

Attachment 2

Drought Impacts

2.1 Drought Impacts

Monterey County has been identified in the U.S. Drought Monitor as being within the area of “exceptional drought.” Drought conditions are being felt most severely in the northern coastal portion of the region, where this application is focused.

The Nacimiento and San Antonio Reservoirs, owned and operated by the Monterey County Water Resources Agency (MCWRA), are a critical part of the Greater Monterey County region’s water infrastructure. The Nacimiento and San Antonio Dams were constructed to control floodwaters and to release water into the Salinas River for percolation to underground aquifers throughout the summer. At maximum pool, the Nacimiento Reservoir’s storage capacity is 377,900 AF. At full pool, the San Antonio Reservoir has a volume of 335,000 AF.

Groundwater is the primary source of water supply for residents in the Greater Monterey County region. Groundwater recharge in the Salinas Valley is principally from infiltration from the Salinas River, Arroyo Seco, and to a much less extent, other tributaries to the Salinas River, and from deep percolation of rainfall. It is estimated that stream recharge accounts for approximately half of the total basin recharge. During the spring and summer months, the reservoirs on the Nacimiento and San Antonio Rivers regulate flow to maximize groundwater recharge via the Salinas River channel. The Nacimiento Reservoir yields on average about 200,000 AFY to the Salinas River, or 62%, of the total water in the Salinas River system. The San Antonio Reservoir yields on average about 70,000 AFY to the Salinas River, or about 13% of the total water in the Salinas River system.

Since 2010, with implementation of the Salinas Valley Water Project, MCWRA has been operating an inflatable dam (the Salinas River Diversion Facility) to divert Salinas River water to agricultural growers in the northern coastal part of the region for irrigation. The purpose is to reduce pumping stress on the aquifer system and thereby reduce seawater intrusion advancement (described in more detail below).

At present, Nacimiento Dam is at 19% capacity (normally at 51% capacity this time of year) and San Antonio Dam is at 4% capacity (normally at 62% capacity this time of year). As a result of drought conditions, the MCWRA is currently not releasing any water from the dams for the purpose of groundwater recharge or for the Salinas River Diversion Facility (i.e., water has been shut off for agriculture in the northern valley).

Since MCWRA has been unable to release water from the reservoirs into the Salinas River for groundwater recharge, the groundwater supplies in the underlying aquifers have been significantly reduced and are becoming increasingly overdrafted. This has affected groundwater levels and water quality conditions to varying extents throughout the region but primarily in the northern coastal area – which is the focus of this application.

If the drought continues into 2015, the impacts will be quite severe throughout Monterey County. Groundwater supplies, while affected by the current drought, have been more or less adequate to meet the needs of urban and agricultural users up until now (though those supplies are being increasingly overdrafted and new wells are being drilled to locate new supplies); however, if the drought continues into the winter and the groundwater basins continue to be denied one more year of recharge, water supplies and water quality throughout the region will be severely compromised.

2.1.1 Groundwater Basin Overdraft

Over the last 80 plus years, the quality of water and storage capacity in northern Salinas Valley groundwater aquifer has degraded progressively owing to seawater intrusion. Figures 2-1 and 2-2 show the progression of seawater into the Salinas Valley Groundwater Basin aquifers of the Greater Monterey County region.

To offset groundwater overdraft and the resulting salt water intrusion, the Monterey Regional Water Pollution Control Agency (MRWPCA) regional wastewater treatment plant (WWTP) currently supplies recycled water to about 12,000 acres of agricultural land annually throughout the northern valley and adjacent community of Castroville. Additional water is provided to growers from the Salinas River Diversion Facility (i.e., diverted river water) to further offset groundwater overdraft. This effort – called the Castroville Seawater Intrusion Project (CSIP) – has greatly reduced overdraft and slowed seawater intrusion since its inception in 1992. However, it has not solved the problem. As shown in Figures 2-1 and 2-2, the CSIP program has slowed the advance of seawater into the groundwater aquifers, but it has not stopped it.

