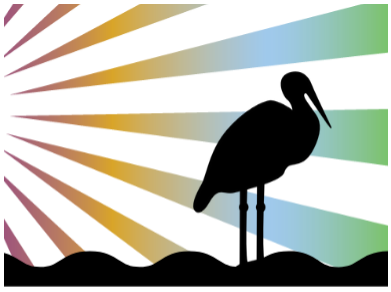
PUBLIC REVIEW DRAFT

Sonoma County
Local Coastal Plan

WATER RESOURCES ELEMENT
September 2019



Local Coastal Program
Permit Sonoma

2550 Ventura Avenue
Santa Rosa, CA 95403

Adopted by Resolution No. 19-XXXX
of the Sonoma County Board of Supervisors
September XX, 2019

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WATER RESOURCES ELEMENT

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1. INTRODUCTION

1.1 Purpose

Water is an essential element of all life forms. Plants and animals are mostly composed of water and need water and the nutrients carried by water. An adequate and high quality water supply is therefore required for continued human survival, development and use of the land, and the health of the entire natural environment.

Due to its critical importance as a legislatively recognized public resource and basic human right, the use and quality of water have long been regulated by government. Since water moves easily across city and county boundaries, regulation typically occurs at the regional, State, and Federal levels. However, since cities and counties have legal authority over development and land use, they are involved in considering the adequacy of water supplies and how development affects the quantity and quality of water available for other beneficial uses.

As development has continued, the long-term adequacy of groundwater and surface water resources has become a major public concern. Water-related issues include lowered groundwater levels, increased stormwater runoff, sediment and pollutants in runoff, water diversions into and out of the Russian River basin, summer rationing in dry years, fish and wildlife water needs, the rates of water use, conservation methods, water storage limitations, the growing re-use of water, and continuing changes in State and Federal regulations. While much is known about groundwater and surface water conditions in Sonoma County's Coastal Zone, addressing these evolving issues will require a continued and iterative process data collection, problem identification, and development of adaptive management strategies.

The primary purpose of this Element, an optional Element to the Sonoma County Local Coastal Plan, is to ensure that coastal water resources are sustained and protected. To achieve this purpose, water resource management should consider the amount of quality water that can be used over the long-term without exceeding the replenishment rates over time or causing long-term declines or degradation in available surface water or groundwater resources. The Water Resources Element establishes goals, objectives, and policies to protect and sustainably manage coastal water resources. Programs needed to implement proposed policies are also identified. In addition, the Element calls out ongoing or potential future County initiatives, referred to as "Other Initiatives", that

support public safety and promote inter-agency and community collaboration. Nothing in this Element should be construed to encourage or condone illegal use of water.

1.2 Relationship to Other Elements

The Water Resources Element addresses a range of water related issues in the Sonoma County Coastal Zone. Some other water-related topics are also addressed in other Elements. Water availability as a factor in Land Use Map densities is addressed in the Land Use Element. The Open Space and Resource Conservation Element addresses riparian corridors, wetlands, wildlife protection, tree protection, fishery resources and other biotic resources, soil erosion, forestry, and mineral resources. The Public Access Element addresses water oriented recreation. The Public Facilities and Services Element addresses connections to public water systems. The Public Safety Element addresses flood hazards, fire suppression, and hazardous materials. The Agricultural Resources Element addresses aquaculture.

The Water Resources Element has been developed to be consistent with other Elements. References to policies in other Elements are provided where they support or implement the objectives of the Water Resources Element.

1.3 Scope and Organization

The Water Resources Element is organized as follows. Section 2 reviews the relevant water rights law, the hydrologic system, the major streams and drainage basins, the role of vegetation in the water cycle, and the natural underground water storage in the County. Section 3 states the County's goals, objectives, and policies for each of the six topics.

2. WATER RESOURCES AND REGULATION

2.1 Water Cycle

In Sonoma County, the hydrologic cycle of water is dominated by the frequent inflow of moisture-laden air from over the Pacific Ocean. As the moisture laden air cools, particularly where it is forced higher by steep slopes, the vapor condenses into water that falls as rain or, if the vapor is chilled enough, it forms solid ice crystals and falls as snow. Most of the rain and snowmelt runs off into surface water bodies that drain back to the sea. Some of the precipitation is absorbed into the Earth and becomes groundwater, some of which moves slowly through subsurface layers to streams, lakes, and the ocean. When the sun heats surface water, it evaporates and again becomes potential precipitation.

The range of temperatures, cloud cover, and moisture and evaporation levels, when combined with the effects of topography, vegetation, and development, can result in varying rainfall levels at any particular time in each of the watersheds in the County. In addition, long-term changes in snowpack and precipitation related to climate change could alter precipitation patterns, the regional availability and temperature of water, surface runoff, and sea level elevation.

2.2 Watersheds

The term watershed refers to the area of land that includes a particular river or lake and all the rivers, streams, and creeks that flow into it. Most land in Sonoma County falls within the three main watersheds: Russian River, Gualala River, and San Pablo Bay. **Table C-WR-1** and **Figures C-WR-1a-c** show the areas and locations, respectively, of the Watersheds and Sub-watersheds of the Sonoma County Coastal Zone, which lay both inside and outside Sonoma County.

Table C-WR-1: Area of Watersheds and Sub-Watersheds of the Sonoma County Coastal Zone

Watershed / Sub-Watershed	Total Area (square miles)	Area Within Coastal Zone (square miles)
Abbotts Lagoon-Frontal Pacific Ocean	107	<1
Gualala River	299	2
South Fork Gualala River	44	2
Lower Russian River	148	15
Dutch Bill Creek-Russian River	55	<1
Willow Creek-Russian River	24	15
Salmon Creek-Frontal Pacific Ocean	256	52
Bodega Harbor-Frontal Pacific Ocean	55	11
Russian Gulch-Frontal Pacific Ocean	166	36
Salmon Creek	35	4
Tomales Bay-Bodega Bay	160	17
Bodega Bay	16	1
Bodega Harbor	9	7
Estero Americano	38	9

In general, watersheds in the northern areas of the County (Gualala River, Austin Creek, Dry Creek, Big Sulphur Creek, and Maacama Creek) consist of mountainous, rugged terrain with little urban development. Land use in these upper watersheds is predominantly rural, with timber production and grazing being the primary uses.

Most of central Sonoma County is part of the Russian River watershed and ultimately drains west to the Pacific Ocean. This area has moderate topography and lies in the ancient alluvial floodplain of the Russian River. Much of the suburban and urban development of Sonoma County is located inland within sub-watersheds, including Healdsburg, Windsor, Santa Rosa, Sebastopol, Rohnert Park and Cotati. These inland sub-watersheds drain to, and have the potential to impact, coastal surface waters and groundwater.

The Coastal Zone includes many small watersheds which are drained by stream segments that flow a short distance from the first coastal ridgeline directly to the Pacific Ocean. These individual small coastal drainage basins are collectively referred to as the Frontal Pacific Ocean watershed. Streams in these watersheds flow through areas of steep terrain and marine terraces. Coastal streams typically enter the ocean at small sandy beach inlets periodically along steep rocky coastal bluffs.

2.3 Aquifers

Groundwater is an important source of agricultural, industrial, and domestic water supply in Sonoma County. While the Russian River is the primary source of domestic water for the County's urban areas, most rural areas are served by groundwater. Groundwater resources are tapped by both municipal and private wells. However, not all groundwater in the County is of sufficient volume, has a reasonable rate of recharge, or is suitable for drinking water or other purposes.

Some groundwater naturally contains dissolved substances that can cause health problems, depending on the concentrations and combinations of the substances present. According to the State Water Resources Control Board (State Board), groundwater is also often polluted by human activities that generate contaminants such as microorganisms, gasoline and diesel fuels, solvents, nitrates, pesticides, pharmaceuticals, and metals. The underground flow and concentration of these contaminants, as well as the intrusion of ocean saltwater into groundwater, can be influenced by the extraction of groundwater and changes in levels of groundwater and surface water.

The California Department of Water Resources (DWR) has identified the groundwater basins and subbasins in Sonoma County in DWR Bulletin 118. In the Sonoma County Coastal Zone, they include the Bodega Bay Area (DWR 1-57, 2,680 acres), Wilson Grove Formation Highlands (DWR 1-59, size unavailable), Lower Russian River Valley (DWR 1-60, 10 square miles), and Fort Ross Terrace Deposits (DWR 1-61, 3.5 square miles in Sonoma County). **Figures C-WR-2a-c** shows the locations of the groundwater

basins in the Coastal Zone. None of these groundwater basins are currently designated by DWR as medium- or high-priority groundwater basins.

Most of the County's groundwater basins are centered along major creek and river valleys. Recharge of groundwater basins typically occurs along the major streams as well as their principal tributaries. The principal water bearing formations in Sonoma County groundwater basins are typically alluvium. While other geologic units can yield adequate amounts of water in some areas, much of the County may not have dependable groundwater supplies.

