

SECTION 3

Planning Area Description



This section of the SWRP describes the external and internal jurisdictional boundaries of the Russian River watershed and presents a general overview of the water resources in the region and their associated uses.

3.1 WATERSHED OVERVIEW

The SWRP Planning Area is defined by the Russian River watershed boundary, which consists of three planning subregions defined by the Technical Advisory Committee (TAC) and shown on Figure 3-1. The Russian River watershed possesses extraordinary cultural and biological richness and diversity. It encompasses nearly 1,500 square miles of forests, agricultural lands and urban lands in Mendocino and Sonoma Counties. The mainstem of the Russian River flows 110 miles from its headwaters in the north to the Pacific Ocean near Jenner in the southwest (Figure 3-2). The Russian River is the primary source of drinking water for the region, including areas beyond the watershed such as Petaluma and Sonoma Valley, which are served by an aqueduct operated by the Sonoma County Water Agency. On average, 159,000 acre-feet of water per year is imported to the watershed from the Eel River via the Potter Valley Project operated by Pacific Gas & Electric Company. In addition to surface water resources, the watershed encompasses nine (9) groundwater basins. Both flood control and water supply goals are met by the watershed's 60 State recognized dams. Of these, Coyote Valley Dam on the East Fork Russian River and Warm Springs Dam on Dry Creek are the largest.

The Russian River watershed has a Mediterranean climate, mostly cool and moist near the coast, with increasing temperature variability inland and in the upper areas of the watershed. The average rainfall ranges from 30 to 80 inches per year.

The Russian River is the second largest river in the greater San Francisco Bay Area, and it supports several threatened and endangered salmon species, including Chinook, Coho, and Steelhead, as well as the endangered California tiger salamander, California red-legged frog, Baker's larkspur, marbled murrelet, northern spotted owl, and approximately 30 threatened and endangered plant species. Figure 3-3 shows the critical habitats identified in the Russian River watershed.

SWRP CHECKLIST GUIDELINES

- Plan identifies watershed and subwatershed(s).
- Plan is developed on a watershed basis and includes a description and boundary map of each watershed and subwatershed.
- Plan includes an explanation of why the watershed and sub-watersheds are appropriate for storm water management with a multiple-benefit watershed approach.
- Plan includes boundaries of municipalities, service areas of water, wastewater, and land use agencies, and groundwater basins.
- Plan describes the water quality priorities within the watershed based on applicable Total Maximum Daily Loads and water body-pollutant combinations listed on the State's Clean Water Act Section 303(d) list. **See also Section 4.**
- Plan describes the general quality and identification of surface and groundwater resources within the watershed.
- Plan describes the local entity or entities that provide potable water supplies and the estimated volume of potable water provided.
- Plan includes maps showing location of native habitats, creeks, lakes, rivers, parks, and other natural or open space within the subwatershed boundaries.
- Plan identifies the natural watershed processes that occur within the subwatershed and a description of how those natural watershed processes have been disrupted within the subwatershed.

Section 3

Planning Area Description



The primary land uses in the watershed are rural residential, mixed agriculture, and small municipalities (upper and lower subregions); wine grape cultivation (middle subregions); and mixed agriculture, rural residential, and recreational tourism (all subregions). Extensive agriculture, including orchards, row crops, vineyards, and ranching is established within the alluvial valleys and lower elevations of the watershed. Major industrial uses include high-tech industry, light manufacturing, timber harvesting, and commercial and residential construction. Urban areas are located mainly within the historical and existing floodplains, but rural residential development also extends into the uplands and along ridge tops. The highest population density occurs in the southern portion of the watershed. General land use within the watershed is shown on Figure 3-4.

Studies of the Russian River watershed have shown that various portions of the watershed are polluted by excessive amounts of fine sediment, phosphorus, mercury, and pathogens, excessively high water temperature, and inadequate dissolved oxygen (NCRWQCB, 2012b). These impairments prevent the Russian River from providing all of its potential ecological, economic, and social benefits.

