

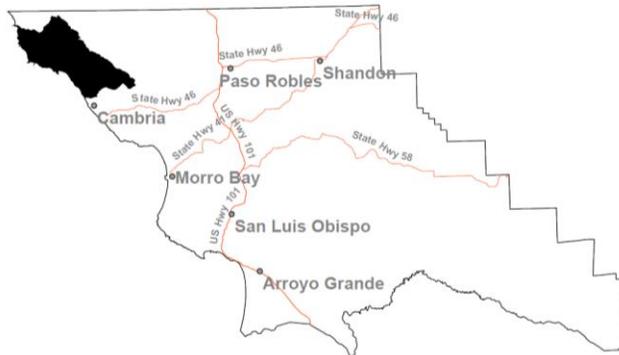
# San Simeon - Arroyo de la Cruz Area Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Estero Bay 10	1, San Simeon	60,141 acres	Pacific Ocean (Monterey Bay National Marine Sanctuary)	Arroyo de la Cruz Valley, Piedras Blancas Point, San Simeon Point, San Simeon Valley, Santa Rosa Valley	County of San Luis Obispo, San Simeon, Cambria (ptn)



### Description:

The San Simeon-Arroyo de la Cruz area watershed grouping (CalWater HUC 10 Scale) is located within the North Coast region of the county. This watershed drains approximately 51,500 acres and originates on the western slopes of the Santa Lucia Mountains, flowing to the Pacific Ocean at San Simeon State Beach. Although smaller creeks within this watershed grouping have direct drainages to the ocean, there are two major drainages – Arroyo de la Cruz and San Simeon Creek. Recharge of the aquifer comes from percolation of stream flow, deep percolation of precipitation and irrigation return flows. San Simeon Creek headwaters occur in the Coast Ranges to the northeast of Cambria. Elevations in the watershed range from 3,559 feet above sea level in the Santa Lucia Range at the eastern most watershed boundary to sea level along the coast. The dominant land use throughout the watershed is agriculture, specifically rangeland. The watershed includes the disadvantaged community of San Simeon, the northern portion of Cambria and the Hearst San Simeon State Historical Monument. San Simeon Estuary is located within San Simeon State Beach and is the home to several biotic communities including salt and freshwater marshes, grasslands, Monterey pine forest, as well as estuarine habitats. The watershed also contains multiple creeks that support critical Steelhead Trout habitat.



### Existing Watershed Plans:

No existing plans to date

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## Characteristics:

	Physical Setting	
	Rainfall	Average Annual: 19 in. (coast) - 42 in. (mountains) (NRCS shapefile, 2010)
	Air Temperature	Summer Range (August 1999-2012): 58°-77°F Winter Range (December 1999-2012): 45°-59°F (Hearst Castle, NOAA National Climatic Data Center, viewed 2013)
	Geology Description	<p>Lower Arroyo de la Cruz sub-watershed has steep Franciscan non-infiltrative headwaters with a flat Franciscan low infiltrative valley.</p> <p>Upper Arroyo de la Cruz, Burnett Creek, Arroyo de los Chinos, Arroyo del Corral and Pico Creek have steep pre-Quaternary non-infiltrative headwaters with flat Franciscan low infiltrative valleys.</p> <p>Middle Arroyo de la Cruz, Oak Knoll Creek and Broken Bridge Creek sub-watersheds have steep Franciscan non-infiltrative headwaters (Bell, pers. comm., 2013).</p> <p>The name San Simeon refers to some of the geologic structures present in the area, particularly elements of the coastal Jurassic Age landforms and ophiolite mineral formations. The San Simeon Terrain is a mass of ophiolite, Franciscan Melange, and Lospe and Monterey Formation that lies on the west side of the San Simeon Fault and was considered to have moved along the San Simeon-Hosgri fault system. The area is part of the Coastal Melange Zone, with the main rock type being Franciscan Formation, a mixture of metamorphic and igneous rocks formed under high pressure and temperature during subduction 300 to 50 million years ago (Chipping, 1987)</p> <p>Present in this watershed are mainly marine-sedimentary and metasedimentary rocks. Nearer to the coast minor-marine and nonmarine parent rock types dominate with little metavolcanic rock and some scattered plutonic rock inclusions. The soils found in the watershed are moderate to well-drained fine to moderately coarse textured with moderate</p>