In the Coastal Zone, groundwater aquifers consist mainly of fractured bedrock of the Franciscan Complex, a large area of Jurassic and Cretaceous sedimentary, metamorphic, and igneous rocks from the ocean's crust that were mixed by shearing along faults and stuck to the continental edge as the ocean floor slid down under the edge of western North America.

In fractured rock aquifers, groundwater is stored in the fractures, joints, bedding planes, and cavities of the rock mass. The Franciscan Complex is generally considered to be non-water bearing; water availability largely depends on the nature of the fractures and their interconnection. Groundwater is derived from local rainfall that has percolated down into the rock, existing in small fractures in the zone of saturated rock below the water table.

Poor groundwater quality can be the result of geologic conditions, such as the highly mineralized water extracted from the Sonoma Volcanics or brackish water from the Petaluma Formation. Also, some groundwater naturally contains dissolved elements such as arsenic, boron, selenium, mercury or radon (a gas formed by the natural breakdown of uranium in the soil).

2.4 Water Rights

The California Constitution requires that water be used in a reasonable and beneficial manner and prohibits misuse and waste of water. Water is used beneficially when, for example, it is used to drink, grow crops, or wash cars. What is reasonable water use depends on the circumstances. For example, it could be unreasonable to wash cars during a severe drought. All types of water rights are subject to this constitutional provision, and a State agency, the State Board, is authorized to take action to prevent unreasonable uses of water.

There are two principal types of surface water rights in California, riparian rights and appropriative rights. A riparian water right allows a landowner bordering a watercourse

to share the water flowing past his property with other riparian landowners. An appropriative right is a use-based right dependent upon physical control and beneficial use of the water, rather than any special relationship between land and water. Since 1914, all new appropriations of surface water require a permit from the State.

The Sustainable Groundwater Management Act (SGMA) of 2014 provides for establishment of Groundwater Sustainability Agencies in designed groundwater basins and grants these agencies new authorities to manage groundwater use, recharge, and environmental impacts. The Act requires development of sustainable groundwater management plans for groundwater basins designated by Department of Water Resources as medium- or high-priority groundwater basins. Sonoma County is currently in the process of meeting the schedule for compliance with the new state law. There are no medium- or high- priority basins in the Coastal Zone.

2.5 Biotic Resources and Water

The policies in the Water Resources Element recognize the importance of natural vegetation and wildlife habitat, both as beneficial water uses whose needs must be considered but also as factors in maintaining adequate water quality and quantity. The supporting biotic resource goals, objectives, and policies are contained in the Open Space and Resource Conservation Element.

Trees and other natural vegetation depend on water, but their presence also affects the long-term quality and quantity of water resources in several ways. The natural vegetation found around wetlands, streams, and lakes benefits water quality by filtering out sediment and pollutants from stormwater runoff before it enters surface water bodies. Vegetation can also block stream flows and increase the retention of stormwater, thereby recharging groundwater, absorbing pollutants, and modifying peak flood levels. Vegetation on stream banks reduces bank erosion as a source of sediment. Trees and shrubs provide shade which can lower the temperature of the water and increase its value as fishery habitat in a warm climate. Streamside trees that fall into stream channels may aid fishery habitat by providing shelter, diverting flood flows, and scouring deep holes. The Open Space and Resource Conservation Element also includes discussion of the relationship of biotic resources to water.

Trees and other vegetation need and use water but also help maintain year-round water levels in streams and groundwater. In the fall, many trees stop absorbing water. Trees in exposed foggy areas reportedly increase precipitation. Trees in any location provide shade that cools the ground surface and reduces evaporation. Plants add moisture to the air through transpiration of water from their leaves.

2.6 Regulatory Framework

In Sonoma County, the Sonoma Creek and Petaluma River watersheds are in the Bay Area Regional Quality Control Board's jurisdiction, and the remainder of the County is under the jurisdiction of the North Coast Regional Water Quality Control Board. Waste discharge requirements are set by each Regional Water Board for point sources of pollution, including industrial and commercial uses, community wastewater and storm water management systems, and individual septic systems. Implementation of point source controls has led to improvements in the quality of discharges and regional water quality.

California's Non-point Source Pollution Control Program (CA NPS Program) addresses federal requirements under both the Clean Water Act and the Coastal Zone Management Act (Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990), by implementing California's Coastal Nonpoint Pollution Control Program on a statewide basis. The lead State agencies responsible for implementing the CA NPS Program are the State Water Resources Control Board, designated as the lead water quality agency) and the California Coastal Commission (designated as the lead coastal zone management agency), along with the nine Regional Water Boards. The California Coastal Act also mandates protection and restoration of water resources in the Coastal Zone.

The Local Coastal Program provides water quality protection measures in accordance with Coastal Act requirements for development in the Coastal Zone, which supplement the State Board's regulations. The Local Coastal Program is the standard of review for the Coastal Act Development Permits, issued by Sonoma County, including appeals to the Coastal Commission of Coastal Development Permits issued by Sonoma County.

Over time, development and land use have resulted in erosion, sedimentation, and degradation of surface water quality in the Russian River watershed and elsewhere. Surface water quality concerns in some watersheds include low levels of dissolved oxygen; high temperatures; and high levels of coliform bacteria, ammonia, nutrients, pathogens, metals, herbicides, pharmaceuticals and exotic species. These watershed conditions often impact coastal waters, especially in lagoons and coastal estuaries.

2.6.1 National Pollutant Discharge Elimination System

The focus of regulatory efforts has expanded in recent years to address surface runoff and pollutants entering into drainage channels, streams and groundwater. The National Pollutant Discharge Elimination System (NPDES) program requires individual permits for construction sites that disturb more than one acre of land, and for certain industrial and

commercial activities. The NPDES program also regulates and requires municipal area wide permits for urbanized areas under the Municipal Separate Storm Sewer System (MS4) permit program. Sonoma County's coastal area is not currently regulated under the MS4 permit program. However, design, siting, and planning requirements have been included in this Local Coastal Plan to provide a similar standard of water quality protection in the Coastal Zone.

2.6.2 Total Maximum Daily Load Program

The other major Clean Water Act program affecting the County in the future is the Total Maximum Daily Load (TMDL) program. Regional Water Boards are required to determine which surface water bodies are impaired, assess pollutant sources, determine acceptable levels, allocate allowable pollutant loads to various sources, and establish implementation programs. Impaired water bodies are those where beneficial uses of water are limited due to certain pollutants. Water bodies in Sonoma County that have been identified as impaired are the Russian River, Gualala River, Lake Sonoma, Santa Rosa Creek, Laguna de Santa Rosa, Estero Americano, Stemple Creek, Sonoma Creek, Petaluma River, and San Pablo Bay. Of these only the Russian River, Gualala River and Estero Americano are located within the Coastal Zone. Pollutants of concern typically in Sonoma County are sediment/siltation, nutrients, pathogens, and temperature but also include low dissolved oxygen, mercury, other metals, herbicides and exotic species. The listing of impaired water bodies is periodically re-evaluated by the Regional Water Boards.

The time frames for completing the TMDL processes in Sonoma County vary over the course of the next decade or so. In the meantime, Sonoma County will continue to be proactive in addressing water quality issues through a combination of education, restoration, and development policies. Total Maximum Daily Loads have been adopted for excess sediment and pathogens in Sonoma Creek and for urban pesticides in Petaluma River watershed as part of the Bay Area Regional Water Board's Urban Creek's Pesticide TMDL. TMDLs are also being developed for surface waters in the Coastal Zone including, the Russian River and Gualala River.

3. WATER RESOURCES POLICY

Regional, State, and Federal regulatory agencies and associated policies provide the framework for local water protections. The Water Resources Element establishes goals, objectives, and policies to further protect and sustainably manage coastal water resources.

3.1 Minimize Water Pollution from Runoff and Other Sources

GOAL C-WR-1: **Protect, restore and enhance the quality of surface and groundwater resources to meet the needs of all reasonable beneficial uses.**

Objective C-WR-1.1: Protect and, where feasible, restore the quality of coastal waters. Coastal waters include the ocean, rivers, streams, wetlands, estuaries, lakes, and groundwater.

Objective C-WR-1.2: Protect water quality and improve water quality of impaired surface waters. Focus water quality improvement efforts in coastal waters and watersheds which contain surface waters that are the most impaired, have the highest value for fish and wildlife, or are at most risk from future development.

Objective C-WR-1.3: Plan, site, and design development to minimize the transport of pollutants in runoff from the development, to avoid pollution of coastal waters.

Objective C-WR-1.4: Plan, site, and design development to minimize post-development changes in the site's runoff volume, flow rate, timing, and duration, to prevent adverse changes in the hydrology of coastal waters.

Objective C-WR-1.5: Reduce the degradation of surface water quality from the failure of septic and other wastewater treatment systems.

Objective C-WR-1.6: Educate the public about practices and programs to minimize water pollution, and provide educational and technical assistance to agriculture in order to reduce sedimentation and increase on-site retention and recharge of storm water.

