassica nigra*	NI
Blackwood acacia	*Acacia melanoxylon*	NI
Blue gum	*Eucalyptus globulus*	NI
Bristly ox-tongue	*Helminthotheca echioides*	FAC
California blackberry	*Rubus ursinus*	FAC
Canada horseweed	*Erigeron canadensis*	FACU
Chinese pistache	*Pistacia chinensis*	NI
Coast live oak	*Quercus agrifolia*	NI
Common yarrow	*Achillea millefolium*	FACU
Coyote brush	*Baccharis pilularis*	NI
Curly dock	*Rumix crispis*	FAC
Cutleaf geranium	*Geranium dissectum*	NI
English plantain	*Plantago lanceolata*	FAC
French broom	*Genista monspessulana*	NI
Hairgrass	*Deschampsia elongata*	FACW
Harding grass	*Phalaris aquatica*	FACU
Himalayan blackberry	*Rubus armeniacus*	FAC
Italian thistle	*Carduus pycnocephalus*	NI
Pennyroyal	*Mentha pulegium*	OBL
Poison hemlock	*Conium maculatum*	FACW
Poison oak	*Toxicodendron diversilobum*	FAC
Stinkwort	*Dittrichia graveolens*	NI
Sweet bay	*Laurus nobilis*	NI
Sweet fennel	*Foeniculum vulgare*	NI
Tall flatsedge	*Cyperus eragrostis*	FACW
Valley oak	*Quercus lobata*	FACU
Yerba buena	*Clinopodium douglasii*	FACU

[1]Wetland Indicator Status Key:
OBL = Obligate wetland species, occur almost always in wetlands (>99% probability).
FACW = Facultative Wetland species, usually occur in wetlands (67 to 99% probability), but occasionally found in non-wetlands.
FAC = Facultative species, equally likely to occur in wetlands or non-wetlands (34 to 66% probability).
FACU = Facultative Upland, usually occur in non-wetlands (67% to 99%), but occasionally found in wetlands.
UPL = Obligate Upland species, occur almost always in non-wetlands (>99% probability).
NI = Non-Indicator, not present on list. Considered to be an upland species unless otherwise indicated.

Appendix C: USACE Arid West Wetland Data Forms and OHWM Datasheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Rosa Fire Station 5 City/County: Santa Rosa/Sonoma Sampling Date: 12-09-2020

Applicant/Owner: City of Santa Rosa State: CA Sampling Point: 1

Investigator(s): Megan Kalyankar, Melinda Mohammed Section, Township, Range: 2, 7N, 8W

Landform (hillslope, terrace, etc.): Stream Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): California Lat: 38°29'09.01 Long: -122°42'29.32 Datum: WGS84

Soil Map Unit Name: SkE-Spreckles loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Soil sample was only 6 inches deep due to rocks restricting a greater depth, rocks probably placed by people around culvert. Soil may have hydric indicators below 6 inches, soil was wet despite no recent rain.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 ft. x 10 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 10 ft. x 10 ft.)			
1. Rumex crispus	70	Y	FAC
2. Cyperus eragrostis	5	N	FACW
3. Geranium dissectum	2	N	UPL
4. Rubus ursinus	1	N	FAC
5. Carduus pycnocephalus	1	N	UPL
6. Phalaris aquatica	1	N	FACU
7. Dittrichia graveolens	1	N	UPL
8.			
	81	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 19 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Small area of wetland vegetation present near a culvert adjacent to Stagecoach Road at the northeast corner of the site.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
6	10R 2.5/2	100					Loam	Soil is rocky.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

A rock layer restricted a soil sample below a depth of 6 inches. Soil could have hydric indicators below 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Rosa Fire Station 5 City/County: Santa Rosa/Sonoma Sampling Date: 12-09-2020

Applicant/Owner: City of Santa Rosa State: CA Sampling Point: 2

Investigator(s): Megan Kalyankar, Melinda Mohammed Section, Township, Range: 2, 7N, 8W

Landform (hillslope, terrace, etc.): Stream Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): California Lat: 38°29'07.21 Long: 122°42'37.37 Datum: WGS84