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		permeabilities in stream channels. Poor to moderately well drained, fine or clay soils, with shallow over nearly impervious layers with slow permeability. Sand and sandy loams near coast, predominately loam textured soils in middle region, and very cobbly and gravelly clay loams in hills. Groundwater is found in Holocene and late Pleistocene age alluvium that consists of sand, gravel, and clay and ranges to 130 feet thick (Carollo, 2012; Chipping, 1987).
	<b>Hydrology</b>	
	Stream Gage	Yes; USGS 11142500 (Arroyo de la Cruz near Hwy 1) The San Simeon Stream Gage Station is located at Lower San Simeon Creek (#22) 35-35-59 121-06-52 (USGS, viewed August 2013)
	Hydrology Models	No source identified
	Peak Flow	23,700 cfs (USGS, 1950-1979 viewed August 2013) San Simeon Creek 45,380 AFY (SLO County Flood Control and Water Conservation District, 2005)
	Base Flow	San Simeon Creek 1200 AFY (SLO County Flood Control and Water Conservation District, 2005)
	Flood Reports	No source identified
	Flood Control Structures	Bridges:1 over Hearst Ranch Creek on SLO San Simeon Road (PWD Bridges GIS layer)  Cambria Flood Control Project: <ul style="list-style-type: none"> <li>1. Bypass channel along Santa Rita Creek in the West Village</li> <li>2. Gravity pressure stormdrain system to collect runoff from central residential area and divert to Santa Rosa Creek</li> </ul>
	Areas of Heightened Flood Risk	Cambria: poor drainage facilities, steep topography, location of residential parcels below street grade. Santa Rosa Creek in West Village – up to 8 feet of water in storms of 1995  Cayucos: steep topography, poor drainage network
	<b>Biological Setting</b>	
	Vegetation Cover	Primarily coastal oak woodland consisting of continuous, coast live oak; and non-native

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	<p>annual grassland mixed chaparral consisting of chamise, scrub oak and serpentine Manzanita; buckbrush and chamise chaparral; coastal scrub consisting of black sage; intermittent ponderosa pine; montane hardwood consisting of coast live oak; and open foothill pine. (SLO County vegetation shapefile, 1990)</p> <p>Many drainages in this watershed are lined with willow riparian scrub, and provide unique habitats for shorebirds, waterfowl and songbirds.</p> <p><i>Data limited by age of shapefile</i></p>																																										
	<p><b>Invasive Species</b></p> <p>Wild oats (<i>Avena fatua</i>), field mustard (<i>Brassica rapa</i>), and ripgut grass (<i>Bromus diandrus</i>), as well as rapidly spreading species, such as Italian thistle (<i>Carduus pycnocephalus</i>) and yellow star-thistle (<i>Centaurea solstitialis</i>) (Caltrans, 2006)</p> <p><i>Data limited to observations, not complete inventory</i></p>																																										
	<p><b>Special Status Wildlife and Plants</b></p> <p>Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank (CNDDDB, viewed August, 2013)</p> <p>Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered.</p> <p><i>Data limited to observations, not complete inventory</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Species</th> <th style="text-align: left;">Status</th> <th style="text-align: center;">ATASCADERO</th> <th style="text-align: center;">CAYUCOS</th> <th style="text-align: center;">CYPRESS MTN</th> <th style="text-align: center;">MORRO BAY NORTH</th> <th style="text-align: center;">MORRO BAY SOUTH</th> </tr> </thead> <tbody> <tr> <td><i>black legless lizard</i></td> <td>SSC</td> <td></td> <td></td> <td></td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> </tr> <tr> <td><i>California red-legged frog</i></td> <td>FT</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td></td> </tr> <tr> <td><i>coast horned lizard</i></td> <td>SSC</td> <td></td> <td></td> <td></td> <td style="text-align: center;">x</td> <td></td> </tr> <tr> <td><i>Coast Range newt</i></td> <td>SSC</td> <td></td> <td></td> <td style="text-align: center;">x</td> <td></td> <td></td> </tr> <tr> <td><i>globose dune beetle</i></td> <td>SA</td> <td></td> <td style="text-align: center;">x</td> <td></td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> </tr> </tbody> </table>	Species	Status	ATASCADERO	CAYUCOS	CYPRESS MTN	MORRO BAY NORTH	MORRO BAY SOUTH	<i>black legless lizard</i>	SSC				x	x	<i>California red-legged frog</i>	FT	x	x	x	x		<i>coast horned lizard</i>	SSC				x		<i>Coast Range newt</i>	SSC			x			<i>globose dune beetle</i>	SA		x		x	x
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Species	Status	ATASCADERO	CAYUCOS	CYPRESS MTN	MORRO BAY NORTH	MORRO BAY SOUTH
<i>monarch butterfly</i>	SA		x		x	
<i>Morro Bay blue butterfly</i>	SA				x	x
<i>Morro shoulderband (=banded dune) snail</i>	FE				x	
<i>pallid bat</i>	SSC		x		x	x
<i>San Luis Obispo pyrg</i>	SA				x	
<i>sandy beach tiger beetle</i>	SA		x		x	x
<i>southern steelhead - southern California DPS</i>	FE		x			
<i>steelhead - south/central California coast DPS</i>	FT		x	x	x	
<i>tidewater goby</i>	FE		x		x	
<i>western pond turtle</i>	SSC	x	x	x	x	
<i>western snowy plover</i>	FT				x	
<b>Plants</b>						
<i>adobe sanicle</i>	SR; CRPR 1B.1		x			
<i>Betty's dudleya</i>	CRPR 1B.2		x		x	
<i>Blochman's dudleya</i>	CRPR 1B.1		x		x	x
<i>Blochman's leafy daisy</i>	CRPR 1B.2				x	
<i>Brewer's spineflower</i>	CRPR 1B.3	x			x	
<i>California seablite</i>	FE; CRPR 1B.1		x		x	
<i>Cambria morning-glory</i>	CRPR 4.2		x			
<i>Carmel Valley bush-mallow</i>	CRPR 1B.2	x		x		
<i>compact cobwebby thistle</i>	CRPR 1B.2		x			
<i>Cook's triteleia</i>	CRPR 1B.3			x		
<i>Cuesta Ridge thistle</i>	CRPR	x			x	