Objective C-WR-1.7: Secure funding sources for development of Sonoma County Coastal Zone groundwater quality assessment, monitoring, remedial and corrective action, and awareness/education programs.

The following policies, in addition to those in the Land Use, Open Space and Resource Conservation, and Public Facilities and Services Elements shall be used to accomplish these objectives:

Policy C-WR-1a: The approval for any project proposed within 200 feet of an impaired surface water shall include as conditions of approval design features and mitigation measures to prevent impacts to the quality of such waters. **(New)**

Policy C-WR-1b: New development and redevelopment shall include measures to minimize post-development changes in the runoff flow regime, control pollutant sources, and, where necessary, remove pollutants. Such measures shall take into account existing

site characteristics that affect runoff (such as topography, drainage, vegetation, soil conditions, natural hydrologic features, and infiltration conditions). In addition, these measures should be considered early in site design planning and through alternative analysis. Such measures include, but may not be limited to the following:

(1) Incorporate storm water management measures.

(2) Use pollutant Source Control Best Management Practices (BMPs), which can be structural features (post construction) or operational actions (during construction), in all development to minimize the transport of pollutants in runoff from the development.

(3) Incorporate Treatment Control BMPs to remove pollutants of concern when the combination of site design and source control BMPs are not sufficient to protect water quality, or to meet State and Federal water quality objectives.

(4) Plan, site, and design development to maintain or enhance on-site infiltration of runoff, where appropriate and feasible. Minimize the installation of impervious surfaces, especially directly-connected impervious areas, and, where feasible, increase the area of pervious surfaces in re-development, to reduce runoff.

(5) Plan, site, and design development to protect and, where feasible, restore natural hydrologic features such as groundwater recharge areas, natural stream corridors, floodplains, and wetlands.

(6) Plan, site, and design development to preserve or enhance non-invasive vegetation to achieve water quality benefits such as transpiration, interception of rainfall, pollutant uptake, shading of waterways to maintain water temperature, and erosion control.

(7) In areas adjacent to an Environmentally Sensitive Habitat Area (ESHA), plan, site, and design development to protect the ESHA from any significant disruption of habitat values resulting from the discharge of storm water or dry weather flows. **(New) (Model LCP)**

Policy C-WR-1c: Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate. **(New)**

Policy C-WR-1d: Avoid construction of new storm water outfalls and direct storm water to existing facilities with appropriate treatment and filtration, where feasible. Where new outfalls cannot be avoided, plan, site, and design outfalls to minimize adverse impacts to coastal resources from outfall discharges, including consolidation of existing and new outfalls where appropriate. **(New) (Model LCP)**

Policy C-WR-1e: Some developments have a greater potential for adverse impacts to water quality and hydrology due to the extent of impervious surface area, type of land use, or proximity to coastal waters or tributaries. As determined by Permit Sonoma, on

a case-by-case basis, such developments may require Treatment Control Best Management Practices (BMPs) for post-construction treatment of storm water runoff. Applicants for these types of developments shall do the following:

(1) Conduct a polluted runoff and hydrologic site characterization by a qualified licensed professional, early in the development planning and design stage, and document the expected effectiveness of the proposed BMPs.

(2) Conduct an alternatives analysis to demonstrate that there are no appropriate and feasible alternative project designs that would substantially improve on-site runoff retention, if a proposed development will not retain on-site the runoff volume from the appropriate design storm using a Low Impact Development (LID) approach.

(3) Use Treatment Control BMPs or suites of BMPs designed to treat, infiltrate, or filter the amount of storm water runoff produced by all storm events up to and including the 1st inch of a 24 hour storm event, and/or the 85th percentile, 1-hour storm event (with an appropriate safety factor of 2 or greater) for flow-based BMPs.

(4) Use Treatment Control BMPs or suites of BMPs to remove pollutants from any portion of the design storm runoff volume that will not be retained on-site, or if additional pollutant removal is necessary to protect coastal waters.

(5) Use a Runoff Control BMP or suites of BMPs including LID and minimization of impervious surfaces for the design storm, consistent with Regional Water Quality Control Board storm water permits or applicable State Water Resources Control Board requirements, to minimize adverse post-development changes in the runoff flow regime. **(New) (Model LCP)**

Policy C-WR-1f: Permits for new development shall be conditioned to require a mechanism for verification of inspection, monitoring, repair, and maintenance of Source Control and Treatment Control Best Management Practices (BMPs) as necessary so that they function properly for the economic life of the development. The condition shall specify that this requirement runs with the land, such that the burden for implementing this requirement becomes the responsibility of the new owner upon transfer of the property. **(New) (Model LCP)**

Policy C-WR-1g: Approvals for new development and redevelopment shall ensure water quality impacts from construction are minimized by:

(1) Limiting the project footprint, phasing grading activities, implementing soil stabilization and pollution prevention measures, and preventing unnecessary soil compaction;

(2) Limiting land disturbance from construction (e.g., clearing, grading, and cut-and-fill), especially in erosive areas (including steep slopes, unstable areas, and erosive soils);

(3) Requiring soil stabilization Best Management Practices be implemented over disturbed areas as soon as feasible;

(4) Requiring that grading plans include measures to avoid soil erosion and sedimentation of storm water to the maximum extent feasible;

(5) Requiring as a condition of grading permit approval for all new development, regardless of the area of land to be disturbed, that soil stabilization and erosion control measures be installed in erosive areas of construction sites (e.g., steep slopes, unstable areas, and erosive soils);

(6) Requiring treatment control BMP's adequate to avoid adverse impacts to habitat and water quality be identified and implemented for new development in or adjacent to Environmentally Sensitive Habitat Areas on sites that drain directly to surface waters, regardless of the area of land to be disturbed;

(7) Requiring inspection of construction sites to verify implementation of approved erosion control plans and Storm Water Pollution Prevention Plans; and

(8) Requiring BMPs be implemented for constructing, maintaining, and repairing roads and trails in County parks, including stabilizing erosion, clearing vegetation, resurfacing, and removing slide debris. **(New) (Model LCP)**

Policy C-WR-1h: All projects which involve construction of new storm drain inlets or maintenance of existing inlets shall be required to add a sign or stencil to each inlet with the equivalent of this language: "No dumping, drains into creek/ocean." **(New)**

Policy C-WR-1i: For new development and redevelopment projects that could affect water resources of Sonoma County's Coastal Zone, as a condition of permit approval and prior to permit issuance, require the applicant to:

(1) Provide proof that all applicable local, state, and federal approvals related to water resources protection have been obtained. Such permits may include, but are not necessarily limited to the following:

   a. National Pollutant Discharge Elimination System Permits (State and Regional Water Quality Control Boards)

   b. Lake and Streambed Alteration Agreement (California Department of Fish and Wildlife)

   c. Clean Water Act Section 404 Permit (U.S. Army Corps of Engineers)

(2) Submit final project designs that demonstrate incorporation of applicable regulatory requirements, resource agency conditions of permit approval, and associated best management practices related to water resources protection. **(New)**

Policy C-WR-1j: The abatement of failing septic systems that pose a risk to public health or the environment shall be actively pursued. **(GP2020)**

Policy C-WR-1k: Initiate a review of any sewer system when it persistently fails to meet applicable standards. If necessary to assure that such standards are met, the County may deny new development proposals or impose moratoria on building and other permits that would result in a substantial increase in demand, and may impose strict treatment and monitoring requirements. **(GP2020)**

Policy C-WR-1l: Ensure that agricultural operations reduce non-point source pollution through the development and implementation of County-approved ranch plans and farm plans that demonstrate how the applicant intends to avoid, minimize, or mitigate the impact to water quality from agriculture. **(GP2020)**

Policy C-WR-1m: Design, construct, and maintain County buildings, roads, bridges, drainage, and other facilities to avoid or minimize sediment and other pollutants in storm water runoff. Implement Best Management Practices for their ongoing maintenance and operation. **(GP2020)**

Policy C-WR-1n: Encourage removal of abandoned, deteriorated piers and associated buildings in Bodega Bay, particularly those within the alignment of future trails. **(New)**

3.2 Groundwater

Sonoma County's groundwater plays an extremely important role in our natural environment, communities, industry sectors, and agriculture. In 2002, there were about 40,000 wells in Sonoma County, with 42 percent of the population supported at least in part by groundwater. Nearly all of the County's population relies on groundwater as either a primary or backup source of water supply. In the Coastal Zone, most users obtain their water from groundwater. Groundwater wells also supply community water systems and occasionally provide a supplemental or backup source for other sheet water flow collection systems. The release of contaminants or pollutants into groundwater from natural sources or human activities may have adverse impacts on human health, the environment, and property depending on the type, location, and quantity of materials released.

