Salinas Valley Basin
Groundwater Sustainability Agency

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Re: Salinas Valley – 180/400 Foot Aquifer Subbasin (No. 3-004.01) – Response to DWR 2025 Periodic Review – Additional Information Request

Dear Ms. Salais:

On December 1, 2025, the Department of Water Resources (DWR) sent a letter to the Salinas Valley Basin GSA (SVBGSA) requesting a meeting to discuss and clarify additional information DWR deemed necessary to assess SVBGSA's progress toward "…achieving the [180/400-Foot Aquifer Subbasin's] sustainability goal and the potential for adverse effects on adjacent basins". The letter identified four areas where DWR seeks additional information and clarification. The requested meeting took place on December 23, 2025, at which time DWR presented its findings and additional questions from the December 1 letter. The attached report provides a response to DWR's request for information.

DWR specifically requested clarification on the 2025 Periodic Evaluation for the 180/400-Foot Aquifer Subbasin (180/400 Subbasin) and the 2022 Amended Groundwater Sustainability Plan (GSP Amendment 1), submitted to DWR in January 2025. SVBGSA has made substantial progress since both documents were produced. Therefore, the attached response not only clarifies those 2 documents as requested, but also provides DWR new information about analyses, actions, and decisions that occurred since the documents were developed. We believe these recent activities address many of DWR's questions and demonstrate significant progress toward achieving sustainability.

Our responses additionally address or allude to sustainability actions in other subbasins of the Salinas Valley. In 2020, Section 1.3 of the 180/400 Subbasin GSP stated that:

> "This GSP is developed in concert with GSPs for five other Salinas Valley Groundwater Basin subbasins under SVBGSA jurisdiction: the Eastside Aquifer Subbasin, the Forebay Aquifer Subbasin, the Upper Valley Aquifer Subbasin, the Langley Area Subbasin and the Monterey Subbasin. The projects and programs presented in this GSP are part of a cohesive set of

> projects and programs designed to achieve sustainability throughout the entire Salinas Valley Groundwater Basin."

In 2022, SVBGSA and partner GSAs subsequently prepared 5 GSPs for these other 5 subbasins in our jurisdiction, along with Amendment 1 to the 180/400 GSP that is the subject of this response. In 2022, GSP Amendment 1 stated in the Executive Summary that:

> "This GSP Update is developed as part of an integrated effort by the SVBGSA to achieve groundwater sustainability in all 6 subbasins of the Salinas Valley under its authority. Therefore, the projects and actions included in this GSP are part of a larger set of integrated projects and actions for the entire Valley."

SVBGSA continues to take a holistic approach to SGMA implementation across all areas under SVBGSA management to reduce the administrative burden for many SGMA compliance activities in the Salinas Valley. Substantial progress has been made to fill data gaps and develop improved model tools to assess and determine management required to achieve and maintain groundwater sustainability in all 6 subbasins within SGMA deadlines. Given hydrologic connectivity between the 6 subbasins and pre-SGMA water projects and management practices, SVBGSA has continued to develop an integrated approach to its work plan for projects and management actions. A portfolio of projects is needed to avoid undesirable results not only in the 180/400 Subbasin but in multiple subbasins.

Large-scale projects needed to mitigate seawater intrusion and declining groundwater levels are driven by groundwater conditions across multiple subbasins, rather than groundwater conditions within the 180/400 Subbasin alone. Seawater intrusion in the 180/400 Subbasin is a regional issue, and effective management therefore requires a regional approach.

SVBGSA has developed a coordinated strategy to decide which projects and management actions will move forward in the next 5-year SGMA cycle across its entire jurisdiction. As part of this effort, SVBGSA is reviewing a wide range of options to find the most effective and practical path to sustainability. Staff is in the process of presenting these options to the Advisory Committee, which will evaluate them and recommend a preferred set to the Board of Directors. Considerations include feasibility, cost, whether SMC could be achieved and meet SGMA deadlines, and potential consequences to the Monterey County economy. This approach recognizes that sustainability in the 180/400-Foot Aquifer Subbasin cannot be achieved in isolation and requires coordination across all subbasins for long-term success.