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	1B.2			
<i>Eastwood's larkspur</i>	CRPR 1B.2	x	x	x
<i>Hardham's bedstraw</i>	CRPR 1B.3		x	
<i>Jones' layia</i>	CRPR 1B.2	x		x
<i>late-flowered mariposa-lily</i>	CRPR 1B.2			x
<i>Miles' milk-vetch</i>	CRPR 1B.2	x		x
<i>Monterey spineflower</i>	FT; CRPR 1B.2			x
<i>most beautiful jewel-flower</i>	CRPR 1B.2	x	x	x
<i>Palmer's monardella</i>	CRPR 1B.2	x		x
<i>San Benito fritillary</i>	CRPR 1B.2			x
<i>San Joaquin spearscale</i>	CRPR 1B.2		x	x x
<i>San Luis Obispo owl's-clover</i>	CRPR 1B.2	x		
<i>San Luis Obispo sedge</i>	CRPR 1B.2	x	x	x
<i>Santa Lucia bush-mallow</i>	CRPR 1B.2		x	
<i>woodland woollythreads</i>				

Steelhead Streams	Yes; Arroyo de los Chinos Creek, Arroyo de la Cruz Creek, Pico Creek, San Simeon Creek, Steiner Creek (Becker et. al., 2010).
Stream Habitat Inventory	Yes; DFG, August 1973 and September 1992 <i>Data limited by age of last inventory</i>
Fish Passage Barriers	Van Gordon Creek, 0.2 mile east (upstream) of Van Gordon Creek Rd. on San Simeon Creek Rd. ID #167; Unnamed Tributary of San Simeon Creek, 7 miles upstream of Hwy 1 on San Simeon Creek Rd., ID #46 (PAD Database)
Designated Critical Habitat	Yes; For Steelhead - San Simeon Hydrologic Sub-area 331013. Outlet(s) = Arroyo del Corral (Lat 35.6838, Long -121.2875); Arroyo del Puerto (35.6432, -121.1889); Little Pico Creek (35.6336, -121.1639); Oak Knoll Creek (35.6512, -121.2197); Pico Creek (35.6155, -121.1495); San Simeon Creek (35.5950, -121.1272) upstream to

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		<p>endpoint(s) in: Arroyo Laguna (35.6895, – 121.2337); Arroyo del Corral (35.6885, – 121.2537); Arroyo del Puerto (35.6773, –121.1713); Little Pico Creek (35.6890, – 121.1375); Oak Knoll Creek (35.6718, – 121.2010); North Fork Pico Creek (35.6886, – 121.0861); San Simeon Creek (35.6228, – 121.0561); South Fork Pico Creek (35.6640, – 121.0685); Steiner Creek (35.6032, –121.0640); Unnamed Tributary (35.6482, –121.1067); Unnamed Tributary (35.6616, –121.0639); Unnamed Tributary (35.6741, – 121.0981); Unnamed Tributary (35.6777, –121.1503); Unnamed Tributary (35.6604, –121.1571); Unnamed Tributary (35.6579, – 121.1356); Unnamed Tributary (35.6744, –121.1187); Unnamed Tributary (35.6460, –121.1373); Unnamed Tributary (35.6839, – 121.0955); Unnamed Tributary (35.6431, –121.0795); Unnamed Tributary (35.6820, –121.2130); Unnamed Tributary (35.6977, – 121.2613); Unnamed Tributary (35.6702, –121.1884); Unnamed Tributary (35.6817, –121.0885); Van Gordon Creek (35.6286, – 121.0942). (Federal Register- Vol. 70, No. 170 / Friday, September 2, 2005)</p> <p>California Red-Legged Frog (USFWS Critical Habitat Portal, viewed 2013)</p>
	Habitat Conservation Plans	No; HCP/NCCP meeting occurred on 3.19.01 (D. Highland, CDFW files)
	Other Environmental Resources	San Simeon State Beach, William Randolph Hearst Memorial State Beach, Hearst Ranch Conservation Project, San Simeon Creek Groundwater Basin, Rocky Butte Botanical Area (SLO County Flood Control and Water Conservation District, 2007)
	Land Use	