Soil Map Unit Name: GIE-Goulding cobbly clay loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 ft. x 10 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10 ft. x 10 ft.)			
1. Rubus armeniacus	2	Y	FAC
2. Genista monspessulana	1	N	UPL
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: 10 ft. x 10 ft.)			
1. Cyperus eragrostis	70	Y	FACW
2. Mentha pulegium	13	N	OBL
3. Deschampsia elongata	5	N	FACW
4. Phalaris aquatica	3	N	FACU
5. Rumex crispus	1	N	FAC
6. Geranium disssectum	1	N	UPL
7.			
8.			
	93 = Total Cover		
Woody Vine Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 7 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Blackberry not dominant when strata considered together, vegetation is hydrophytic as indicated in prevalence index worksheet.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					Clay	
6-18	10YR 3/2	90	5YR 5/8	10			Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

Redox apparent, spotty in soil matrix and along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 2

Water Table Present? Yes ✓ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 0-18

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Rosa Fire Station 5 City/County: Santa Rosa/Sonoma Sampling Date: 12-09-2020

Applicant/Owner: City of Santa Rosa State: CA Sampling Point: 3

Investigator(s): Megan Kalyankar, Melinda Mohammed Section, Township, Range: 2, 7N, 8W

Landform (hillslope, terrace, etc.): Stream Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): California Lat: 38°29'06.12 Long: 122°42'38.00 Datum: WGS84

Soil Map Unit Name: GIE-Goulding cobbly clay loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

No hydric soil indicators, but could only sample to 12 inches and soils were saturated despite no recent rain, indicating saturation in the growing season long enough to develop anaerobic conditions in the upper part.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 ft. x 10 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 10 ft. x 10 ft.)			
1. Cyperus eragrostis	60	Y	FACW
2. Unknown feathery pollen	15	N	
3. Mentha pulegium	5	N	OBL
4. Rumex crispus	5	N	FAC
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Unknown species is not dominant and does not affect the result; vegetation is hydrophytic.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 12 inches

Hydric Soil Present? Yes ____ No ✓

Remarks:

Soil sample was only 12 inches deep due to rocks restricting a greater depth, rocks probably placed by people around culvert. Soil may have hydric indicators below 12 inches, soil saturated despite no recent rain.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ____ Depth (inches): 2

Water Table Present? Yes ✓ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 0-12

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil was moist, but not saturated, from the surface to the depth of the soil pit (12 inches).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Rosa Fire Station 5 City/County: Santa Rosa/Sonoma Sampling Date: 12-09-2020

Applicant/Owner: City of Santa Rosa State: CA Sampling Point: 4

Investigator(s): Megan Kalyankar, Melinda Mohammed Section, Township, Range: 2, 7N, 8W

Landform (hillslope, terrace, etc.): Stream Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): California Lat: 38°29'05.55 Long: 122°42'38.58 Datum: WGS84

Soil Map Unit Name: GIE-Goulding cobbly clay loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Soil sample was only 12 inches deep due to rocks restricting a greater depth, rocks probably placed by people around culvert.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 ft. x 10 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 10 ft. x 10 ft.)			
1. Cyperus eragrostis	80	Y	FACW
2. Rumex crispus	5	N	FAC
3. Deschampsia elongata	5	N	FACW
4. Mentha pulegium	3	N	OBL
5. Phalaris aquatica	1	N	FACU
6. Geranium dissectum	1	N	UPL
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft. x 10 ft.)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	80	5YR 5/8	2			Clay	
0-12	10YR 2/1	10					Clay	
0-12	10YR 3/4	10					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 12 inches

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

Soil sample was only 12 inches deep due to rocks restricting a greater depth, rocks probably placed by people around culvert.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2

Water Table Present? Yes ✓ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0-12

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project: Santa Rosa Fire Station 5 Rebuild
Project Number: 10860
Stream: Unnamed Drainage-Sample Point 1
Investigator(s): M. Kalyankar, M. Mohamed

Date: 9-DEC-2020 **Time:** 1117
Town: Santa Rosa **State:** California
Photo begin file# 2390 **Photo end file#** 2390

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 38.485833, -122.708118

Notes: Many portions of the site have been covered with mulched and generally landscaped and/or managed for weeds.