This year due to drought, MCWRA has suspended diversions from the Salinas River Diversion Facility for growers in the northern valley because of insufficient supply in the Nacimiento and San Antonio reservoirs. In addition, reduced water conservation by sewer flow contributors has decreased the amount of water reaching the MRWPCA regional WWTP. As a result, the amount of water available to growers through the CSIP has been reduced, and growers are having to draw much more heavily on groundwater to irrigate their fields. As comparison: Last year, a total of 24,752 AF was used to irrigate approximately 12,000 acres of crops. Of that amount, 15,485 AF was recycled water, 6,093 AF was river water, and 3,175 AF was well water. This year through June, 11,301 AF has been used to irrigate crops, with 7,936 AF recycled and 3,365 AF well water. And the year is only halfway over.

Increased overdraft of the coastal aquifers due to drought is escalating the advancement of seawater intrusion into the Greater Monterey County region's primary water source. If the drought continues into 2015, growers and water agencies will be forced to continue to overdraft these aquifers, which could devastate the water supply in the area for both agricultural and residential use and further impact groundwater supply for the larger region.

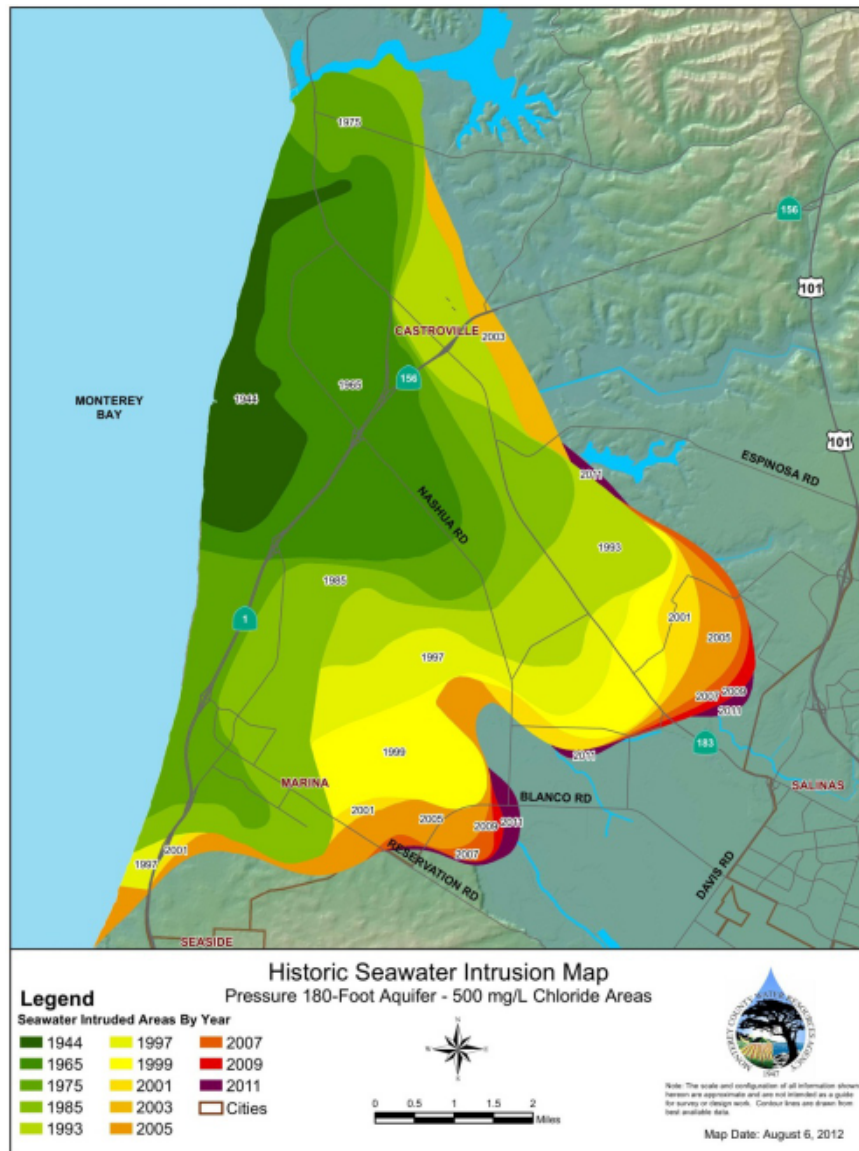


Figure 2-1. Seawater Intrusion Impacts in 180-Foot Aquifer

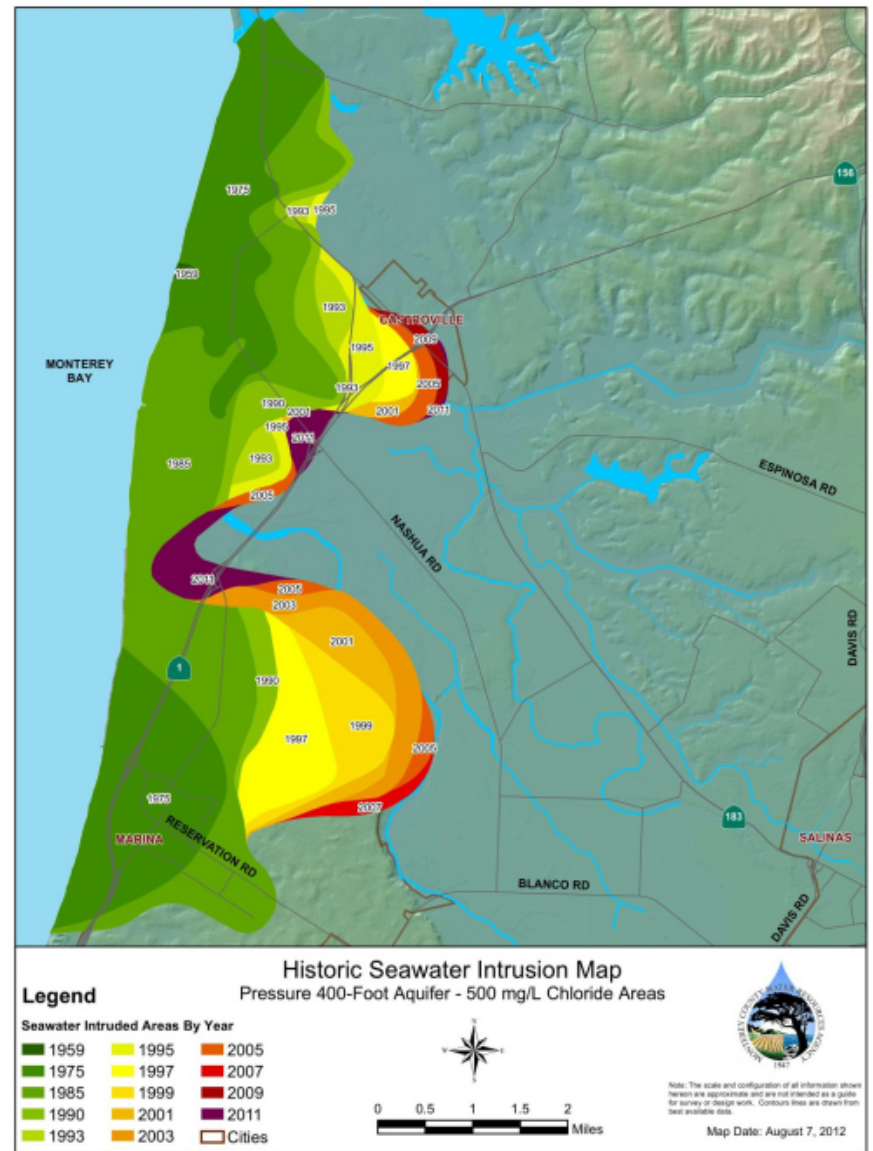


Figure 2-2. Seawater Intrusion Impacts in 400-Foot Aquifer

2.1.2 At Risk of Not Meeting Existing Drinking Water Demands

With drought conditions forcing growers and water supply agencies in the area to overdraft the groundwater aquifers to meet demand, seawater intrusion in the aquifers is causing serious drinking water issues in the disadvantaged community of Castroville. As shown in Figure 2-1, Castroville lost the ability to pump fresh water from the 180-Foot Aquifer in 1993. Figure 2-2 shows seawater intrusion reaching beyond the city lines in Castroville, which places Castroville in great danger of losing the ability to pump from the 400-foot Aquifer if the drought continues. Further seawater intrusion caused by overdraft severely exacerbated by the drought could mean loss of this water source, which could catastrophically affect the drinking water supply for Castroville.