The attached response outlines SVBGSA's leading solution to manage seawater intrusion, as well as contingency projects that can be implemented should the preferred approach prove politically or economically infeasible. The response then addresses the specific questions asked by DWR. For each concern, we provide clear responses that include analyses and decisions that occurred after GSP Amendment 1 and the 2025 Periodic Evaluation were submitted. The Board approved staff's submittal of the topics and information provided. At the March 12, 2026, Board meeting, staff presented an outline of the proposed response to DWR's additional information request, responded to Board questions, and received feedback. By consensus, the Board directed staff to submit the response by the April 30, 2026, due date and to provide a copy of the final response to the Board in a subsequent agenda packet following submittal.

The preferred solution for managing seawater intrusion has not officially been adopted by the SVBGSA Board of Directors. However, SVBGSA intends to open the 90-day public comment period for the planned GSP amendments following the August 2026 SVBGSA Board of Directors meeting. At that meeting, the SVBGSA Board will be asked to approve preferred implementation strategy for meeting sustainable management criteria for all subbasins in SVBGSA jurisdiction.

Therefore, while responding to many of DWR's questions with this response, SVBGSA requests an extension of time to September 15, 2026, to complete the Board Approval process. SVBGSA staff have communicated to DWR staff in meetings that it is preparing 180/400 GSP Amendment 2 and the corresponding GSP periodic evaluation for the 180/400 Subbasin concurrent with GSP amendments and periodic evaluations for the other 5 subbasins that are due to DWR in January 2027. This additional time is needed for Board approval of the preferred portfolio of PMAs that will be incorporated into the 2027 GSP periodic evaluations.

We realize SVBGSA has a different structure for the GSA and a unique approach than has been adopted in most parts of California. The inter-subbasin agreement provisions in SGMA are not clearly applicable in SVBGSA's jurisdiction. However, SVBGSA is convinced it is the correct approach for the areas of the Salinas Valley Groundwater Basin in Monterey County. SVBGSA is committed to cooperatively achieving sustainability in all 6 subbasins that it fully or partially manages, and this will be further articulated through the integrated implementation strategy that will be completed this summer.

SVBGSA invites DWR to remain in regular contact because our sustainability program is moving quickly. SVBGSA is committed to working together with DWR and our local partner water agencies and GSAs to implement SGMA and manage the Salinas Valley's groundwater sustainably.

Sincerely,

Piret Harmon

Piret Harmon
General Manager
Salinas Valley Basin Groundwater Sustainability Agency

CC:

Board of Directors	SVBGSA
Remleh Scherzinger	General Manager, Marina Coast Water District GSA
Kelly Donlon	Deputy County Counsel, County of Monterey GSA Point of Contact

180/400-Foot Aquifer Subbasin 5-Year Evaluation and GSP Amendment 1

Response to DWR Additional Information Request

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ACRONYMS & ABBREVIATIONS

180/400 Subbasin....180/400-Foot Aquifer Subbasin
AF ....acre-feet
AFY........................acre-feet per year
Ag BMPs.................Agricultural Best Management Practices
AWSP ....Alternative Water Supply Project
BGRP ....Brackish Groundwater Restoration Project
BODR ....Basis of Design Report
CEQA......................California Environmental Quality Act
cfs...........................cubic feet per second
CIPs.........................capital improvement projects
CSIP ....Castroville Seawater Intrusion Project
DDW.......................Division of Drinking Water
DWR ....Department of Water Resources
Eastside Subbasin....Eastside Aquifer Subbasin
EHB.........................Monterey County Health Department Environmental Health Bureau
EIR ....environmental impact report
EIS..........................environmental impact statement
GMP........................Groundwater Monitoring Program
GSP ....Groundwater Sustainability Plan
ILP...........................Irrigated Lands Program
IRWM ....Greater Monterey County Integrated Regional Water Management
M1W ....Monterey One Water
MBGWFM ....Monterey Subbasin Groundwater Flow Model
MCWDGSA............Marina Coast Water District Groundwater Sustainability Agency
MCWRA.................Monterey County Water Resources Agency
MG ....million gallons
mg/L........................milligrams per liter
MLRP......................California Multi-Benefit Land Repurposing Program
MO ....Measurable Objective
MT..........................Minimum Threshold
NAA........................No Action Alternative
NEPA ....National Environmental Policy Act
NSIP........................New Seawater Intrusion Project
O&M.......................operations and maintenance
PMA........................projects and management actions
RCAs.......................Recommended Corrective Actions
RMUs......................Remote Monitoring Units
RO ....reverse osmosis