The river has therefore been listed as an impaired water body under section 303(d) of the U.S. Clean Water Act, which, along with the California Water Quality Control Act (section 13000 of the California Water Code), requires restoring beneficial uses by reducing surface water pollution through appropriate water quality control actions. Figure 3-5 shows Russian River watershed surface water impairments. The entire watershed is impaired for sediment, pathogens, and high temperature (Ubiquitous Pollutants). Some Hydraulic Sub-Areas (HSAs) in the watershed are impaired for various metals, such as aluminum, mercury, manganese, and specific conductivity (Metal Indicators), and some are impaired for other parameters, such as phosphorus, diazinon, and dissolved oxygen (Chemical Indicators). Further details on water quality issues in the watershed are described in Section 4 of this SWRP, including water quality priorities and the status of Total Maximum Daily Loads (TMDLs).

There are nine distinct groundwater basins located within the Russian River watershed (Figure 3-2). The Santa Rosa Plain is the largest basin in the watershed and is defined by three subbasins. The Alexander Valley basin is defined by two subbasins. The estimated storage capacity and general water quality of each basin is discussed in Table 3-1.

Section 3 Planning Area Description



Table 3-1. Estimated Storage Capacity and General Water Quality of Each Groundwater Basin or Subbasin (DWR, 2016)

Basin or Subbasin Name	Storage, acre-feet ^(a)	Groundwater Quality ^(a,b)
Knights Valley Basin	15,000	Groundwater in the basin is characterized as calcium magnesium bicarbonate water and is moderately hard. Water quality of the basin is reported as good and suitable for most uses.
Potter Valley Basin	10,000	Groundwater in the basin is characterized as calcium-magnesium bicarbonate or magnesium calcium bicarbonate water and varies from hard to moderately hard.
Ukiah Valley Basin	75,000-100,000	Groundwater in the basin is characterized as calcium bicarbonate or magnesium bicarbonate water and is moderately hard to hard. Water quality is generally classified as good, although this can vary throughout the basin. Reported concentrations of nitrate-N are below 7 mg/L. Reported concentrations of total dissolved solids (TDS) are as high as 800 mg/L in some locations, and below 300 mg/L in others.
Sanel Valley Basin	20,000	Groundwater in the basin is characterized as calcium magnesium bicarbonate water and is generally suitable for most uses.
Alexander Valley Basin: Alexander Subbasin	762,000	Groundwater in the subbasin is characterized as bicarbonate water and is moderately hard to hard. Overall, the water quality of the subbasin is characterized as high quality for salts and nutrients. Reported concentrations of nitrate-N are below 7 mg/L. Reported concentrations of TDS are below 450 mg/L.
Alexander Valley Basin: Cloverdale Subbasin	71,000	Groundwater in the subbasin is characterized as moderately hard to hard. Groundwater quality is generally classified as good and suitable for most uses.
Santa Rosa Valley Basin: Santa Rosa Plain Subbasin	3,900,000	Groundwater in the western portion of the subbasin is characterized as magnesium and calcium water; in the northern portion of the subbasin as magnesium chloride water; in the Santa Rosa area as primarily sodium and magnesium bicarbonate water, and in the southern portion as sodium and calcium bicarbonate water. Reported concentrations of nitrate-N are below 8 mg/L. Reported concentrations of TDS can be as high as 500 mg/L in the northern portion of the basin, but are generally below 450 mg/L.
Santa Rosa Valley Basin: Healdsburg Area Subbasin	489,000	Groundwater in the subbasin is characterized as moderately hard to hard and is generally suitable for all uses. Reported concentrations of nitrate-N are generally below 10 mg/L, although concentrations as high as 13 mg/L have been reported. Reported concentrations of TDS are below 400 mg/L.
Santa Rosa Valley Basin: Rincon Valley Subbasin	21,000	Groundwater in the subbasin is characterized as calcium bicarbonate water, with a localized area of sodium and/or magnesium chloride water in the southwest portion of the subbasin. Overall, the water quality of the subbasin is characterized as high quality for salts and nutrients. Reported concentrations of nitrate-N are below 8 mg/L. Reported concentrations of TDS are below 450 mg/L.
McDowell Valley Basin	NA	Groundwater in the subbasin is characterized as calcium and magnesium bicarbonate, is generally considered good water quality and suitable for all uses.
Wilson Grove Formation Highlands Basin	NA	The northern portion of the basin is within the Russian River watershed. Overall, the water quality of the basin is characterized as high quality for salts and nutrients. Reported concentrations of nitrate-N can be as high as 43 mg/L, but average concentrations are close to 3 mg/L. Reported concentrations of TDS can be as high as 1100 mg/L, but average concentrations are close to 300 mg/L. The basin also has concentrations of hexavalent chromium which exceed the public health goal of 0.02 µg/L in many locations.
Lower Russian River Valley Basin	55,000	Groundwater in the basin is characterized as calcium magnesium bicarbonate water and is generally classified as good water quality.
Kenwood Valley Basin ^(c)	40,000	There is no published water quality data available for this basin.

