



County of Monterey

Item No.

Board Report

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

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Consider receiving the 2022 August Trough Groundwater Level and 2022 Seawater Intrusion Contour Maps

RECOMMENDATION:

It is recommended that the Monterey County Water Resources Agency Board of Supervisors:

Receive the 2022 August Trough Groundwater Level and 2022 Seawater Intrusion Contour Maps

SUMMARY/DISCUSSION:

The Monterey County Water Resources Agency (Agency) is responsible for data collection and analysis of groundwater data throughout the Salinas Valley to support the ongoing Groundwater Level contouring, Seawater Intrusion mapping, and other programs related to current groundwater conditions. Conditions are assessed throughout the year to better understand how aquifers are responding during different hydrologic conditions as well as the relative groundwater storage fluctuations that occur on an annual basis. These activities align with Strategic Plan Goals B7, *Use of data and analysis to make informed decisions based on science* and E1, *Improve public outreach to increase transparency, communication, education and information about Agency projects and programs.*

The Monterey County Water Resources Agency Board of Directors received the 2022 August Trough Groundwater Level Contour and 2022 Historical Seawater Intrusion maps on February 21st, 2023. The data collection and analysis related to the mapping is described in more detail below.

August Trough Groundwater Level Survey - (Strategic Plan Programs No. 23 Groundwater monitoring of dedicated wells and No. 50 August Trough)

On a single day in August, Agency staff conducts an intensive groundwater level survey of the northern Salinas Valley. Groundwater levels (GWLs) are sampled at 143 wells from Chualar to the coast, to obtain a snapshot of conditions within and beyond the seawater intrusion fronts. This is done during a time of the year when aquifers are most stressed by pumping. One of the key purposes of the survey is to monitor and assess the forces driving seawater intrusion, in particular groundwater level gradients sloping inland from the coast, which are most pronounced when pumping is at its seasonal peak.

The 2022 August Trough contours for the 180-Foot and East Side Shallow Aquifers are included as Attachment A. Compared to the 2021 survey, there was a decline in groundwater levels of 2-4 feet near the coast, meaning groundwater elevations remained below sea level. The East Side trough and

groundwater levels in the area north of Salinas deepened by 10 feet. Groundwater levels in the area south of Salinas and towards Chualar saw declines of 4 to 12 feet from last year.

The 2022 August Trough contours for the 400-Foot and East Side Deep Aquifers are included as Attachment B. Near the coast, groundwater levels declined 3-6 feet southwest of the Salinas River Lagoon, 10 feet towards Castroville, and declined 20-25 feet in the Espinosa Lake area. The -20 foot elevation contour is south of the Salinas Lagoon, meaning groundwater elevations in the 400-Foot Aquifer remained between 20 and 30 feet below sea level at the coast. The East Side trough widened towards the area north of Salinas and deepened by 10feet. Groundwater levels in the area south of Salinas towards Chualar saw declines of 5 to 12 feet from last year.

2022 Seawater Intrusion (SWI) Maps - (Strategic Plan Programs No. 23 Groundwater monitoring of dedicated wells and No. 52 Coastal GW Quality Monitoring)

Seawater intrusion was first detected in the Salinas Valley Groundwater Basin in 1933. As seawater intrudes into an aquifer there is a transition zone where seawater and freshwater mix. The chloride concentrations in this transition zone are between 50 mg/L, which is the native water quality of the 180-Foot and 400-Foot Aquifers, and 19,000 mg/L, which is the concentration of chloride in Pacific Ocean water.

The Agency uses the 500 mg/L chloride iso-contour as the threshold for determining seawater intrusion into the coastal aquifers. This definition of “seawater intruded” is described in Monterey County Water Resources Agency Ordinance No. 03790, Section 1.01.13. A chloride concentration of 500 mg/L is roughly ten times the native concentration of chloride in these aquifers, two times the regulatory limit set by the E.P.A Drinking Water Secondary Maximum Contaminant Level (250 mg/L) and exceeds the USDA concentration (350 mg/L) for water considered to be of “Class III - injurious or unsatisfactory” quality for agricultural irrigation.

Each summer, Agency staff samples approximately 120 agricultural, urban purveyor, and small diameter monitoring wells in the coastal area of the northern Salinas Valley. Water quality samples are collected from the agricultural and urban wells twice, once in June and again in August. The Agency’s network of small diameter monitoring wells is sampled once in September.

The water quality samples are analyzed by the County’s Consolidated Chemistry Lab (ELAP # 1395). The data are then evaluated with several geochemical tools and chloride isocontours are developed using an ArcMap interpolation tool to map the approximate location of the seawater intrusion front. Supporting data from several other Agency programs are used to provide additional data validation of the chloride isocontour locations. The new polygons depicting the areas that increased above the seawater intrusion threshold are then added to the Historical Seawater Intrusion maps, which illustrate the seawater intrusion front while highlighting the changes seen over the period of record. Additionally, this year the 250 mg/L isocontours are included on both the 180-Ft Aquifer and 400-Ft Aquifer Seawater Intrusion Maps.

In 2022 the 500 mg/L or greater chloride areas show no advancement within the 180-Foot Aquifer (Attachment C).

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Within the 400-Foot Aquifer, the 500 mg/L or greater chloride area of the main seawater intrusion front showed advancement occurring in two areas, along the middle section near where the Salinas River crosses Highway 1 and along the southern lobe, near Blanco Road (Attachment D). Interestingly, groundwater levels in both these areas have declined between 5 and 10 feet.

Additionally, the large southern “island” of seawater intrusion that is not contiguous with the regional seawater intrusion front expanded along its east and south margins and the “arm” that previously joined the southern and middle islands in 2020 also showed expansion. This occurred in the area of Nashua and Cooper Roads and groundwater levels have declined in these areas by 10 to 15 feet.

OTHER AGENCY INVOLVEMENT:

None

FINANCING:

There is no financial impact in receiving this report. Activities associated with this program are funded by Funds 111 & 116 and included in each year’s budget.

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Attachments:

- A: August Trough 2022 Groundwater Elevation Contours, 180-Ft and East Side Shallow Aquifers
- B: August Trough 2022 Groundwater Elevation Contours, 400-Ft and East Side Deep Aquifers
- C: 2022 Historical Seawater Intrusion Map, 180-Ft Aquifer
- D: 2022 Historical Seawater Intrusion Map, 400-Ft Aquifer