# San Simeon - Arroyo de la Cruz Area Watershed

Jurisdictions & Local Communities	County of San Luis Obispo, Town of San Simeon, North portion of the Town of Cambria
% Urbanized	3% (commercial, multi-family residential, and residential single family)(U.S. Census Block, 2010).
% Agricultural	94.4% Agriculture (row crop, orchards, rangeland)(U.S. Census Block, 2010).
% Other	1.4% rural land; 1.2% Recreation (U.S. Census Block, 2010).
Planning Areas	North Coast Planning Area
Potential growth areas	Hearst Corporation property; North Coast Planning Area, Hearst Castle staging area, San Simeon Village, Pine Resort Area (SLO County, 2011)
Facilities Present	Piedras Blancas Light House, Hearst Ranch / Hearst Castle (Hearst San Simeon State Historical Monument), San Simeon State Park  Three wells for Cambria Community Services District are located in Lower San Simeon Creek. Wastewater treatment spray fields are also located in this area. Treated wastewater infiltrates back into the groundwater aquifer.
Commercial Uses	Industrial facilities - Cambria Rock (Sand and Gravel mine along San Simeon Creek); Rancho San Simeon Pit (Decomposed Granite Mine); Arroyo Del Oso Pit (Sand and Gravel mined at the mouth of Arroyo Del Oso Alo); Agriculture – majority rangeland; Recreation and tourism at San Simeon, Coastal Beaches, and Hearst Castle.
<b>Demographics</b>	
Population	998 in watershed (US Census Blocks, 2010) 450 in San Simeon (US Census Blocks, 2010) 392 in Cambria (US Census Blocks, 2010)
Race and Ethnicity	Watershed: Caucasian, representing 27.7%. Latinos represent 6.57% in City. 16% are mixed race individuals with the remainder including African American, American Indian, and Asian (US Census Block, 2010)  San Simeon: 55.3% Latino; 40% Caucasian; 1.7% Mixed Race; 1.3% Asian; 1.1% American Indian and Alaska Native (US Census Blocks, 2010)  Cambria: 91% Caucasian; 5.4% Latino; 2% Mixed Race (US Census Blocks)

# San Simeon - Arroyo de la Cruz Area Watershed

	Income	MHI \$51,557 (U.S. Census Tracts, 2010) MHI \$44,583 in San Simeon (US Census, 2010) MHI \$76,271 in Cambria (US Census, 2010)
	Disadvantaged Communities	Yes; San Simeon (Department of Water Resources) 0.0% of individuals below poverty level in Watershed (US Census Tracts, 2010) 0.0 % of individuals below the poverty level in San Simeon (2007-2011 American Community Survey 5-Year Estimates) 5.0% of individuals below poverty level in Cambria (2007-2011 American Community Survey 5-Year Estimates)
	<b>Water Supply</b>	
	Water Management Entities	Cambria CSD, San Simeon CSD (Carollo, 2012)
	Groundwater	Yes; Alluvial; and Arroyo de la Cruz Valley, Piedras Blancas Point, San Simeon Point, San Simeon Valley, and Santa Rosa Valley Basins (Carollo, 2012)
	Surface Water	No public reservoirs (Carollo, 2012).
	Imported Water	None (Carollo, 2012)
	Recycled/Desalinated Water	The CCSD currently operates a wastewater treatment plant at the northern boundary of Cambria. The treated wastewater effluent is percolated into the ground between the San Simeon well field and the Pacific Ocean to create a hydraulic barrier that slows the fresh water underflow in the San Simeon Creek aquifer. This mound of fresh water also prevents seawater intrusion into the up-gradient potable groundwater aquifer, and maintains down-gradient surface flows. (CCSD Master Plan, 2008)
	Key Infiltration Areas	No data available
	Water Budget	Yes; Yates and Van Konyenburg, 1998. <i>Data limited by age of last water budget calculated</i>
	<b>Water Uses</b>	
	Beneficial Uses	<i>Arroyo del Corral</i> - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold

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Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), Estuarine Habitat (EST), Freshwater Replenishment (FRESH), and Commercial and Sport Fishing (COMM)

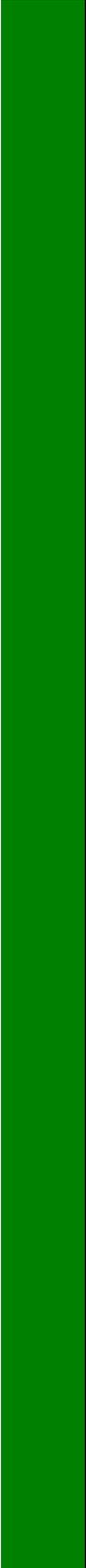
*Arroyo de los Chinos* – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), Estuarine Habitat (EST), Freshwater Replenishment (FRESH), and Commercial and Sport Fishing (COMM)

*Arroyo de la Cruz* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), Freshwater Replenishment (FRESH), and Commercial and Sport Fishing (COMM)

*Oak Knoll Creek* – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Threatened, or Endangered Species (RARE), Estuarine Habitat (EST), Freshwater Replenishment (FRESH), and Commercial and Sport Fishing (COMM)

*Pico Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2),

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Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Preservation of Biological Habitats of Special Significance (BIOL), Threatened, or Endangered Species (RARE), Freshwater Replenishment (FRESH), and Commercial and Sport Fishing (COMM)

*San Simeon Creek Estuary* - Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Preservation of Biological Habitats of Special Significance (BIOL), Rare, Threatened, or Endangered Species (RARE), Estuarine Habitat (EST), Commercial and Sport Fishing (COMM) and Shellfish Harvesting (SHELL).

*San Simeon Creek* - Municipal & Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Fresh Water Habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Preservation of Biological Habitats of Special Significance (BIOL), Rare, Threatened, or Endangered Species (RARE), Freshwater Replenishment (FRSH) and Commercial and Sport Fishing (COMM).

*Steiner Creek* - Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Freshwater habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Threatened, or Endangered Species (RARE), and Commercial and Sport Fishing (COMM)

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		(CCRWQCB, 2011)
	<b>Other Unique Characteristics</b>	
	Cambria Mercury Mines	No longer operating, partially reclaimed, with annual reports indicating low concentrations of metals and salts continue to leave the site, sometime exceeding receiving water standards (New Times, 2009)
	San Simeon Point Conservation Easement	319 acres held by the California Department of Park and Recreation (National Conservation Easement Database, viewed 2013)
	California Trade Lands Easement	5 acres held by The Nature Conservancy (National Conservation Easement Database, viewed 2013)
	Cambria Pines Easement	1450 acres held by The Nature Conservancy (National Conservation Easement Database, viewed 2013)
	Hearst San Simeon State Historical Monument	<ul style="list-style-type: none"> <li>- Ranch encompasses over 118,000 acres, 77,000 acres in San Luis Obispo County. Three Spanish land grants in the early 1840's were basis for the acquisition of the ranch property including Rancho Piedra Blanca, Rancho San Simeon and Rancho Santa Rosa</li> <li>- Attracts over one million visitors annually</li> <li>- Proposed development of five separate coastal areas for resort recreation and limited residential uses.</li> </ul>
	San Simeon Acres	<ul style="list-style-type: none"> <li>- Small commercial village developed to provide tourist and recreation services</li> <li>- Provides food and lodging facilities for Hearst Castle visitors as well as tourists driving Highway One.</li> <li>- Evolved from 1940 sale of the area by W. R. Hearst to facilitate recreational development</li> </ul>
	North Coast Shoreline	<ul style="list-style-type: none"> <li>- Valuable scenic and natural resource</li> <li>- Consists of low marine terraces with accessible beaches and coves, interspersed with rocky shorelines and steep bluffs. Offshore are rocks, reefs, and kelp beds.</li> <li>- The Monterey Bay Marine Sanctuary provides protection for rich offshore marine habitat.</li> </ul>
	Monterey Pine Forests	<ul style="list-style-type: none"> <li>- 2,500 acres surrounding Cambria</li> <li>- 500 acres at Pico Creek</li> <li>- Stands are extremely important as a "gene pool" – genetic variations found there protect some trees from pine pitch canker</li> <li>- Preservation of finer specimen stands</li> </ul>