The amount of groundwater in an area varies by the recharge from rainfall, the surface runoff in streams and drainage channels, and the local underground geology. The alluvial soils, sand, and gravel found in valleys generally can hold large amounts of water and thus constitute the largest aquifers in the County. Sandstone and some other sedimentary rocks can still absorb some water. However, many upland areas and the Coastal Zone are comprised of harder rock formations that lack water storage capacity.

The climate of coastal Sonoma County provides abundant rainfall during the winter months, and potentially abundant groundwater recharge on an annual basis. The continual shortage of groundwater supplies in this area can be traced directly to the lack of storage capacity in much of the Franciscan Formation rocks that underlie the area. The Franciscan Formation is a large area of mixed sedimentary, metamorphic, and igneous rocks. Groundwater is stored in the fractures, joints, cavities, and bedding planes of the rocks. Rainfall that would otherwise percolate into the aquifer simply runs off into creeks and streams and then to the ocean for lack of storage space in most of the rocks.

Using information on geology and water yields, the County uses a four tier classification system to indicate general areas of groundwater availability. Class 1 are Major Groundwater Basins, Class 2 are Major Natural Recharge Areas, Class 3 are Marginal Groundwater Availability Areas, and Class 4 are Areas with Low or Highly Variable Water Yield. In addition to County mapping, the State regularly updates the maps of groundwater basins and prioritizes groundwater basins for sustainable management in the County.

With three small exceptions, Sonoma County's Coastal Zone is within the Class 4 Groundwater Availability Area. The exceptions are the Fort Ross Terrace Deposits groundwater basin, in the vicinity of The Sea Ranch, which is Class 3; the Lower Russian River Valley groundwater basin, adjoining the Russian River as far west as State Highway 1, which is Class 1; and the Wilson Grove Formation Highlands groundwater basin, along State Highway 1 North of the Estero Americano, which is Class 2. The remainder of the Coastal Zone is composed of Franciscan Complex rocks whose serpentine and shale members are typically non-water bearing. Chert, greenstone, and sandstone members of the Franciscan may possess water bearing fractures that yield sufficient and occasionally abundant water in some locations. The location of water-bearing bedrock is difficult to predict, so water availability is uncertain.

Public concerns over depletion of groundwater supplies have increased as development that relies on groundwater supply has increased. The County fully participates in the California Statewide Groundwater Elevation Monitoring (CASGEM) and continues to collect data about existing groundwater levels, water quality, and water use to best inform planning decisions.

In response to reports that groundwater levels have declined in some areas, the County has initiated a long-term program to increase the available data on groundwater resources and to systematically organize and use it as development is planned and new well permits are sought. Programs are underway to assess the available groundwater in

the County's three major basins, Santa Rosa Plain, Sonoma Valley and Petaluma Valley. In the fractured rock areas of the Coastal Zone, data from monitoring will improve our understanding of available groundwater resources. This growing body of data will produce better information for County decision makers to determine what further measures may be appropriate in order to properly manage groundwater resources.

GOAL C-WR-2: Manage groundwater as a valuable and limited shared resource.

Objective C-WR-2.1: Conserve, enhance, and manage groundwater resources on a sustainable basis that assures sufficient amounts of clean water required for future generations, the uses allowed by the Local Coastal Plan, and the natural environment.

Objective C-WR-2.2: Develop a scientifically based program to collect the data needed to assess and understand groundwater conditions.

Objective C-WR-2.3: Encourage new groundwater recharge opportunities and protect existing groundwater recharge areas.

Objective C-WR-2.4: Increase institutional capacity and expertise within the County to competently review hydrogeologic reports and data for critical indicators and criteria.

The following policies, in addition to those in the Public Facilities and Services, Land Use, and Open Space and Resource Conservation Elements, shall be used to accomplish these objectives:

Policy C-WR-2a: Ensure sufficient groundwater quantity and quality for existing and proposed uses reliant upon groundwater wells through application of County standards for pump tests, well yields, pollutant levels, and water storage, particularly for higher capacity wells. **(GP2020)**

Policy C-WR-2b: Continue the County program to require groundwater monitoring for new or expanded commercial and industrial operations using wells. Where justified by the monitoring program, establish additional monitoring requirements for other new wells. **(GP2020)**

Policy C-WR-2c: Proof of groundwater with a sufficient yield and quality to support proposed uses in Class 3 and 4 Groundwater Availability Areas shall be required for discretionary permits. Test wells may be required in Class 3 Groundwater Availability Areas. Test wells or the establishment of community water systems to support new development in Class 4 Groundwater Availability Areas shall be required. Permit applications for new development in Class 3 and 4 Groundwater Availability Areas shall be denied unless the applicant can demonstrate through a hydrogeologic report that the proposed use will not cause an adverse effect on groundwater quantity or quality, or

exacerbate an overdraft condition in a groundwater basin, subbasin, or fractured rock aquifer. Procedures for proving adequate groundwater shall consider streamflow, groundwater overdraft, land subsidence, saltwater intrusion, and the expense of such study in relation to the water needs of the project. **(GP2020)**

Policy C-WR-2d: New development and redevelopment projects in Urban Service Areas, where the density of development and thus extent of impervious surface area is greater than in Rural Communities, shall be required to maintain the site's pre-development recharge of groundwater to the maximum extent practicable. **(GP2020)**

Policy C-WR-2e: Encourage public water suppliers to monitor and report groundwater levels, yields, and other information on groundwater conditions. **(GP2020 Revised)**

3.3 Public Water Systems

An adequate and sustainable water supply is essential if Sonoma County is to serve projected increases in population, housing, employment, business, and agriculture. The main purpose of this section is to address what the County can do to help maintain the long-term adequacy of water supply services provided by public and private entities, given the legal limitations on the County's authority over such services.

The Sonoma Coast has about 16 water systems which fall under the regulatory authority of the SWRCB as a public water system.

The large public water systems on the coast are The Sea Ranch Water Company with 1,857 connections and the Bodega Bay Public Utilities District with 1,058 connections. The small public water systems range from the Sereno del Mar Mutual Water Company with 168 connections to the Blue Heron Restaurant with one connection. The small public water systems supply water to a wide variety of uses such as businesses, residences, schools, and small unincorporated communities. Most are owned by mutual companies or other private entities, and a few are operated by special districts. These systems have small revenue bases and relatively high per capita costs and often have difficulty financing major capital investments needed to replace aging facilities or accommodate growth. Additional information about public water systems on the coast is provided in Public Facilities and Services Element Section 3.1 (Water Services) and **Table C-PF-1**.

All public water systems must meet and maintain water quality standards established by the Sonoma County Department of Health Services and the Regional Water Quality Control Boards. The suppliers are required to prepare and adopt wellhead protection plans that will avoid future contamination. To the extent that these plans may need to rely upon the regulation of land uses around supply wells, the County's cooperation may be necessary.

In light of concerns over the future availability of water from surface and groundwater sources, water conservation, re-use, and alternative resources are increasingly important to providing adequate water supplies in the future.

GOAL C-WR-3: **Encourage public water suppliers to provide an adequate water supply that meets long-term needs, is consistent with the adopted Local Coastal Plan and community water management plans, and maintains water resources for other water users while protecting the natural environment.**

Objective C-WR-3.1: Assist public water suppliers in collecting and disseminating surface and groundwater data, assessing available water supplies, and protecting water quality.

Objective C-WR-3.2: Work with public water suppliers in developing and implementing long-term plans for water supply, storage, and delivery necessary to first meet existing water demands; and secondly to meet planned growth within the designated service areas, consistent with the sustainable yield of water resources.

Objective C-WR-3.3: Work with public water suppliers to balance reliance on groundwater and surface water to assure the sustainability of both resources.

The following policies, in addition to those in the Land Use and Public Facilities and Services Elements, shall be used to accomplish these objectives:

Policy C-WR-3a: Assist public water suppliers in complying with Federal and State water quality standards by assuring that water sources used for public water systems are not contaminated by land uses or pollutants in the watershed, by supporting continued study and monitoring of water quality, and by encouraging acquisition of critical watershed areas by the water suppliers or the Sonoma County Agricultural Preservation and Open Space District. In furtherance of this initiative, work with public water suppliers in developing and implementing wellhead protection plans. **(GP2020)**

Policy C-WR-3b: Encourage local public agencies that are public water suppliers, including county-dependent districts, special districts, and other local public agencies, to consult with the County prior to acquiring a site or developing any well or facility for public water supplies in the unincorporated area; and require a determination of consistency with the Local Coastal Plan and supporting technical documentation for development of any such well or facility. **(GP2020)**

Policy C-WR-3c: Encourage the preparation of master facilities plans and urban water management plans for all public water suppliers to design and construct all facilities in accordance with sustainable yields. A master facilities plan should contain, but not be limited to the following:

(1) Maps showing future service area boundaries;

(2) Forecasted growth and relationship to Local Coastal Plan projections and limits;

(3) Projected service and facility needs;

(4) Estimated costs and revenues for needed improvements;

(5) System design parameters and assumptions;

(6) Monitoring and mitigation measures to assure long-term adequacy of sources, including during possible drought conditions; and

(7) Water conservation measures.