^(a) Storage, mineral characterization, and hardness data obtained from Bulletin 118 – Update 2003 Groundwater Basin Descriptions (DWR, 2013).
^(b) Nutrient and TDS data obtained from GeoTracker Groundwater Ambient Monitoring and Assessment Program (SWRCB, 2015a).
^(c) Only a small portion of the Kenwood Valley Basin is in the Russian River Watershed.

Section 3

Planning Area Description



3.1.1 Purpose for the Watershed-Wide Collaboration

Established in 2004, the RRWA has served as the coordinating entity for the Phase I & II Municipal Separate Storm Sewer System (MS4) /NPDES permittees in the watershed for the purposes of effective and efficient storm water management. By leveraging collective resources and expertise, the RRWA implements regional storm water projects benefiting the watershed while providing a cost savings to individual agencies.

Through the framework of the RRWA, the SWRP was developed through a watershed-wide collaborative process. Partners in the collaborative process include the RRWA, public agencies, conservancies, and nongovernmental organizations. The collaborative process provides a consistent approach to storm water and dry weather runoff project planning throughout the watershed, resulting in maximized environmental benefits.

3.1.2 Description of Watersheds and Subwatersheds

The US Geological Survey identifies watershed areas by hydrologic unit areas and unique hydrologic unit codes (HUC) at six levels. The Russian River watershed is classified at the fourth level as a HUC 8 (uniquely identified as Basin Number 18010110). The SWRP planning area was divided into three subregions: Upper, Middle, and Lower Russian River and includes nine HUC 10 watersheds (Figure 3-6). The planning area boundary is the outer limit of the nine combined HUC 10 watersheds. With such an expansive and diverse planning area, priorities throughout the Russian River watershed can vary with location. To adequately represent the diverse characteristics, challenges, and priorities of the watershed, the TAC made the decision to define priorities for each watershed subregion separately. An overview and description of natural watershed processes in each subregion is provided below.

3.1.2.1 Upper Russian River Subregion

The Upper Russian River watershed includes three HUC 10 subwatersheds:

- Headwaters Russian River (HUC 10, Basin Number 1801011002): 64,846 acres
- East Fork Russian River (HUC 10, Basin Number 1801011001): 67,072 acres
- Upper Russian River (HUC 10, Basin Number 1801011004): 204,190 acres

The Upper Russian River subregion encompasses a total of 336,108 acres. Ukiah is the only incorporated community in the subregion; the majority of the subregion is unincorporated Mendocino County. There are 16 tributaries to the Upper Russian River. Larger tributaries include, Forsythe Creek, Feliz Creek, and Burright Creek.

Coyote Valley Dam was completed in 1958 for the purposes of flood control, water supply, and recreation (Sonoma County Water Agency (SCWA), 2016b), and is located within the upper subregion in the East Fork Russian River HUC. The dam controls 105 square miles of the upper watershed on the East Fork Russian River just upstream of the confluence with the Upper Russian River. The dam impounds water from the East Fork Russian River in Lake Mendocino, which is located approximately five miles north of Ukiah. Lake Mendocino has a gross capacity of 118,000 acre-feet and a water supply pool of 70,000 acre-feet. The East Fork Russian River then flows from Lake Mendocino into the Russian River mainstem just north of Ukiah.