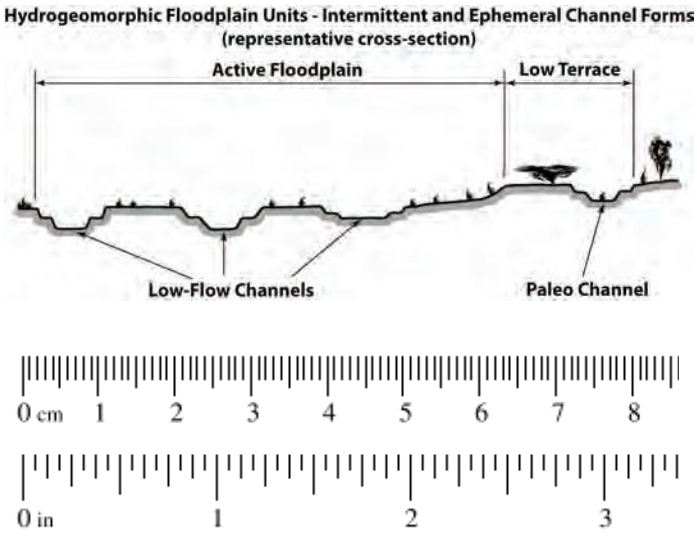
Brief site description: Sample point is in drainage leading to culvert along Stagecoach Rd; dominated by Rumex spp.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☐ Topographic maps
  Scale:
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☒ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ Clinometer / level
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)		Inches (in)		Wentworth size class	
	10.08		256	Boulder	
	2.56		64	Cobble	Gravel
	0.157		4	Pebble	
	0.079		2.00	Granule	
	0.039		1.00	Very coarse sand	
	0.020		0.50	Coarse sand	
1/2	0.0098		0.25	Medium sand	Sand
1/4	0.005		0.125	Fine sand	
1/8	0.0025		0.0625	Very fine sand	
1/16	0.0012		0.031	Coarse silt	
1/32	0.00061		0.0156	Medium silt	Silt
1/64	0.00031		0.0078	Fine silt	
1/128	0.00015		0.0039	Very fine silt	
				Clay	Mud



☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☒ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: clay

Total veg cover: 81 % Tree: _____% Shrub: _____% Herb: 81 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: Rumex spp.

Other:

- ☐ Juncus spp.
- ☐ Ditrichia spp.
- ☐ Carduus pycnocephalus
- ☐ Geranium dissectum
- Rubus ursinus
- unidentified grass

☒ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

- ☒ Change in total veg cover
- ☒ Change in overall vegetation maturity
- ☒ Change in dominant species present
- ☐ Other
  - ☐ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____
- ☐ Tree
- ☒ Shrub
- ☐ Herb

☒ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: dry clay

Total veg cover: 25 % Tree: _____% Shrub: 20 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: oak (Quercus spp.) sapling

Other:

- ☐ Eucalyptus globulus
- ☐ Genista monspessulana
- ☐ Toxicodendron diversilobum
- ☐ Foeniculum vulgare
- unidentified grass

☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☐ Change in average sediment texture
- ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- ☐ Change in overall vegetation maturity
- ☒ Change in dominant species present
- ☐ Other ☐ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☒ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☐ N ☐ Change in average sediment texture
- Y ☒ N ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- Y ☐ N ☐ Change in overall vegetation maturity
- Y ☒ N ☐ Change in dominant species present
- Y ☐ N ☐ Other: Y ☐ N ☐ Presence of bed and bank
  - Y ☐ N ☐ Drift and/or debris
  - Y ☐ N ☐ Other: _____
  - Y ☐ N ☐ Other: _____

☒ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☒ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: unknown-no physical access, only assessed visually

Total veg cover: 50 % Tree: _____% Shrub: 10 % Herb: 40 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: unidentified grass species

Other:

- ☐ Quercus spp.
- ☐ Toxicodendron diversilobum
- ☐ _____
- ☐ _____

☐ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☐ Mapping on aerial photograph
- ☐ Digitized on computer
- ☐ GPS
- ☐ Other: _____

Project: Santa Rosa Fire Station 5 Rebuild
Project Number: 10860
Stream: Unnamed Drainage-Sample Point 2 "Flats"
Investigator(s): M. Kalyankar, M. Mohamed

Date: 9-DEC-2020
Town: Santa Rosa
Photo begin file# 8078

Time: 1446
State: California
Photo end file# 9875

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 38.485523, -122.710444

Notes:

Brief site description: Typical site within drainage in "flats" area. Drainage exists downslope of hill and water drains from offsite through culvert on Fountaingrove Rd, travelling from southwest corner of site to northeast corner before flowing under Stagecoach Rd.