ROC ....reverse osmosis concentrate
SGM R1 Grant ....Sustainable Groundwater Management Round 1 Implementation Grant
SGM R2 Grants.......Sustainable Groundwater Management Round 2 Implementation Grants
SGMA ....Sustainable Groundwater Management Act
SIRP ....seawater intrusion response plan
SMC ....Sustainable Management Criteria
SRDF.......................Salinas River Diversion Facility
SVBGSA.................Salinas Valley Basin Groundwater Sustainability Agency
SVIHM....................Salinas Valley Integrated Hydrologic Model
SVOM ....Salinas Valley Operational Model
SVRP.......................Salinas Valley Reclamation Project
SWIM......................Salinas Valley Seawater Intrusion Model
SVWP ....Salinas Valley Water Project
UCCE......................University of California Cooperative Extension
USBR ......................U.S. Bureau of Reclamation
USGS ......................U.S. Geological Survey
VFD.........................variable frequency drive
WEPP ....Water Efficiency Pilot Program

1 INTRODUCTION

Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) has made significant progress since it submitted Amendment 1 to Department of Water Resources (DWR) in 2025 together with the Groundwater Sustainability Plan (GSP) 2025 Periodic Evaluation (SVBGSA, 2025). This report provides a response to DWR's request for information on both documents. It provides clarifications as requested as well as new information about analyses, actions, and decisions that have occurred since the documents were developed. These recent activities address many of DWR's questions and demonstrate significant progress toward achieving sustainability.

The GSP 2025 Evaluation covered work conducted through Fall 2024 and data summaries for Water Years 2019-2023. SVBGSA and partner agencies have continued to conduct numerous efforts to fill data gaps and advance GSP implementation. Some information was not yet available for DWR's review in January 2025, and many of the efforts directly address DWR's questions. Additional work completed has not only advanced SVBGSA's progress toward achieving sustainability, but has also underscored the need for integrated, Valley-wide groundwater management.

As stated in the 2020 GSP for the 180/400 Subbasin and again in Amendment 1, SVBGSA takes a holistic approach to Sustainable Groundwater Management Act (SGMA) implementation across all areas under SVBGSA management to reduce the administrative burden for many SGMA compliance activities in the Salinas Valley. Substantial progress has been made to fill data gaps and develop improved model tools to assess and determine management required to achieve and maintain groundwater sustainability in all 6 subbasins within SGMA deadlines. Given hydrologic connectivity between the 6 subbasins and pre-SGMA water projects and management practices, SVBGSA continues to work on an integrated approach to its work plan for projects and management actions. A portfolio of projects is needed to avoid undesirable results not only in the 180/400 Subbasin but in multiple subbasins.

Large-scale projects needed to mitigate seawater intrusion and declining groundwater levels are driven by groundwater conditions across multiple subbasins, not solely by the groundwater conditions within the 180/400 Subbasin. It is necessary to take a regional approach to managing seawater intrusion in the 180/400 Subbasin. This is appropriate because:

- The aquifers across all 6 Salinas Valley Subbasins are hydraulically connected.
- The Salinas River connects 3 of the subbasins (180/400, Forebay, and Upper Valley) and is the main source of groundwater recharge for the Valley, including from reservoir releases from Lake Nacimiento and San Antonio.

- Aquifers cross subbasin boundaries. SVBGSA must manage the various aquifers and subbasins cooperatively to achieve sustainable management criteria and avoid the "adverse effects on adjacent basins" cited in DWR's letter.
- Seawater intrusion occurs in both the 180/400 and Monterey Subbasins. A coordinated effort to manage seawater intrusion across the entire coastal extent where it is documented is necessary.
- Low groundwater levels in the adjacent Eastside Subbasin contribute to seawater intrusion. Any solution to managing seawater intrusion must additionally manage the Eastside's groundwater levels.
- The potential cost and potential repercussions of failing to act are of regional importance. The economic consequences of controlling (or failing to control) seawater intrusion should be a County-wide concern.