In the event that a master plan or monitoring fails to show adequate public water facilities or supplies for planned growth, consider moratoria on plan amendments, zoning changes, building permits, or other entitlements in order to protect services to existing residents. **(GP2020)**

Policy C-WR-3d: Support the actions and facilities needed by public water suppliers to meet the demands estimated in adopted master facilities plans, consistent with the adopted Local Coastal Plan, community water management plans, and in a manner that protects the natural environment. **(GP2020)**

Policy C-WR-3e: Encourage public water suppliers to avoid or minimize significant adverse impacts on the environment resulting from water supply, storage, and transmission facilities, including impacts on other water users. **(GP2020)**

Policy C-WR-3f: Support cooperative inter-regional planning efforts by the public water suppliers, their contractors, and other existing water users, to consider future demand projections concurrently with the availability of sustainable water supplies. **(GP2020 Revised)**

3.4 Water Conservation and Re-Use

Water conservation has long been a practice in Sonoma County households, businesses, and agriculture. The rise of environmental consciousness in the 1970s and a prolonged drought in 1976 and 1977 led to the early efforts by some water suppliers to reduce demand. Planned re-use of treated water in the Santa Rosa Plain was initiated by the City of Santa Rosa during this same period as part of its regional wastewater system. Most of these earlier conservation efforts were not well publicized and, due to the

relative abundance of fresh water sources (outside the Coastal Zone), were not thought to be significant as a water supply strategy.

In recent years, both water conservation and re-use programs have expanded considerably. As advanced treatment has become an increasingly standard practice, re-use programs are becoming even more viable. Meeting peak water demands in the future may require increased water conservation efforts and water recycling by water users in both urban and rural areas.

The Sonoma Coast has always been a water scarce area. As described above in Section 3.2 (Groundwater), most of the County's Coastal Zone is in a Class 4 Groundwater Availability Area, underlain by typically non-water bearing Franciscan rocks. Therefore, there is an even greater need within the County's Coastal Zone to increase the efficiency of water use and reduce demand for water by applying new water conservation and re-use technology and implementing water conservation programs.

GOAL C-WR-4: Increase the role of water conservation and safe, beneficial water re-use in meeting water supply needs of both urban and rural users.

Objective C-WR-4.1: Increase the use of recycled water where it meets appropriate standards of quality and quantity for the intended use.

Objective C-WR-4.2: Promote and encourage the efficient use of water by all water users.

Objective C-WR-4.3: Conserve and recognize stormwater as a valuable resource.

The following policies, in addition to those in other sections of the Water Resources Element and the Public Facilities and Services Element, shall be used to accomplish these objectives:

Policy C-WR-4a: Require stormwater and wastewater disposal methods in accordance with all applicable Federal, State, and local regulations to avoid or minimize reliance on discharges into natural waterways. Where applicable, comment on projects and environmental documents to ensure that low impact development practices and reclamation, conservation, and reuse programs are protective of surface and groundwater resources. **(GP2020)**

Policy C-WR-4b: Water conserving plumbing and water conserving landscaping shall be required in all new development projects. Prior to building permit issuance, the applicant shall submit to Permit Sonoma for review and approval a Water Conservation Plan for all buildings and landscaping. The Water Conservation Plan shall include all reasonably feasible measures to reduce water demand to the maximum extent feasible

and enhance water resource recovery to maintain sustainable water supplies. Measures that must be evaluated include: installation of low-flow fixtures, best available conservation technologies for all water uses, rainwater and stormwater collection systems and graywater reuse. Landscaping plans must comply with the County Water Efficient Landscape Ordinance. Verification from a qualified irrigation specialist that landscaping plan complies with the County Ordinance shall be provided. The measures in the plan shall be implemented by the applicant and verified by Permit Sonoma staff prior to Certificate of Occupancy or operation of the use. **(GP2020 Revised)**

Policy C-WR-4c: County operated water systems shall be required to minimize water loss and waste and promote programs to minimize water loss and waste by public water suppliers and their customers. **(GP2020 Revised)**

Policy C-WR-4d: Encourage and support conservation for agricultural activities that increase the efficiency of water use for crop irrigation, frost protection, and livestock. **(GP2020)**

Policy C-WR-4e: Ensure that public wastewater disposal systems are designed to reclaim and reuse recycled water for agriculture, geothermal facilities, landscaping, parks, public facilities, wildlife enhancement, and other uses to the extent practicable, provided that the water meets the applicable water quality standards and is supplied in appropriate quantities for the intended uses. **(GP2020)**

Policy C-WR-4f: Encourage graywater systems, roof catchment of rainwater, and other methods of re-using water; and minimizing the need to use potable surface water or groundwater. **(GP2020)**

Policy CWR-4g: Encourage property owners to incorporate only native, drought-tolerant, and low water use plants to conserve water and reduce the potential for runoff and erosion. **(New)**

Policy C-WR-4h: Support programs to monitor and determine per capita or per unit water use in each community and area, and use these data in groundwater management plans, master facilities plans, and wastewater treatment plans. **(GP2020)**

Policy C-WR-4i: Encourage monitoring for all water use and water metering for public water suppliers that require water users to pay for costs of the amount of water used. Encourage tiering and other pricing mechanisms for public water suppliers that provide incentives for water users to employ conservation and reuse programs. Actively encourage public water suppliers to maximize water re-use and conservation prior to increasing net water use for new development**. (GP2020)**

Policy C-WR-4j: Promote programs for retrofitting plumbing, providing cost rebates, identifying leaks, changing landscaping, irrigating efficiently, and other methods of reducing water consumption by existing users. **(GP2020)**

3.5 Water Importing and Exporting

For many years, Sonoma County has relied to some degree upon importation of water from sources outside of the County borders. Since 1908, water has been diverted from the Eel River watershed in Mendocino County through a hydroelectric power plant into the Russian River watershed. This water has increased dry season flows in the Russian River and supplemented water supplies for downstream users.

GOAL C-WR-5: **Ensure that new proposals for surface and groundwater imports and exports are consistent with Sonoma County's ability to sustain an adequate supply of high quality water for all its water users and dependent natural resources.**

Objective C-WR-5.1: Protect the interests of current and future water users of Sonoma County in the review of proposals to export water from Sonoma County.

Objective C-WR-5.2: Ensure consideration of the environmental impacts of all proposed water imports and exports.

The following policies, in addition to those in the other sections of the Water Resources Element, shall be used to accomplish these objectives:

Policy C-WR-5a: Assess the environmental impacts and the impacts on current and future Sonoma County water users of any proposals to physically export water outside of Sonoma County, or to substantially increase existing out-of-County exports. Consideration of any proposal to export additional water shall prioritize benefit of and need for the water in Sonoma County, and assure that water needed by Sonoma County's urban, rural, and agricultural water users will not be exported outside the county. **(GP2020)**

Policy C-WR-5b: Full assessment of the environmental impacts shall be required for any proposals to import additional water into Sonoma County. **(GP2020)**

Policy C-WR-5c: Where allowed by State law, require that groundwater not be exported off-site for commercial purposes without prior County approval. **(GP2020)**

3.6 Watershed Management

Watershed management is a holistic approach to managing water resources and other watershed functions such as fish and wildlife, riparian functions, and ecological services. Watershed management allows for an integrated approach to surface water, groundwater, and water supply management taking into account effects on stream flow, groundwater levels, water quality and habitat conditions.

GOAL C-WR-6: **Improve the understanding, valuation, and sound management of the water resources in the diverse watersheds of the Sonoma County coast.**

Objective C-WR-6.1: Seek and secure funding for addressing water resource issues on a watershed basis.

Objective C-WR-6.2: Ensure consideration of the environmental impacts of all proposed water imports and exports.