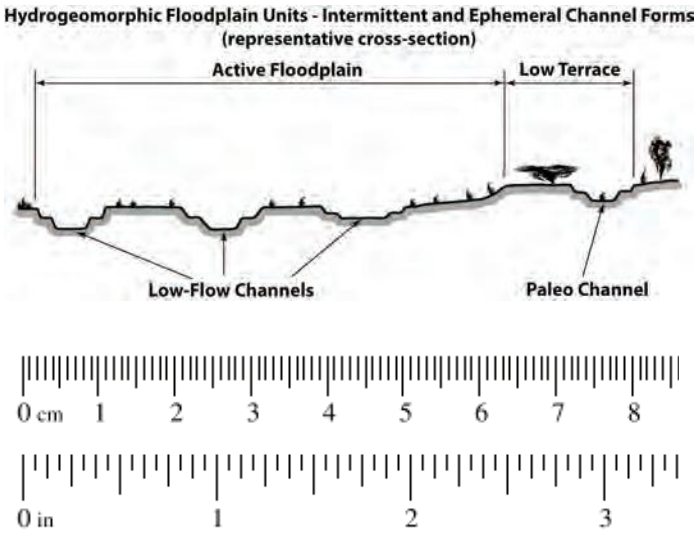
Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☐ Topographic maps
  Scale:
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☒ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ Clinometer / level
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64		
0.157	4	Pebble	
		Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
		Coarse sand	
0.020	0.50		
0.0098	0.25	Medium sand	Sand
0.005	0.125	Fine sand	
0.0025	0.0625	Very fine sand	
		Coarse silt	
0.0012	0.031		
0.00061	0.0156	Medium silt	Silt
0.00031	0.0078	Fine silt	
		Very fine silt	
0.00015	0.0039		
		Clay	Mud

1/2	1/4	1/8	1/16	1/32	1/64	1/128



☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☒ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: red clay, sticky

Total veg cover: 100 % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: Rumex spp.

Other:

- ☐ Brassica nigra
- ☐ unidentified grass
- ☐ Clinopodium douglasii
- ☐ Rubus ursinus
- ☐ Salvia spp. (chia)
- ☐ Phalaris aquatica
- ☐ Dittrichia spp.
- ☐ Lamiaceae (unidentified mint spp.)
- ☐ sedge (Cyperaceae)
- ☐ Conium maculatum

☒ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

- ☒ Change in total veg cover
- ☐ Tree
- ☐ Shrub
- ☐ Herb
- ☒ Change in overall vegetation maturity
- ☒ Change in dominant species present
- ☐ Other
  - ☒ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☒ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: drier, red clay, with pebbles

Total veg cover: 30 % Tree: _____% Shrub: 10 % Herb: 20 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: unidentified grass, nonnative annual

Other:

- ☐ Brassica nigra
- ☐ Quercus agrifolia (saplings)
- ☐ _____
- ☐ _____

☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☐ Change in average sediment texture
- ☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- ☒ Change in overall vegetation maturity
- ☐ Change in dominant species present
- ☐ Other ☐ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☒ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☐ N ☒ Change in average sediment texture
- Y ☐ N ☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- Y ☐ N ☒ Change in overall vegetation maturity
- Y ☐ N ☒ Change in dominant species present
- Y ☐ N ☐ Other: Y ☐ N ☐ Presence of bed and bank
  - Y ☐ N ☐ Drift and/or debris
  - Y ☐ N ☐ Other: _____
  - Y ☐ N ☐ Other: _____

☒ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☒ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: same, drier, red clay, with pebbles

Total veg cover: 75 % Tree: _____% Shrub: _____% Herb: 75 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: unidentified grass, nonnative annual

Other:

- ☐ Dittrichia spp.
- ☐ Brassica nigra
- ☐ _____
- ☐ _____

☒ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☐ Mapping on aerial photograph
- ☒ GPS
- ☐ Digitized on computer
- ☐ Other: _____

Project: Santa Rosa Fire Station 5 Rebuild | **Date:** 9-DEC-2020 | **Time:** 1520
Project Number: 10860 | **Town:** Santa Rosa | **State:** California
Stream: Unnamed Drainage-Sample Point 3 "Bay-Oak Woodland" | **Photo begin file#** 9513 | **Photo end file#** 5631
Investigator(s): M. Kalyankar, M. Mohamed

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates: 38484830, -122.711083

Notes: Drainage beginning near Fountaingrove Parkway. Very shaded from bay laurel-oak woodland. Drainage channel is fairly steep, ranging from approximatley 15° angle to 45° angle. Water flows almost entirely over rocks and cobbles.

