Salinas Valley Groundwater Basin, Seaside Area Subbasin

- Groundwater Basin Number: 3-4.08
- County: Monterey
- Surface Area: 25,900 acres (40 square miles)

Basin Boundaries and Hydrology

The Salinas Valley –Seaside Area Subbasin includes the coastal communities of Seaside and Marina as well as the western portion of the former Fort Ord. The western boundary is the extent of Quaternary sand dunes which form the shoreline of Monterey Bay. The northeast boundary is the 180/400 foot aquifer subbasin which is in the Salinas Valley proper. The southeastern boundary is the Corral de Tierra subbasin which is roughly the extent of Quaternary sand (Jennings and Strand 1956). Surface drainage within the subbasin is primarily internal to small depressions between the sand dunes. Very few streams exit the area. Average annual precipitation is approximately 17 inches along the coast to 15 inches inland.

Hydrogeologic Information

Water Bearing Formations

From oldest to youngest, the water-bearing units of the subbasin are the Miocene/Pliocene Santa Margarita Formation, the Pliocene Paso Robles Formation, the Pleistocene Aromas Formation, and Pleistocene and Holocene age alluvial deposits (GTC 1984). These units have an aggregate maximum thickness of more than 1,000 feet (Muir 1982). Surface outcrops within the area are limited to alluvial sands and terrace deposits (Jennings and Strand 1956).

The Santa Margarita Formation is a poorly consolidated marine sandstone. This unit is an important water-bearing formation in the subbasin. It underlies the Paso Robles Formation and has a maximum thickness of 225 feet (GTC 1984).

The Paso Robles Formation is the major water-bearing unit in the Seaside area and consists of sand, gravel and clay interbedded with some minor calcareous beds (GTC 1984).

Within the subbasin the Aromas Formation is grouped together with the dune sand deposits and are difficult to differentiate between the units. These units consist of relatively clean red to yellowish-brown, well sorted sand and are estimated to range in thickness from 30 to 50 feet near the coast to up to 200 feet inland (GTC 1984).

Restrictive Structures

Two anticlines, three synclines and at least five faults exist within the Seaside subbasin (GTC 1984 and DWR 1970). No evidence was found to indicate that these geologic structures have any effect on the movement of groundwater. Differences between horizontal and vertical conductivity is reported to result in partial confinement (Muir 1982).

Recharge Areas

Groundwater recharge is from deep percolation of local precipitation, subsurface inflow from the Corral de Tierra subbasin to the east, and seepage of minor amounts from creeks (Muir 1982 and GTC 1984).

Groundwater Level Trends

Groundwater level monitoring in production and monitoring wells within the subbasin have generally shown declines in the period from the 1960's to the present. One well which is considered representative of the Northern Coastal and former Fort Ord areas has shown a general trend of water level decline of approximately 1 foot per year from the 1950's to at least 1997 (Fugro West 1997).

Groundwater Storage

Groundwater Storage Capacity. The storage capacity of the subbasin was estimated to be 1,000,000 af based on the storage of 630,000 af of groundwater in the southern half of the subbasin (Muir 1982).

Groundwater Budget (Type B)

There are not enough data in the referenced literature to provide a detailed estimate of the subbasin's groundwater budget. The lack of complete data on inflow, outflow, and aquifer transmissivities allow only general estimates. For the period from 1962 to 1979 inflow to the groundwater reservoir from rainfall was estimated by Muir (1982) to range from 0 to 15,200 af. Subsurface inflow was estimated by Thorup (1976) to be about 2000 af per year. Average pumpage from 1962-1979 is estimated at 3,600 af/yr, and the subbasin yield is estimated to be more than 6,400 af/yr and less than 7,700 af/yr (Muir 1982).

Groundwater Quality

Characterization. The groundwater in this subbasin is characterized as a sodium-chloride type in the southern end of the subbasin to a sodium-barcarbonate type in the northern portion (Muir 1982). TDS values range from 191 to 890 mg/L, with an average value of 420 mg/L (based on 28 wells, DWR 1959). Title 22 water quality standards report a TDS range of 180 to 610 mg/L, with an average value of 408 (based on 10 analyses). No average EC values were found in the referenced literature, but an extreme value of 1,450 µmhos/cm was noted in one well.

Impairments. Water from the Santa Margarita Formation is high in hydrogen-sulfide gas (Furgro 1997, Muir 1982). High levels of iron were found south of the City of Seaside (Muir 1982). Seawater intrusion is an ongoing problem in this subbasin.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	19	1
Radiological	21	3

Nitrates	21	0
Pesticides	20	0
VOCs and SOCs	20	0
Inorganics – Secondary	19	6

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: – 100-3500	Average: 1,000 (DWR well records)
	Total depths (ft)	
Domestic	Range: 32-1550	Average: 326 (DWR well records)
Municipal/Irrigation	Range: 60 - 1090	Average: 361 (DWR well records)

Active Monitoring Data

Agency	**Parameter**	**Number of wells /measurement frequency**
	Groundwater levels	
DWR (Including Cooperators)	Miscellaneous water quality	7 Annually (DWR 1967)
Department of Health Services and cooperators	Title 22 water quality	24 Varies

Basin Management

Groundwater management:	The Marina Coast Water District (MCWD) joined zone 2 and 2A of the Monterey County Water Resources Agency (MCWRA) in 1966
Water agencies	
Public	Monterey County Water Resources Agency (MCWRA), Marina Coast Water District (MCWD), City of Seaside, Presidio of Monterey Annex.
Private	Marina Del Mar Water System, Messick Road WS#1

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Errata

Changes made to the basin description will be noted here.