The following policies, in addition to those in other sections of the Water Resources Element, shall be used to accomplish these objectives:

Policy C-WR-6a: Prioritize a watershed management approach to remediating identified water related problems. **(GP2020)**

Policy C-WR-6b: Utilize the North Coast Integrated Coastal Watershed Management Plans for the Salmon Creek and the Russian River Watersheds where appropriate and feasible. **(New)**

4. IMPLEMENTATION PROGRAMS

4.1 Water Resources Implementation Programs

Program C-WR-1: Develop and provide educational, outreach, or technical assistance programs focusing on water quality to owners and managers of agricultural operations and timberlands. Inform owners and managers of agricultural lands, including vineyards, orchards, row crops, grazing, ranches, and dairies, about the Agricultural Commissioner's Best Management Practices for erosion and sediment control, including on-site retention of storm water, maintenance of natural sheetflow and drainage patterns, and avoidance of concentrated runoff, particularly on slopes greater than 35 percent; and for protection of streams and other surface waters from the effects of livestock grazing. **(New)**

Program C-WR-2: Develop and require compliance with standards for the siting and design of harbors, marinas, and other waterfront development, regardless of the size of

the area to be disturbed. Require stormwater source control Best Management Practices to minimize polluted runoff including installation of trash receptacles with lids, posting of No Littering signs; and installation and maintenance of filters in storm drains. **(New)**

Program C-WR-3: Consider developing guidelines for development in Rural Communities that would provide for retention of the site's pre-development rate of groundwater recharge. **(GP2020 Revised)**

Program C-WR-4: Initiate and support educational programs to inform residents, business and agriculture owners and operators, and other groundwater users of best management practices in the areas of efficient water use, water conservation, and increasing groundwater recharge. **(GP2020)**

Program C-WR-5: In cooperation with the Sonoma County Water Agency, California Department of Water Resources, other public agencies, and well owners, establish and maintain a system of voluntary monitoring of wells throughout the County, using public water system wells and private wells where available. Encourage participation in voluntary monitoring programs and, if funds are available, consider funding of well monitoring where determined necessary in order to stimulate participation. **(GP2020)**

Program C-WR-6: In order to assess groundwater resources, review well permit data, monitoring data and identify special study areas where additional groundwater studies are needed. In each such special study area that is approved by the Board, develop a comprehensive groundwater assessment that includes the following:

(1) An existing system of monitoring wells and stream gauges;

(2) Locations of water wells;

(3) Available data on groundwater and surface water levels and contamination;

(4) Maps and graphs that show past and present data and changes in precipitation, imports, groundwater levels, groundwater quality, rates of extraction, and the relationship of groundwater to surface water;

(5) Drillers' logs, geologic data and monitoring data needed to estimate water yields in the area;

(6) Estimated future rates of imports, recharge, extraction, exports, changes in groundwater levels, and possible changes in groundwater quality;

(7) A water budget for the area that estimates the total amount of water gain or loss in the area;

(8) Any needed changes in well monitoring, data collection and reporting; and

(9) Provisions for applicant fees and other funding of County costs.

If an area assessment, as defined above, demonstrates a need for additional management actions to address groundwater problems, a plan for managing groundwater supplies shall be prepared pursuant to the California Water Code or the County's land use or other legal authority. Include involvement by the affected water users, well drillers, local agencies, private water companies and landowners. **(GP2020)**

Program C-WR-7: Work with the State Water Resources Control Board, California Department of Water Resources, California Department of Health Services, California Environmental Protection Agency, public water suppliers, and applicable County agencies to secure funding sources for developing groundwater assessment, protection, enhancement, and management programs. **(GP2020)**

Program C-WR-8: Develop a program to facilitate the tracking and maintenance of consistency between the adopted Local Coastal Plan, adopted groundwater management plans, and the master facilities plans of public water suppliers. Such a program should include meetings between Permit Sonoma and public water suppliers, Permit Sonoma review of proposed master facilities plans, and referral of Local Coastal Plan changes to all public water suppliers. **(GP2020)**

Program C-WR-9: Use water effectively and reduce water demand by developing programs to:

(1) Increase water conserving design and equipment in new construction, including the use of design and technologies based on green building principles;

(2) Educate water users on water conserving landscaping and other conservation measures;

(3) Encourage retrofitting with water conserving devices;

(4) Design wastewater collection systems to minimize inflow and infiltration; and

(5) Reduce impervious surfaces to minimize runoff and increase groundwater recharge. **(GP2020)**

Program C-WR-10: Assess water use by County buildings and facilities and reduce water consumption to the maximum extent feasible. **(GP2020)**

Program C-WR-11: Consider amending County codes to increase the use of recycled water for new commercial, residential, and agricultural development. **(GP2020 Revised)**

Program C-WR-12: Where a problem related to water is identified, promote and seek funding for evaluating and remediating the problem through a watershed management approach. **(GP2020)**

4.2 Other Initiatives

Other Initiative C-WR-1: Work with the California Coastal Commission, Regional Water Board, Sonoma County Water Agency, public water suppliers, and other interested parties to minimize polluted runoff from development, and to continue to develop and implement effective water quality plans and measures. **(GP2020)**

Other Initiative C-WR-2: Work with the Regional Board in development of TMDLs, TMDL Implementation Plans, water quality monitoring, and programs and projects for water quality restoration and remediation for impaired water bodies to improve water quality. **(GP2020)**

Other Initiative C-WR-3: Continue to cooperate with Mendocino County, the Regional Water Board, and CalFire to reduce water quality impacts of timber harvest in the Gualala River watershed. **(New)**

Other Initiative C-WR-4: Coordinate with the North Coast Regional Water Quality Control Board, California Coastal Commission, watershed focus groups, and stakeholders in collecting, evaluating, and using coastal watershed-specific water resource information. **(GP2020)**

Other Initiative C-WR-5: Work with the Regional Water Board and coastal communities to evaluate and monitor impacts on surface and groundwater quality caused by the operation of septic systems in existing and suspected problem areas. **(New)**

Other Initiative C-WR-6: Coordinate with the U.S. Army Corps of Engineers, the Regional Water Board and the Coastal Commission to continue maintenance dredging in Bodega Bay and other areas on the Sonoma Coast in accordance with the California Coastal Act. Dispose of dredge spoils in a manner that protects habitat and water quality and in accordance with all local, state, and federal permit requirements. **(New)**

Other Initiative C-WR-7: Support the Sonoma County Water Agency with development of flood control design criteria that considers stream geomorphic analysis, and the use of biotechnical bank stabilization methods for the purpose of preventing erosion and siltation in drainage swales and streams. **(GP2020)**

Other Initiative C-WR-8: Work with public water suppliers in assessments of the sustainable yield of surface water, groundwater, recycled water, and conserved water, including during possible drought periods. This work should include the exploration of potentially feasible alternative water supplies. Surface and groundwater supplies must remain sustainable and not exceed safe yields. **(GP2020)**

Other Initiative C-WR-9: Request technical assistance and water resource data from public water suppliers and share available water resource information with them and the public. **(GP2020)**

Other Initiative C-WR-10: Help public water suppliers disseminate information on the limits of available water supplies, how the supplies can be used efficiently, the possible effects of drought conditions, acceptable levels of risk of shortage for various water users, priorities for allocation of the available water supply, conditions for use of limited supplies, and limits of alternate sources that could be used or developed. Towards this end, support water conservation and education programs which provide measurable targets for public water suppliers. **(GP2020)**

Other Initiative C-WR-11: Cooperate with public water suppliers in planning, developing, and constructing storage and transmission facilities needed to supply water pursuant to adopted Local Coastal Plan policies, urban water management plans, water supply agreements, master facilities plans and, where applicable, programs to mitigate identified groundwater overdraft conditions. **(GP2020)**

Other Initiative C-WR-12: Coordinate with the North Coast Regional Water Quality Control Board and California Department of Water Resources to promote stormwater impoundments for agricultural uses. **(GP2020)**

Other Initiative C-WR-13: Encourage and support research on and monitoring of local groundwater conditions, aquifer recharge, watersheds, and streams where needed to assess groundwater quantity and quality. **(GP2020)**

Other Initiative C-WR-14: Encourage and support comprehensive studies of long-term changes in climate and precipitation patterns in the County and region. **(GP2020)**

Other Initiative C-WR-15: Where area studies or monitoring find that saltwater intrusion into groundwater has occurred, support analysis of how the intrusion is related to groundwater extraction; and support development of a groundwater management plan or other appropriate measures to avoid further intrusion and, where feasible, reverse past intrusion. **(GP2020)**

Sonoma County
Local Coastal Plan
Watersheds and Subwatersheds

Mendocino County

Gualala River Watershed

Salmon Creek-Frontal Pacific Ocean Watershed

The Sea Ranch

Stewarts Point

Annapolis Rd

Wheatfield Fork Gualala River

Stewarts Point Skaggs Springs Rd

South Fork Gualala River

King Ridge Rd

Kruse Ranch Rd

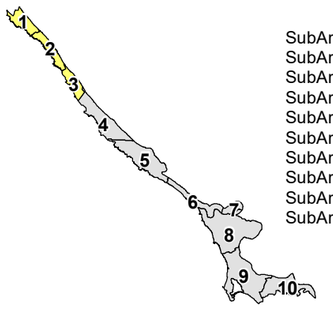
Plantation

Gualala River Watershed
South Fork Gualala River-Gualala River

Salmon Creek-Frontal Pacific Ocean Watershed
Russian Gulch-Frontal Pacific Ocean

Base Map Layers
Watershed
County
Parcel
Coastal Zone Boundary
Highway
Road
Stream

Local Coastal Plan SubAreas



SubArea 1 The Sea Ranch North
SubArea 2 The Sea Ranch South
SubArea 3 Stewart's Point/Horseshoe Cove
SubArea 4 Salt Point
SubArea 5 Timber Cove/Fort Ross
SubArea 6 High Cliffs/Muniz-Jenner
SubArea 7 Duncans Mills
SubArea 8 Pacific View/Willow Creek
SubArea 9 State Beach/Bodega Bay
SubArea 10 Valley Ford

DRAFT

0 1 Miles

1 inch = 1.34 miles

FIGURE C-WR-1a
Watersheds and Subwatersheds
SubAreas 1 - 3

Note:
Map scale and reproduction methods limit precision in physical features displayed. The parcels contained herein are not intended to represent surveyed data. In some areas the County's parcel base is not in alignment with the coastline. This map is for illustrative purposes only and does not reflect all policies. Site-specific studies are required to draw parcel-specific conclusions. The sub-watershed layers have been clipped for cartographic purposes.