The Castroville Community Services District (CCSD) serves water to about 7,400 residents in the community of Castroville. The CCSD currently delivers about 820 AFY (0.73 million gallons per day). The district draws water from the 400-Foot aquifer through three wells. The static water level is more than 100 feet below sea level for these wells, having dropped nearly 80 feet over the past three months. If the levels drop any lower they will be below the CCSD's level transmitters. As an apparent direct result of ongoing drought conditions, the water quality for two of these wells has degraded markedly, with chloride concentration at Well 3 increasing by over 130 mg/L in the past month to 476 mg/L of chloride. Owing to the continuing water table drop, CCSD's energy costs for pumping have increased about \$3,000 per month, compared to the same wells and the same calendar dates last year. CCSD General Manager Eric Tynan says he expects to lose one or two of these wells by the end of August. He hopes to drill a new well further to the east but the cost will be substantial, over \$1 million.

CCSD also owns one well currently not in service that penetrates into a much deeper aquifer, roughly 1,400 feet deep. This well's water quality is problematic. Its arsenic (As) concentration is 17 micrograms per liter ($\mu\text{g}/\text{L}$), well above the maximum contaminant level of 10 $\mu\text{g}/\text{L}$. Furthermore, the deeper well water has elevated sulfur compounds and is odorous. CCSD estimated that an As treatment system would cost about \$1 million per well. CCSD also is considering desalination, which would also be very costly, in lieu of drilling a new well or treating groundwater to remove As and sulfur compounds.

2.1.3 At Risk of Not Meeting Existing Agricultural Water Demands

Limited water availability is a serious issue for growers in the Salinas Valley and for the Castroville area in particular. As noted above, growers in the northern valley and the Castroville area are receiving no river water this year from the Salinas River Diversion Facility and are therefore drawing much more heavily from the coastal aquifers to meet irrigation needs. If the drought continues into 2015, groundwater overdraft and seawater intrusion will worsen, and lack of water will further impact the supply available to growers in the area. The results of the continued drought could be detrimental to agriculture in the area.

Protecting this water supply is vital for drought preparedness and immediate response. Efforts to recharge the groundwater supply and prevent salt water intrusion will help the area's drought tolerance. This project seeks to protect the groundwater supply and increase available water by diverting and treating dry-weather urban and industrial runoff (i.e., non-stormwater flows from residential, commercial, and industrial water use) as well as all stormwater for treatment reuse to help mitigate these urgent needs. The diverted water will flow to the MRWPCA regional WWTP to be recycled and distributed as part of the CSIP.

2.1.4 At Risk of Not Meeting Ecosystem Water Demands

The San Antonio and Nacimiento Rivers are two of the major tributaries to the Salinas River, with watershed areas of about 323 and 330 square miles, respectively. Dams owned and operated by the MCWRA control both of these rivers. The Nacimiento and San Antonio reservoirs together yield a majority of the total water in

the Salinas River system. Average annual flows to the ocean from the Salinas River are 259,300 AFY,¹ most of which occurs during the period of November through March. This year, with the Nacimiento Reservoir at only 19% capacity and the San Antonio Reservoir at only 4% capacity, the MCWRA has ceased releasing water for agricultural and groundwater recharge purposes. However, the MCWRA is releasing some water – just 20% of the normal release – for environmental purposes.

Critical habitat has been designated for South-Central California Coast steelhead within the Salinas River basin, which includes the Salinas River, the Salinas River Lagoon, Gabilan Creek, Arroyo Seco River, Nacimiento River, the San Antonio River, and their tributaries. Because of reduced rainfall and reduced flow in the Salinas River, the Salinas River Lagoon did not open to the ocean this year, providing almost no opportunity for fish to enter the river system from the ocean. There are some resident fish in the system; however, the lack of winter flows has affected migration and spawning, and there is little opportunity for juveniles to migrate out to the ocean.

