



## AGENDA REPORT

**MEETING DATE:** May 9, 2024

**AGENDA ITEM:** 6.3

**SUBJECT:** Deep Aquifers Study

**RECOMMENDATION:** Receive Deep Aquifers Study and direct staff to engage other agencies with groundwater management authority in the region to review the study findings and develop next steps.

**BACKGROUND:**

The Deep Aquifers increasingly provide vital groundwater resources for drinking water, irrigation, and industrial uses in the Salinas Valley. The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and collaborative funding partners jointly financed the Deep Aquifers Study (Study) to address critical questions regarding the geology and hydrogeology of the Salinas Valley’s Deep Aquifers and provide a scientific basis for sustainable management.

The need for additional study of the Deep Aquifers has been identified in the context of stopping seawater intrusion and effectively managing groundwater sustainability. In 2017, the Monterey County Water Resources Agency (WRA) issued “Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin.” In 2018, the County of Monterey issued an interim ordinance No. 5302 (extended by No. 5303) which prohibited construction of new wells in the Deep Aquifers unless exempted by ordinance and directed WRA to complete a study of the Deep Aquifers. In 2020, MCWRA updated its 2017 report, however some recommendations were not implemented, and the interim ordinance expired. The expiration of the ordinance, coupled with data on well construction and groundwater extraction in the Deep Aquifers that occurred while the ordinance was in place, highlighted the need to complete this critical study.

The importance of the Study has also been described in the 2020/2022 180/400-Foot Aquifer Groundwater Sustainability Plan and 2022 Monterey Subbasin Groundwater Sustainability Plan. Both GSPs include a Management Action to undertake and operationalize guidance from a study of the deep aquifers. In the fall of 2021, SVBGSA put together a funding agreement, issued a request for proposals (RFP) and, with input from other agencies, selected Montgomery & Associates Inc. to complete the Study. The collaborative funding partners

include ALCO Water, California Water Service, Castroville Community Services District, City of Salinas, Irrigated Agriculture, Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA), County of Monterey, SVBGSA, and WRA. The Study began in January 2022 and was planned to take 2 years to complete.

During the Study preparation SVBGSA facilitated diverse technical expert input on M&A's interim work products and findings from the Groundwater Technical Advisory Committee (GTAC), which evolved out of the Seawater Intrusion Working Group Technical Advisory Committee. GTAC peer review of an administrative draft extended the original December 2023 completion timeline by several months. The GTAC provided input on numerous aspects of the Study, including:

- Key tasks to be included in the scope of the study
- Definition of Deep Aquifers
- Review of preliminary findings and interim guidance
- Newly collected data and how they inform the Deep Aquifers Hydrogeologic Conceptual Model
- Water budget
- Current conditions, monitoring recommendations, and guidance for management

After the Deep Aquifer Study is presented at the SVBGSA Board meeting, M&A will be presenting it to the MCWD GSA Board at their May meeting, WRA Board of Directors at their June meeting and to the Monterey County Board of Supervisors in July.

## **DISCUSSION:**

Declining groundwater elevations in the Deep Aquifers over the past few decades prompted the need for this Study. Despite chronic groundwater elevation declines in most Deep Aquifers wells, well installations continued. Extractions from the Deep Aquifers in the Seaside, Monterey, and coastal 180/400-Foot Aquifer Subbasins have been occurring since the 1980s, increasing at a steeper rate over the past decade in the coastal 180/400-Foot Aquifer and Monterey Subbasins. Since 2014, many new agricultural Deep Aquifers wells have been installed in the areas that are seawater-intruded in the 180- and 400-Foot aquifers, and where the Castroville Seawater Intrusion Project (CSIP) does not deliver an alternative water supply. Data indicate that recent surface water has not infiltrated into the Deep Aquifers under current climate conditions, and groundwater elevation declines increase the risk of seawater intrusion and subsidence.

This Study compiles all available data into a scientifically robust report characterizing the geology and hydrogeology of the Deep Aquifers in the Salinas Valley. Collection and integration of different types of data fills key data gaps and provides science-based guidance for management. It provides definition of the Deep Aquifers and a hydrogeologic conceptual model (HCM) that describes the geology and hydrogeology, extent of the Deep Aquifers, aquifer hydraulic properties, groundwater chemistry and potential natural recharge and

discharge pathways. It includes a water budget, and reviews historical and recent conditions. Lastly, it provides guidance for management.