Data Source: Sonoma County PRMD GIS, Watershed and Sub-Watershed layers obtained from the USDA Natural Resources Conservation Service (NRCS).

Author: PRMD Cartography: J. Samuels File Number:S:\GIS-DATA\PRMD_BASE\PRMD Department Projects\Comprehensive Planning\Local Coastal Plan\Map mxds\Public Review Draft\Figure C-WR-1a_PR.mxd Date: 6/3/2019

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Local Coastal Program

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Sonoma County
Local Coastal Plan
Watersheds and Subwatersheds

Gualala River Watershed
South Fork Gualala River-Gualala River

Lower Russian River Watershed
Willow Creek-Russian River

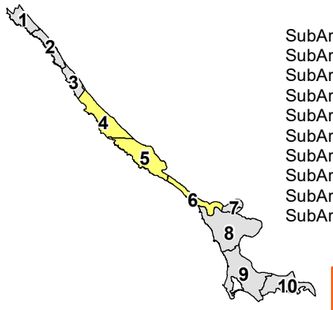
Salmon Creek-Frontal Pacific Ocean Watershed
Bodega Harbor-Frontal Pacific Ocean
Russian Gulch-Frontal Pacific Ocean

Base Map Layers
Watershed
Parcel
Coastal Zone Boundary
Highway
Road
Stream

Gualala River Watershed
Salmon Creek-Frontal Pacific Ocean Watershed
Lower Russian River Watershed

South Fork Gualala River
King Ridge Rd
Kruse Ranch Rd
Plantation
Walsh Landing
Fort Ross Rd
Rio Nido
Russian River
Jenner
Duncans Mills
1
116

Local Coastal Plan SubAreas



SubArea 1 The Sea Ranch North
SubArea 2 The Sea Ranch South
SubArea 3 Stewart's Point/Horseshoe Cove
SubArea 4 Salt Point
SubArea 5 Timber Cove/Fort Ross
SubArea 6 High Cliffs/Muniz-Jenner
SubArea 7 Duncans Mills
SubArea 8 Pacific View/Willow Creek
SubArea 9 State Beach/Bodega Bay
SubArea 10 Valley Ford

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Figure C-WR-1b
Watersheds and Subwatersheds
SubAreas 4 - 6

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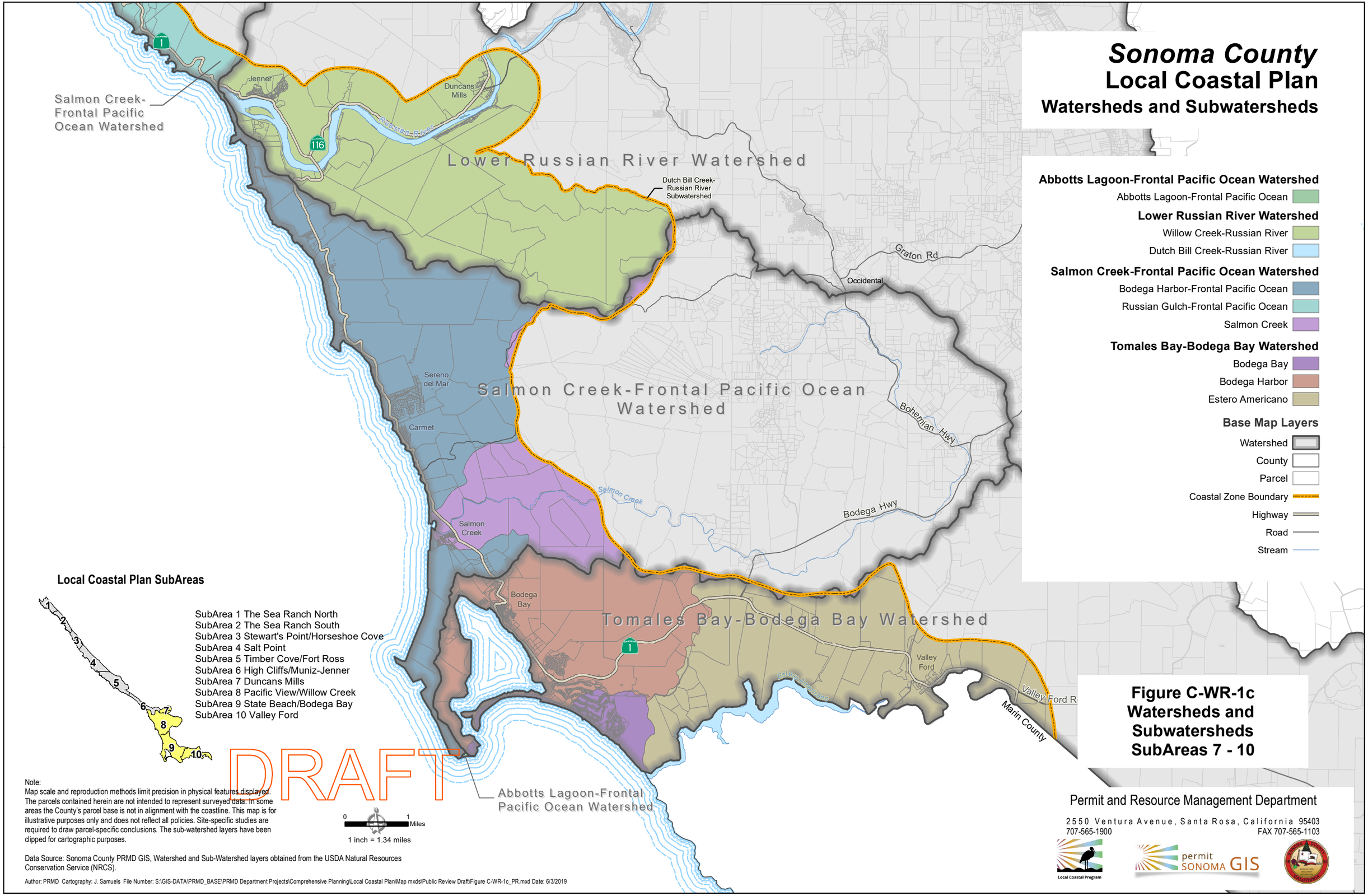
Sonoma County
Local Coastal Plan
Watersheds and Subwatersheds



Abbotts Lagoon-Frontal Pacific Ocean Watershed
- Abbotts Lagoon-Frontal Pacific Ocean

Lower Russian River Watershed
- Willow Creek-Russian River
- Dutch Bill Creek-Russian River

Salmon Creek-Frontal Pacific Ocean Watershed
- Bodega Harbor-Frontal Pacific Ocean
- Russian Gulch-Frontal Pacific Ocean
- Salmon Creek

Tomales Bay-Bodega Bay Watershed
- Bodega Bay
- Bodega Harbor
- Estero Americano

Base Map Layers
- Watershed
- County
- Parcel
- Coastal Zone Boundary
- Highway
- Road
- Stream

Local Coastal Plan SubAreas

SubArea 1 The Sea Ranch North
SubArea 2 The Sea Ranch South
SubArea 3 Stewart's Point/Horseshoe Cove
SubArea 4 Salt Point
SubArea 5 Timber Cove/Fort Ross
SubArea 6 High Cliffs/Muniz-Jenner
SubArea 7 Duncans Mills
SubArea 8 Pacific View/Willow Creek
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SubArea 10 Valley Ford

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0 1 Miles

1 inch = 1.34 miles

Data Source: Sonoma County PRMD GIS, Watershed and Sub-Watershed layers obtained from the USDA Natural Resources Conservation Service (NRCS).

Author: PRMD Cartography: J. Samuels File Number: S:\GIS-DATA\PRMD_BASE\PRMD Department Projects\Comprehensive Planning\Local Coastal Plan\Map mxds\Public Review Draft\Figure C-WR-1c_PR.mxd Date: 6/3/2019

Figure C-WR-1c
Watersheds and Subwatersheds
SubAreas 7 - 10

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Sonoma County
Local Coastal Plan
Groundwater Basins

Mendocino County

Gualala River

South Fork Gualala River

The Sea Ranch

Annapolis Rd

Wheatfield Fork Gualala River

Stewarts Point Skaggs Springs Rd

Stewarts Creek

Stewarts Point

Mcclellon Gulch

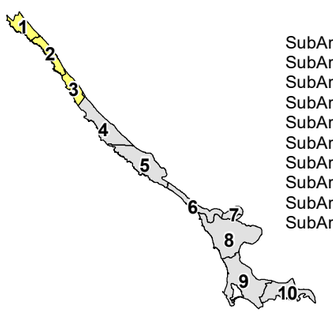
SubArea 4
Salt Point

Fort Ross Terrace Deposits

Base Map Layers

- Coastal SubArea
- Parcel
- Coastal Zone Boundary
- Natural Coastline
- Highway
- Road
- Perennial Stream
- Intermittent Stream

Local Coastal Plan SubAreas



SubArea 1 The Sea Ranch North
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1 inch = 1.09 miles

Data Source: Sonoma County PRMD GIS, Groundwater Basin layer obtained from the California Department of Water Resources.