Section 3

Planning Area Description



The subregion also includes the Potter Valley Project, which is owned and operated by Pacific Gas & Electric Company and provides an interbasin transfer of water from the Eel River basin to the Russian River through a series of tunnels. The project collects water from a drainage basin of 289 square miles above Scott Dam and 50 square miles between Scott Dam and Cape Horn Dam in the Eel River basin and diverts it across the drainage divide to the much lower Potter Valley. Once crossing the divide, the water is used to generate electricity before being released to the headwaters of the East Fork of the Russian River and thence to Lake Mendocino.

3.1.2.2 Middle Russian River Subregion

The Middle Russian River subregion includes three HUC 10 subwatersheds:

- Big Sulphur Creek (HUC 10, Basin Number 1801011003): 54,731 acres
- Dry Creek (HUC 10, Basin Number 1801011005): 139,627 acres
- Middle Russian River (HUC 10, Basin Number 1801011006): 117,736 acres

The Middle Russian River subregion encompasses a total of 312,094 acres. The Cities of Cloverdale and Healdsburg are the only incorporated communities located within the Middle Russian River subregion. The majority of the subregion is unincorporated Sonoma County, although a small portion in the north is unincorporated Mendocino County. There are 14 tributaries to the Middle Russian River. Larger tributaries include Alder Creek, Little Sulphur Creek, Warm Springs Creek, and Mayacamas Creek.

Warm Springs Dam impounds water from Dry Creek to form Lake Sonoma and is located within the subregion in the Dry Creek HUC, which lies in the western portion of the watershed. The dam controls 131 square miles of the watershed and is located 14 miles upstream of the confluence of Dry Creek and the Russian River. Lake Sonoma began storing water in 1984 and has a total storage capacity of 381,000 acre-feet and a water supply pool of 245,000 acre-feet. Lake Sonoma beneficial uses include flood control, municipal supply, and recreation (SCWA, 2016b).

3.1.2.3 Lower Russian River Subregion

The Lower Russian River also includes three HUC 10 subwatersheds:

- Mark West Creek (HUC, Basin Number 10 1801011007): 162,790 acres
- Austin Creek (HUC 10, Basin Number 1801011008): 44,873 acres
- Lower Russian River (HUC 10, Basin Number 1801011009): 94,495 acres

The Lower Russian River subregion encompasses a total of 302,158 acres. The Lower Russian River subregion is the most urbanized of the three subregions and includes the Cities of Cotati, Rohnert Park, Santa Rosa, Sebastopol, and the Town of Windsor. The remainder of the subregion consists of unincorporated Sonoma County. There are 12 tributaries to the Lower Russian River. Larger tributaries include the Lower and Upper Laguna de Santa Rosa, Lower and Upper Santa Rosa Creek, and Mark West Creek.

Section 3

Planning Area Description



The Mark West HUC includes Mark West Creek, Santa Rosa Creek, and the Laguna de Santa Rosa. This area is the most urbanized in the Russian River and accounts for the majority of the population in the watershed. Water quality concerns in the watershed have been linked to urbanization, the increase in impervious surface, and the resulting increased runoff.

3.2 WATERSHED MANAGEMENT

3.2.1 Communities

There are eight incorporated communities within the Russian River watershed shown on Figure 3-7: the cities of Cloverdale, Cotati, Healdsburg, Rohnert Park, Santa Rosa, Sebastopol, and Ukiah, and the Town of Windsor. The watershed spans two counties: Mendocino and Sonoma. The Russian River watershed also includes a large number of unincorporated communities known as census designated places.