# San Simeon - Arroyo de la Cruz Area Watershed

		<p>recommended through use of open space easements, avoidance by development, and direct purchase. The introduction of hybrid species is discouraged</p>
	<p>North Coast Creeks</p>	<ul style="list-style-type: none"> <li>- Important fish streams for migration and spawning</li> <li>- Adjacent riparian and wetland areas provide wildlife habitat</li> <li>- Groundwater and surface waters linked, maintenance of creek habitats essential to protect coastal resources</li> <li>- Support number of declining species such as Tidewater Goby, Striped Garter Snake, Western Pond Turtle, Red-legged Frog and Steelhead Trout</li> </ul>
	<p>San Simeon Creek Lagoon</p>	<ul style="list-style-type: none"> <li>- Estuary located within San Simeon State Beach.</li> <li>- Composed of several biotic communities including salt and freshwater marshes, grasslands, Monterey pine forest, as well as estuarine habitats.</li> <li>- Supports steelhead trout and other fish species</li> <li>- Major waterfowl feeding and nesting site. Close to 190 bird species reported at lagoon and in adjacent areas</li> </ul>
	<p>Hearst San Simeon State Park</p>	<p>One of the oldest units in the Ca State Park System. Coastal bluffs offer scenic views of the ocean and rocky shore. A 3.3 mile trail runs through parts of San Simeon Natural Preserve and the Washburn Campground. The trail includes scenic overlooks, rest-stop benches and interpretive panels with information on wildlife and habitat.</p> <p><u>Santa Rosa Creek Preserve</u> – includes valuable riparian forests and coastal wetlands, that provide habitat for endangered Tidewater Goby</p> <p><u>San Simeon Natural Preserve</u> – contains vast wetlands, riparian areas, and several undisturbed native plant communities including mima mound topography. The Preserve is a wintering site for monarch butterfly populations.</p> <p><u>Pa-nu Cultural Preserve</u> – 13.7 acres with the most significant archeological sites within the San Simeon State Park. The site has been dated to 5850 years before the present. Contains significant evidence documenting prehistoric technology, subsistence practices and social organization over the course of several centuries.</p>

# San Simeon - Arroyo de la Cruz Area Watershed

		W. R. Hearst Memorial Beach – Dedicated to the County in 1953. Has a 795 foot pier, completed in January 1969. Ownership transferred to State in 1970. The National Oceanic and Atmospheric Administration runs the Coastal Discovery Center at San Simeon Bay. It offers interactive exhibits and education programs which highlight the cultural and natural history of Old San Simeon, California State Parks and the Monterey Bay national Marine Sanctuary ( <a href="http://parks.ca.gov">parks.ca.gov</a> )
	Piedras Blancas Light Station	Located on a rugged windswept point of land six miles north of Hearst Castle, along California’s scenic Highway One. First illuminated as an aid to navigation in 1875, the lighthouse is still in operation. Access by guided tours only, operated by U.S. Dept of Interior, Bureau of Land Management ( <a href="http://blm.gov">blm.gov</a> ).
	Historical Resources	Van Gordon Archaeological Site (Located in San Simeon State Park, 500 San Simeon Creek Road; San Simeon); Hearst Ranch (California 1, San Simeon); The Sebastian Store (442 Slo San Simeon Road, San Simeon) (PLN_DES_HISTORIC_POINTS GIS layer)
	<b>Climate Change Considerations</b>	
		See IRWMP, 2014 Section H, Climate Change <i>Data is general for County, not watershed specific</i>

## Watershed Codes

Calwater / DWR umber	HA	Hydrologic Area Name	HSA	Hydrologic Sub-Area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3310.110202	1	San Carpofo	1	Breaker Point	310.11	Breaker Point	Arroyo de los Chinos
3310.120001	1	Arroyo de la Cruz	2	Undefined	310.12	Undefined	Upper Arroyo de la Cruz

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3310.120002	1	Arroyo de la Cruz	2	Undefined	310.12	Undefined	Middle Arroyo de la Cruz
3310.120003	1	Arroyo de la Cruz	2	Undefined	310.12	Undefined	Lower Arroyo de la Cruz
3310.120004	1	Arroyo de la Cruz	2	Undefined	310.12	Undefined	Burnett Creek
3310.130101	1	San Simeon	3	San Simeon Creek	310.13	San Simeon Creek	Steiner Creek
3310.130102	1	San Simeon	3	San Simeon Creek	310.13	San Simeon Creek	Lower San Simeon Creek
3310.130103	1	San Simeon	3	San Simeon Creek	310.13	San Simeon Creek	Upper San Simeon Creek
3310.130201	1	San Simeon	3	Oak Knoll	310.13	Oak Knoll	Broken Bridge Creek
3310.130202	1	San Simeon	3	Oak Knoll	310.13	Oak Knoll	Oak Knoll Creek
3310.130203	1	San Simeon	3	Oak Knoll	310.13	Oak Knoll	Arroyo del Corral
3310.130204	1	San Simeon	3	Oak Knoll	310.13	Oak Knoll	Pico Creek