Author: PRMD Cartography: J. Samuels File Number: S:\GIS-DATA\PRMD_BASE\PRMD Department Projects\Comprhensive Planning\Local Coastal Plan\Map mxds\Public Review Draft\Figure C-WR-2a_PR.mxd Date: 6/3/2019

FIGURE C-WR-2a
Groundwater Basins
SubAreas 1 - 3

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Local Coastal Plan
Groundwater Basins

SubArea 3
Stewarts Point/
Horseshoe Cove

South Fork Gualala River

Kruse Ranch Rd

Plantation

King Ridge Rd

Walsh Landing

Fort Ross Rd

Cazadero Hwy

Russian River

Jenner

SubArea 7
Duncans Mills

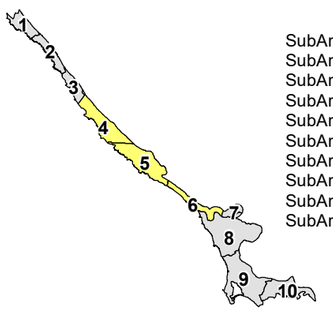
SubArea 8
Pacific View/
Willow Creek

Fort Ross Terrace Deposits
Lower Russian River Valley

Base Map Layers

Coastal SubArea
Parcel
Coastal Zone Boundary
Highway
Road
Perennial Stream
Intermittent Stream

Local Coastal Plan SubAreas



SubArea 1 The Sea Ranch North
SubArea 2 The Sea Ranch South
SubArea 3 Stewart's Point/Horseshoe Cove
SubArea 4 Salt Point
SubArea 5 Timber Cove/Fort Ross
SubArea 6 High Cliffs/Muniz-Jenner
SubArea 7 Duncans Mills
SubArea 8 Pacific View/Willow Creek
SubArea 9 State Beach/Bodega Bay
SubArea 10 Valley Ford

DRAFT

Note:
Map scale and reproduction methods limit precision in physical features displayed. The parcels contained herein are not intended to represent surveyed data. In some areas the County's parcel base is not in alignment with the coastline. This map is for illustrative purposes only and does not reflect all policies. Site-specific studies are required to draw parcel-specific conclusions. The Groundwater Basin layer has been clipped for cartographic purposes.

0 1 Miles

1 inch = 1.5 miles

Data Source: Sonoma County PRMD GIS, Groundwater Basin layer obtained from the California Department of Water Resources.

Author: PRMD Cartography: J. Samuels File Number: S:\GIS-DATA\PRMD_BASE\PRMD Department Projects\Comprhensive Planning\Local Coastal Plan\Map mxds\Public Review Draft\Figure C-WR-2b_PR.mxd Date: 6/3/2019

Figure C-WR-2b
Groundwater Basins
SubAreas 4 - 6

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2550 Ventura Avenue, Santa Rosa, California 95403
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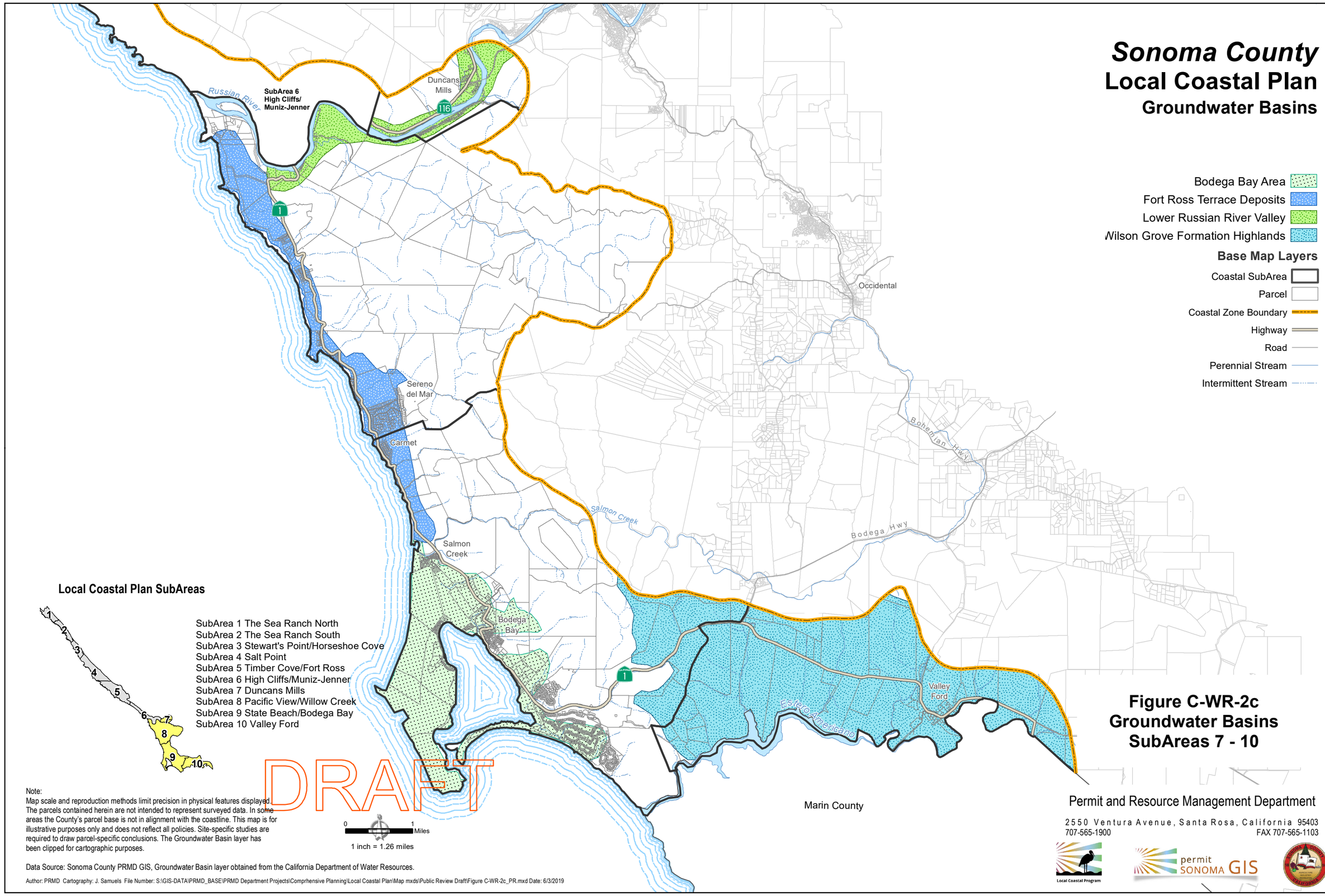
Local Coastal Program

permit SONOMA GIS

Sonoma County
Local Coastal Plan
Groundwater Basins



Bodega Bay Area
Fort Ross Terrace Deposits
Lower Russian River Valley
Wilson Grove Formation Highlands

Base Map Layers

Coastal SubArea
Parcel
Coastal Zone Boundary
Highway
Road
Perennial Stream
Intermittent Stream

Local Coastal Plan SubAreas

SubArea 1 The Sea Ranch North
SubArea 2 The Sea Ranch South
SubArea 3 Stewart's Point/Horseshoe Cove
SubArea 4 Salt Point
SubArea 5 Timber Cove/Fort Ross
SubArea 6 High Cliffs/Muniz-Jenner
SubArea 7 Duncans Mills
SubArea 8 Pacific View/Willow Creek
SubArea 9 State Beach/Bodega Bay
SubArea 10 Valley Ford

DRAFT

0 1 Miles

1 inch = 1.26 miles

Figure C-WR-2c
Groundwater Basins
SubAreas 7 - 10

Note:
Map scale and reproduction methods limit precision in physical features displayed. The parcels contained herein are not intended to represent surveyed data. In some areas the County's parcel base is not in alignment with the coastline. This map is for illustrative purposes only and does not reflect all policies. Site-specific studies are required to draw parcel-specific conclusions. The Groundwater Basin layer has been clipped for cartographic purposes.

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Author: PRMD Cartography: J. Samuels File Number: S:\GIS-DATA\PRMD_BASE\PRMD Department Projects\Comprhensive Planning\Local Coastal Plan\Map mxds\Public Review Draft\Figure C-WR-2c_PR.mxd Date: 6/3/2019

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