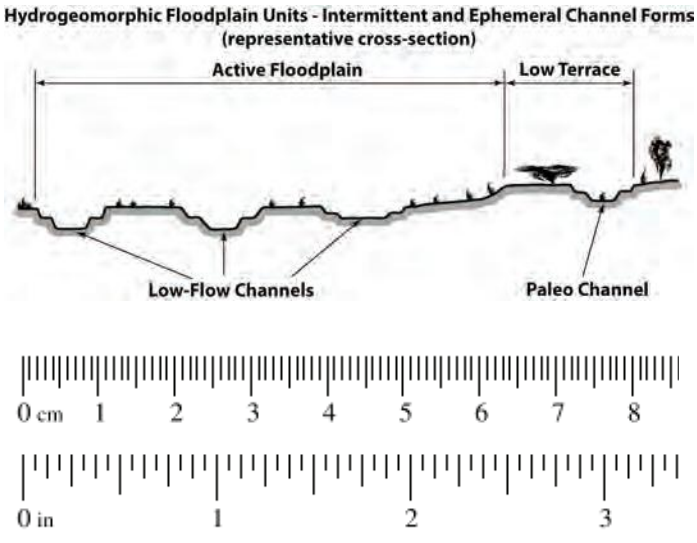
Brief site description: Above sample point, terrace area to south of drainage is quite steep and rocky (approximately 60° angle from floodplain).

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☐ Topographic maps
  Scale:
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☒ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ Clinometer / level
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☒ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: rock

Total veg cover: 0 % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: n/a

Other: ☐ Sedge (cyperaceae) along bank, only outside margins
☐ _____
☐ _____
☐ _____

☒ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
☒ Change in overall vegetation maturity
☒ Change in dominant species present
☐ Other ☒ Presence of bed and bank
☐ Drift and/or debris
☐ Other: _____
☐ Other: _____

☒ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: red, dry, claylike

Total veg cover: 80 % Tree: 10 % Shrub: 5 % Herb: 65 %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: unidentified grass, nonnative annual

Other: ☐ Quercus agrifolia Rubus ursinus
☐ Laurus nobilis
☐ Genista monspessulana
☐ Toxicodendron diversilobum

☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☒ Change in average sediment texture
- ☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- ☐ Change in overall vegetation maturity
- ☒ Change in dominant species present
- ☐ Other
  - ☐ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☒ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☒ N ☐ Change in average sediment texture
- Y ☒ N ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- Y ☐ N ☐ Change in overall vegetation maturity
- Y ☒ N ☐ Change in dominant species present
- Y ☒ N ☐ Other:
  - Y ☐ N ☐ Presence of bed and bank
  - Y ☐ N ☐ Drift and/or debris
  - Y ☒ N ☐ Other: much more rocky--several boulders
  - Y ☐ N ☐ Other: _____

☒ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☒ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: rocky, with boulders

Total veg cover: 20 % Tree: 15 % Shrub: _____% Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Dominant species present: Quercus agrifolia

Other:

- ☐ Laurus nobilis
- ☐ unidentified grass, nonnative annual
- ☐ _____
- ☐ _____

☒ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☐ Mapping on aerial photograph
- ☐ Digitized on computer
- ☒ GPS (taken by M. Kalyankar)
- ☐ Other: _____

Appendix D: Photographic Documentation of the Survey Area

Photo 1: Wetland Sample Point 1 near storm drain outlet.

Photo 2: Wetland Sample Point 2: unnamed stream near chain link fence.

Photo 3: Wetland Sample Point 3 on east side of access road.

Photo 4: Wetland Sample Point 4 on west side of access road.

Photo 5: Cross Section 1 at storm drain outlet.

Photo 6: Cross Section 2 on unnamed stream east of access road.

Photo 7: Cross Section 3 on unnamed stream west of access road.