When the Nacimiento Reservoir gets to minimum pool, MCWRA may no longer have control over releases because of an existing water rights agreement with San Luis Obispo County (which owns some water rights to Nacimiento Reservoir water). When the San Antonio Reservoir gets to “dead pool” (where the outlet is above the water level), the cost to pump the water along with additional infrastructure costs may be too prohibitive to continue water releases for environmental purposes. But if the drought continues into 2015, there may not be any water to release.

2.1.5 Discharge Water TMDL Violations

Currently, all South Salinas runoff flows to the Salinas River and Monterey Bay National Marine Sanctuary (MBNMS) via the City’s stormwater system. This water carries with it pollutants from several urban, industrial and agricultural sources. Based on published data and state evaluation, the lower Salinas River is one of the more polluted water bodies within the state. Segments of the river have continually failed to meet established minimum beneficial use standards; they are listed federally (Federal Clean Water Act Section 303[d]) for non-attainment of water quality standards. According to the Fact Sheet for the City’s stormwater Order No. R3-2012-0005, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0049981 (Permit): “...there is evidence that stormwater discharges from the Permit coverage area are significant sources of the following pollutants that cause or may be causing or threatening to cause or contribute to water quality impairment in the Salinas River: nitrate/nitrite as N, orthophosphate as P, ammonia as N (total), chlorophyll a, fecal coliform, total coliform, E. coli, total dissolved solids, boron (dissolved), chloride, and sodium.”

Left untreated these pollutants cause serious adverse impacts in downstream environments, including critical habitat for steelhead as well as other sensitive habitats within the MBNMS. As the drought has reduced surface flows in the Salinas River, the concentration of these pollutant loads has increased. In order to protect these sensitive habitats, the City needs to reduce pollutant discharges to surface waters to the maximum extent practicable.

2.1.6 Drinking Water MCL Violations

N/A

¹ Source: Annual data report on United States Geological Survey (USGS) website:
<http://wdr.water.usgs.gov/wy2013/pdfs/11152500.2013.pdf>

2.2 Water Conservation Measures

The Monterey County Board of Supervisors approved a resolution on April 22, 2014 calling for all area residents and businesses not already under formal water restrictions to voluntarily cut water use by 20% (see resolution attached as Att1_DG_Eligible_11of12). The County has taken steps toward conservation by reducing watering in County parks and facilities, installing low flow toilets and sinks in 50% of County restrooms, and posting conservation tips throughout County government facilities. In addition, the Board created a countywide interagency drought task force, which is being led by the Monterey County Office of Emergency Services, as well as a website devoted to drought updates and conservation tips.

Castroville Community Service District (CCSD) currently has a very low usage rate per capita at 65 gallons per day per capita. This year due to drought, CCSD has requested that its customers voluntarily reduce water usage by an additional 20%. Customers have been sent a mailer with tips on how to save water. The net effect thus far has been a reduction in pumping from 1,100 acre-feet in 2000 to 820 acre-feet in 2013, despite an increase of 120 new residents.

The Marina Coast Water District (MCWD) is also located in the northern coastal portion of the Greater Monterey County. The MCWD typically delivers approximately 4,500 acre-feet per year (AFY) of potable water to 38,000-42,000 customers in the City of Marina and the Ord Community. All of this water is from the Salinas Valley Groundwater Basin. On account of the drought, the MCWD Board has authorized the implementation of Stage 1 activities within the MCWD's Water Shortage Contingency Plan, which includes a voluntary 10% reduction in water use (attached as Att1_DG_Eligible_12of12).

In other parts of the Greater Monterey County region, Cal Water, which delivers about 20,000 AFY of groundwater to about 135,000 people in its Salinas District, is asking customers for voluntary conservation in the amount of 20% and has implemented Rule 14.1 with the CPUC, which includes certain prohibited uses of water.