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

## Major Changes in the Watershed

Clark Colahan's 2011 account of the settling of the San Simeon Creek watershed by his ancestor EA Clark in *On the Banks of San Simeon Creek*, indicates that EA arrived in California in 1850, traveling by way of the Isthmus of Nicaragua and arriving in the spring of 1858, then homesteaded for a decade on San Simeon Creek in San Luis Obispo County. In *On the Banks*, Colahan compiled extensive diary entries which paint a picture of the developing commerce in the watershed related to the natural resources available, extracted or otherwise utilized in settling and developing a means of survival and providing sustenance.

- Coal mining—William Leffingwell discovered outcropping of coal on the beach south of San Simeon Creek in 1863 (Hamilton, 1999)
- Quicksilver (mercury in the form of cinnabar) mining began in mid 1860's
- Dairying began in mid-to late 1860's
- San Simeon - Leffingwell Landing used in the 1860's followed by pier in late 1860's as well as whaling pier in same time period

The general pattern of land use change in SSC watershed follows that of neighboring watersheds wherein the settlement period following division of Spanish land grants brought grazing, small agricultural concerns, mining, water diversion and pumping, followed by more intense dairy farming, irrigated row crops, further land division, road building and more pumping for irrigated agriculture and residential development. As of the early 1990's, water resource availability has been the primary factor in the lack of continued development and sub-division in the watershed (Central Coast Salmon Enhancement, 2011).

Cambria:

- Located within Rancho Santa Rosa, an original Mexican land grant. Established in 1860's to accommodate shipping of mining and agricultural products in the central coast region.

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- Once an important service center for pioneer residents of the coastal region. Locally produced products included whale oil, lumber, mercury, gold and dairy products, most of which were exported. Depletion of mineral resources and replacement of coastal shipping by inland transportation reduced Cambria’s position of economic importance in the county.
- Continues to provide limited services to nearby agricultural areas. Role as a resort and retirement community grown in importance since 1920’s.
- Today visitors come for pleasant natural setting, seashore and numerous recreational opportunities such as art, craft and antique shops and fine restaurants.
- Annual dry-season water shortage long been cause for concern. 1990-1993: mandatory conservation program which reduced consumption by approximately 28% compared to 1989.
- Early 1990’s: Cambria CSD spray field operation changed to percolation pond system. Raised water well levels while serving as a hydraulic mound to slow fresh water outflow at ocean boundary.
- All new developments must participate in off-site plumbing fixture retrofit program – conventional plumbing fixtures replaced with low-flow fixtures

## San Simeon

- 1878 – George Hearst, proprietor of Piedras Blancas Rancho built a new 1,000 foot wharf at a cost of \$20,000.
- Piedras Blancas Lighthouse was built on the old property of Juan Castro. The light house was 100 feet high, built of brick and iron, and cost \$100,000. It contains a Fresnel light of great power (Storke, 1891).
- On this coast there are a number of whaling stations ½ at Monterey, San Simeon, Point San Luis, and Point Concepcion. The whaling business was begun here as early as 1864, and it has proved quite profitable. The least catch during the season was three whale, the greatest twenty-three. The whale hunts, conducted in open boats off these rugged coasts, is exciting but dangerous sport (Storke, 1891).

## Watershed Health by Major Tributary

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Arroyo del Corral*	Undetermined	Not assessed	Undetermined	Not assessed
Arroyo de los Chinos*	Undetermined	Not assessed	Undetermined	<b>Lower:</b> Spring: 0.4 cfs. Summer: 0.22 cfs.
Broken Bridge Creek*	Undetermined	Not assessed	Undetermined	Not assessed
Burnett Creek	Undetermined	Not assessed	Undetermined	Not assessed
Arroyo de la Cruz*	Undetermined	Escherichia coli (E. coli), Low Dissolved Oxygen	Agriculture, Natural Sources, Grazing-Related	<b>Lower:</b> Spring: 2.33 cfs. Summer: 0.71 cfs.