The Deep Aquifers are defined as the water-bearing sediments that are below a relatively continuous aquitard or area of higher clay content encountered between approximately 500 feet and 900 feet below land surface within the Salinas Valley Basin, building on previous definitions of the aquifer system below the 400-Foot Aquifer. The HCM summarizes the physical framework of the Deep Aquifers and how the groundwater occurs and moves. With areas of uncertainty, primarily around the edges, the HCM shows the areas of the Deep Aquifers sampled have received no recharge of surficial water since at least 1953.

The Deep Aquifer Study water budget provides reasonable estimates of groundwater entering and leaving the Deep Aquifers and annual changes in groundwater storage. Groundwater inflow to and outflow from the Deep Aquifers can come from adjacent aquifers and/or the slow leakage of water between the Deep Aquifers and overlying 400-Foot or equivalent aquifer. Characterized by three different regions with varying degrees of certainty, there is the most data for the “Northern Region” where there is the largest storage decline as more water is extracted than replenished. The water budget for the entire extent of the Deep Aquifers shows groundwater storage has declined on average 9,000 acre-feet (AF) per year in the historical water budget and 9,600 AF per year in the recent water budget.

Historical and current conditions are summarized for the Deep Aquifers which describe how much groundwater has been extracted over time. Water Year 2022 groundwater extraction from the Deep Aquifers ranged from 13,800 AF from the true Deep Aquifers wells to 17,700 AF from all Deep Aquifers wells, with the difference being extraction from wells that are screened in the Deep Aquifers and overlying 400-Foot Aquifer. Groundwater elevations in the Deep Aquifers fluctuated historically but have been on a downward trend over the last 2 decades. Lowering groundwater elevations and downward gradients put the Deep Aquifers at risk of seawater intrusion and subsidence.

Guidance for managing the Deep Aquifers is based on the findings of the Study. Management must fit within the existing regulatory context, including the adjudication of the Seaside Subbasin, Sustainable Groundwater Management Act (SGMA), and the County well permitting process. The goal of management should be to address the risks associated with further groundwater elevation declines. Lack of management of the Deep Aquifers could have severe economic implications due to seawater intrusion, subsidence, and lack of regulatory compliance. Local control may also be compromised without adhering to the Seaside adjudication or SGMA.

The Study provides 12 pieces of guidance aimed at halting further degradation and improving groundwater elevations to prevent seawater intrusion and subsidence. These focus on providing science-based principles to guide management where there is sufficient data for

managing the Deep Aquifers. The guidance does not extend to policy decisions, the type of management actions or projects to implement, or how the guidance should be applied, as those are beyond the Study scope. Policies and implementation should be planned and created with local groundwater management agencies and key stakeholders. Finally, the Deep Aquifer Study makes recommendations for refining the existing monitoring networks to track trends, identify changes and enhance the understanding of groundwater conditions.

The Study reaffirms that the Deep Aquifers are in overdraft. It acknowledges areas of uncertainty and limitations in data and data gaps but confirms that sufficient data exists to manage the Deep Aquifers. Management and monitoring to ensure sustainability of the Deep Aquifers must be a deliberate, collaborative, and timely undertaking by all agencies with overlapping authority, interested parties and beneficial users.

#### **FISCAL IMPACT:**

M&A's services to conduct the Deep Aquifer Study totaled \$850,000. It was funded through contributions from the collaborative funding partners as follows:

- WRA - \$ 340,000.00
- County of Monterey - \$ 170,000.00
- SVBGSA - \$ 89,250.00
- City of Salinas - \$ 42,500.00
- Marina Coast Water District - \$ 42,500.00
- Cal Water Service - \$ 12,750.00
- Castroville CSD - \$ 12,750.00
- Alco Water - \$ 8,500.00
- Irrigated Agriculture - \$ 131,750.00 (collected through Tier 2 fees in FY 2024)

An additional \$23,000 from the 180/400 SGM Round 1 Grant Component 8: Implement Deep Aquifer Study Recommendations supported the GTAC review of the administrative draft and incorporation of GTAC comments into the final report.

**CEQA DETERMINATION:** Statutorily Exempt (15262. Feasibility and Planning Studies). The Deep Aquifer Study is a planning study for possible future actions. Receipt of the Study will not have a legally binding effect on any later activities that may result from its findings and guidance.

#### **ATTACHMENT(S):**

The Deep Aquifers Study can be downloaded from the SVBGSA website here:

<https://svbgsa.org/deep-aquifer-study/>

#### **PREPARED BY:**

Sarah Hardgrave, Deputy General Manager  
Emily Gardner, Deputy General Manager