3.2.2 Resource Conservation Districts

There are three Resource Conservation Districts (RCDs) within the Russian River watershed: the Sonoma Resource Conservation District, the Gold Ridge Resource Conservation District, and Mendocino Resource Conservation District. RCDs are special districts formed by local government to facilitate natural resource conservation. Working with land owners, communities, and local agencies, RCDs provide support in promoting responsible natural resource management. Boundaries of RCDs are shown on Figure 3-7.

3.2.3 Water Service Areas

Water service is provided by a range of service entities as well as by groundwater pumping from privately-owned wells. Service areas are shown on Figure 3-8. A portion of the Russian River watershed is within the jurisdiction of the Sonoma County Water Agency (Water Agency), which provides water to the cities of Cotati, Rohnert Park, Santa Rosa, and Windsor. The Russian River is the primary source of the Water Agency water supply, with groundwater supply wells as a secondary source. Based on the Water Agency's 2015 Urban Water Management Plan, (SCWA, 2016a), the Water Agency supplied Cotati with 479 acre-feet, Rohnert Park with 2,774 acre-feet, Santa Rosa with 15,341 acre-feet, and Windsor and the Airport Industrial Park with 3,048 acre-feet in 2015. The Water Agency also supplies water to several smaller community service districts. In 2015, the Water Agency supplied Larkfield with 219 acre-feet and Forestville Water District with 377 acre-feet.

Four local entities provide drinking water within their own communities. The cities of Cloverdale, Healdsburg, and Ukiah's main source of drinking water is the Russian River. The City of Sebastopol provides water through groundwater wells. Cloverdale provides approximately 1,500 acre-feet per year; Healdsburg approximately 1,600 acre-feet per year; Sebastopol approximately 1,400 acre-feet per year; and Ukiah approximately 3,000 acre-feet per year. Healdsburg also supplies water to Fitch Mountain Water System.

There are 6 water districts within the Russian River watershed that provide potable water to unincorporated communities: Redwood Valley County Water District, Calpella County Water District, Millview County Water District, Willow County Water District, Hopland Public Utility District, and Russian River County Water District.

Section 3

Planning Area Description



3.2.4 Wastewater Service Areas

The Santa Rosa Subregional System Sewer Treatment Plant (Laguna Treatment Plant) provides wastewater treatment within Santa Rosa, Cotati, Rohnert Park, and Sebastopol jurisdictional boundaries. Cloverdale, Healdsburg, Ukiah, and Windsor provide wastewater treatment services within their respective jurisdictions. Figure 3-9 shows the wastewater service boundaries of municipal wastewater service providers. Wastewater in unincorporated jurisdictions is serviced by smaller sanitation districts or private septic systems. Rural areas are serviced by privately-owned septic systems.

3.2.5 Land Use Agencies

Land use authority within the Russian River watershed is held by cities and counties. Each jurisdiction has an established planning commission to implement plans and policies relating to land use matters, including the development of general plans and decisions pertaining to zoning matters. Land use planning and community development is managed through permitting authorities within each jurisdiction, such as Permit Sonoma for unincorporated Sonoma County and other building and planning departments within each jurisdiction. Government land ownership in the Russian River watershed includes: US Bureau of Land Management, the California Department of Parks and Recreation, California Department of Fish and Wildlife, County Regional Parks, and incorporated city jurisdictions. Figure 3-7 depicts public land ownership boundaries for federal, state and local agencies.

3.2.6 Tribal Trust Lands

There are 9 Tribal Trust Lands identified in the Russian River watershed, including: Redwood Valley Rancheria of Pomo Indians, Potter Valley Tribe, Coyote Valley Band of Pomo Indians, Pinoleville Pomo Nation, Guidiville Rancheria, Hopland Band of Pomo Indians, Cloverdale Rancheria of Pomo Indians, Dry Creek Rancheria of Pomo Indians, and Federated Indians of Graton Rancheria (NCRP, 2017). Tribal trust lands are not subject to state and local government jurisdiction. Tribal trust land boundaries are shown on Figure 3-10. The Lytton Rancheria of Pomo Indians is not currently held in trust by the United States government, and therefore was not mapped on Figure 3-10, although they were included in outreach efforts.