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			Sources	
Oak Knoll Creek*	Undetermined	Not assessed	Undetermined	<b>Lower:</b> Spring: 0.63 cfs. Summer: 0.27 cfs.
Pico Creek*	Undetermined	Low Dissolved Oxygen	Grazing-related Sources, Unknown Sources, Natural Sources	Spring: 0.61 cfs. Summer: 0.27 cfs.
San Simeon Creek*	Ephemeral	Chloride, Nitrate, Lo Dissolved Oxygen, Sodium	Agriculture, Grazing related sources, Natural Sources, Wastewater – land disposal	<b>Lower:</b> Spring: 1.6 cfs. Summer: 0.52 cfs. <b>Middle:</b> Spring: 1.51 cfs. Summer: 0.5 cfs <b>Upper:</b> Spring: 0.79 cfs. Summer: 0.32 cfs.
Steiner Creek	Undetermined	Not assessed	Undetermined	Not assessed

\*Indicates independent drainage to the Pacific Ocean

## Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield (Carollo, 2012)	Water Availability Constraints (Carollo, 2012)	Drinking Water Standard Exceedance (Carollo, 2012)	Water Quality Objective Exceedance (CCRWQCB, 2011)
Arroyo de la Cruz Valley	1,244 AFY (Envicom, 1982 / SLO County WMP, 2012)	None	None	None
Piedras Blancas Point	None	None	None	None
San Simeon Point	None	None	None	None
San Simeon Valley	1040 AFY (IRWMP, 2011)	The State Water Resources Control Board (State Board) allows a maximum extraction of 1,230 AFY in the San Simeon Valley Groundwater Basin and a	None	None

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		maximum dry season extraction of 370 AF (Cambria CSD, 2008).		
Santa Rosa Valley	2,260 AFY (SLO County WMP, 2012)	None	None	None
Pico Creek	120 AFY (Cleath, 1986 / SLO County WMP, 2012).	The primary constraints on water availability in the basin include physical limitations and potential water quality issues. (	None	None

During January of 2003, CCSD began investigating the process of adjudicating the San Simeon Basin. To date, neither basin has been adjudicated (Cambria Community Services District, 2004).

## CCSD Water Rights

Under CCSD's diversion permit for the San Simeon Basin, Permit No. 17287, the following restrictions apply:

- Maximum rate of diversion: 5.0 AF/day (2.5 cubic feet per sec [cfs])
- Maximum annual diversion: 1,230 AF
- Maximum dry season diversion: 370 AF. The dry season is defined as the date surface flow ceases at the Palmer Flats gaging station until October 31 of that year.

(Cambria Community Services District, 2004)

Groundwater supplies can be provided from either the San Simeon or Santa Rosa Creek wells. Both sources have appropriate water rights and, with the completion of water treatment facilities for the Santa Rosa Creek wells, the District's two supplies can be utilized conjunctively to manage groundwater levels in both basins (Kennedy and Jenks, 2000).

*Groundwater Quality Description:* (Groundwater samples from 31 wells collected from 1955 to 1994 show total dissolved solids (TDS) concentration ranging from 46 to 2,210 mg/l (DWR, 2003). Samples from three public supply wells show a TDS concentration range of 400 to 420 mg/l with an average concentration of 413 mg/l. Manganese concentrations in the downstream regions of the basin have exceeded the MCL, with a range of 0.002 to 1.6 mg/l (Carollo, 2012).

## Primary Issues

<i>Issue</i>	<i>Potential Causes</i>	<i>Referenced from</i>
Loss of riparian vegetation		J. Nelson, pers. comm., 2013

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Lack of instream flow	Excessive pumping/diversion	J. Nelson, pers. comm., 2013
Excessive sedimentation		J. Nelson, pers. comm., 2013
Gravel mining		J. Nelson, pers. comm., 2013
Grazing/Cattle		J. Nelson, pers. comm., 2013
Low dissolved oxygen kills fish in the lagoon		J. Nelson, pers. comm., 2013
Water pollution	Sewage leaks/overflow, general agriculture/row crops	J. Nelson, pers. comm., 2013
Poaching		J. Nelson, pers. comm., 2013
Sea Water Intrusion		Carollo, 2012
Currently the water supply of San Simeon CSD is at a certified Level III severity rating (resource capacity has been met or exceeded) due to unreliability of the groundwater supply to meet existing demands (SLO County, 2008). As a result, a moratorium on development has been in place since 1991.		SLO County Flood Control and Water Conservation District, 2008
Outdated hydrological studies for area GW basins		Carollo, 2012
Arroyo de la Cruz 303(d) listed for Escherichia coli (E. coli), low dissolved oxygen	Agriculture, natural sources, grazing related sources	Carollo, 2012
Pico Creek 303(d) listed for low dissolved oxygen	Grazing related, natural sources	Carollo, 2012
San Simeon Creek 303(d) listed for chloride, nitrate, low dissolved oxygen, sodium	Agriculture, grazing related and natural sources, wastewater (land disposal)	Carollo, 2012

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## ***Significant Studies in Progress:***

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Water Master Plan for Cambria: In-stream flow management study for San Simeon Creek. Water management strategy, small lot reduction ballot measure