3.2.7 Regulatory Agencies

The United States Army Corps of Engineers (Army Corps) is a branch of the federal Department of Defense and is responsible for a variety of program areas related to supporting the nation's infrastructure and environmental resources. The Army Corps provides services that span from disaster relief support to environmental management and restoration. The Army Corps is responsible for issuing permits for the discharge of dredged or fill material into navigable waters of the United States, under the authority of section 404 of the Code of Federal Regulations, Clean Water Act (known as a 404 Water Quality Certification) (USACE, 2017).

Section 3

Planning Area Description



The Federal Emergency Management Agency (FEMA) is a branch of the US Department of Homeland Security and is primarily responsible for disaster support services. FEMA is also responsible for defining flood plains and flood risk areas through flood hazard mapping services, setting regulatory standards for development within flood plains, and informing flood insurance requirements with flood insurance rate maps and risk assessments. FEMA also requires the local designation of flood plain administrators to ensure standards of flood insurance requirements are met.

The Russian River watershed is located within the regulatory jurisdiction of the NCRWQCB. The NCRWQCB is a State agency responsible for protecting, enhancing, and restoring water quality by the regulatory authority granted in the California Code of Regulations, California Water Code. The NCRWQCB is responsible for issuing Waste Discharge Requirements for various types of discharges including storm water and waste water, identifying impaired water bodies consistent with section 303(d) of the federal Clean Water Act, developing TMDLs for impaired water bodies, and issuing 401 water quality certifications. The NCRWQCB regulates a variety of dischargers including municipalities, wineries, dairies, timber harvest, cannabis cultivation, and solid waste facilities.

According to their *Strategic Vision*, The California Department of Fish and Wildlife (CDFW) is responsible for managing the State's "diverse fish, wildlife, and plant resources and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public" (CDFW, 2012). The Russian River watershed is located within two CDFW regional jurisdictions: Mendocino County is under the Northern Region office jurisdiction and Sonoma County is under the Bay Delta Region's jurisdiction. Under the authority of Title 14 of the California Code of Regulations, the CDFW issues permits and agreements for a variety of activities with the potential to impact fish or wildlife resources, including lake or streambed alteration agreements, plant collecting/removal permits, and aquaculture registration.

The California Coastal Commission is responsible for protecting and enhancing the State's coastal and ocean resources. The Coastal Commission issues permits for development in the coastal zone under the authority of the California Coastal Act. A small portion of the Russian River watershed is within the coastal zone boundary within the Coastal Commission's jurisdiction.

Local government agencies (cities, towns, and counties) are mandated with providing their communities with a variety of resources and services. Local agencies are responsible for permitting all development activities and overseeing the implementation of the California Building Code. Local agencies provide design review services and issue permits related to development, including building permits, encroachment permits, and use permits. Counties also regulate the installation of groundwater wells and septic systems.

3.2.8 Non-Governmental Organizations (NGOs)

Collaborating non-governmental organizations (NGOs) were identified as taking an active role in the development of the SWRP by providing support services such as letters of support, match funding, in-kind match, or providing data and other forms of technical support. NGOs identified as collaborators include: the San Francisco Estuary Institute, Sonoma County Agricultural Preservation and Open Space District, Sonoma Land Trust, Pepperwood Preserve, Laguna de Santa Rosa Foundation, and the National Oceanic and Atmospheric Administration.

Section 3

Planning Area Description



NGO stakeholders within the Russian River watershed include Russian River Watershed Protection Committee, Russian Riverkeeper, West Coast Watershed, Daily Acts, Russian River Confluence, Clean River Alliance, The Fresh Water Trust, Friends of the Eel River, Valley of the Moon Water District, American Water, Sonoma County Water Coalition, Marin Municipal Water District, The Nature Conservancy, California Indian Environmental Alliance, Greenbelt Alliance, and Cotati Creek Critters.

The role of NGO collaborators and stakeholders is discussed in more detail in Section 5: Organization, Coordination, Collaboration.