The Salinas Valley faces ongoing groundwater management challenges that require implementation of PMAs to ensure reliable supplies for both urban and agricultural users. Substantial progress has been made since the approval of the GSPs, but additional investments and coordinated efforts are needed to address groundwater management for long-term sustainability objectives. SVBGSA, with partner agencies and interested parties, will continue to improve analyses and planning that will translate into improvements in groundwater conditions in the next phase of GSP implementation.

This response to DWR includes discussion on the following:

- Recent seawater intrusion monitoring and current conditions (Section 2)
- Continued work and coordination to develop groundwater flow models suitable to assess Valley-wide groundwater and surface water flows and seawater intrusion (Section 2)
- Leading solutions to mitigate seawater intrusion, including an update on the status of the Brackish Groundwater Restoration Project (BGRP), alternatives to the BGRP, and contingency projects and management actions (PMA) to serve beneficial uses and users (Section 3)
- Responses to DWR's questions (Section 4)
    - Interim actions undertaken to address undesirable results, including Monterey County Recycled Water Project capital improvements, well destruction, and focused work on demand management and Deep Aquifers management (Section 4.1)
    - Planning for the possibility of supply wells being impacted, which will include well registration and the Groundwater Monitoring Program, and seawater

intrusion response planning and coordination with partner agencies to strengthen water supply policies, well regulations, and well destruction programs (Section 4.1)

- Contingency projects including optimization of the existing Castroville Seawater Intrusion Project (CSIP), CSIP expansion or a New Seawater Intrusion Project, Northern Eastside Injection, combined with Demand Management (Section 4.2)
- Responses to technical questions DWR had on the mistake found in the reduction of groundwater in storage calculation that was noted in the WY 2024 Annual Report (Section 4.3)
- Responses to technical questions DWR had related to removing small water systems from the evaluation of degraded water quality (Section 4.4)

SVBGSA is also preparing 180/400 GSP Amendment 2 and the corresponding GSP periodic evaluation for the 180/400 Subbasin concurrent with GSP amendments and periodic evaluations for the other 5 subbasins that are due to DWR in January 2027. While this report provides a substantial response to DWR’s request for additional information, SVBGSA is requesting an extension of time to September 15, 2026, for Board approval of the preferred portfolio of PMAs that will be incorporated into the 2027 GSP periodic evaluations.

2 SEAWATER INTRUSION MONITORING AND MODEL UPDATES

Since submittal of the GSP 2025 Evaluation, SVBGSA and Monterey County Water Resources Agency (MCWRA) have undertaken additional monitoring and assessment of seawater intrusion. In addition, SVBGSA has invested significant effort since 2024 to further develop, refine, and update the groundwater models it uses for SGMA compliance and PMA analysis. Developing and refining these models was crucial for identifying and refining projects and management actions that are effective at stopping and reversing seawater intrusion. This section provides DWR with the most recent seawater intrusion monitoring findings and an overview of modeling work performed.

2.1 2025 Seawater Intrusion Monitoring Findings

Seawater intrusion was first identified in the 1940s. MCWRA has monitored and mapped it since that time. As shown on Figure 1, advancement of the seawater intrusion front has slowed in the 180-Foot Aquifer since the Salinas Valley Water Project (SVWP). From 1944 to 2011, on average the 500 milligrams per liter (mg/L) chloride isocontour advanced at a rate of 360 acres/year in the 180-Foot Aquifer, and that rate slowed to 30 acres/year from 2011 to 2026. In the 400-Foot Aquifer the initial advancement was slower with an average advancement of 200 acres/year from 1959 when it was first mapped to 2011. From 2011 to 2026 the average rate of advancement was 390 acres/year; however, much of that was due to vertical migration down from the 180-Foot Aquifer and the annual rate has slowed to 250 acres/year since 2015 when SGMA was enacted.

The 180/400 GSP defines a seawater intrusion undesirable result as any progression of seawater intrusion beyond the 2017 mapped seawater intrusion extent, which is the minimum threshold (MT). SGMA requires the seawater intrusion Sustainable Management Criteria (SMC) be based on a chloride isocontour; however, the minimum threshold is not necessarily directly tied to recent impacts to supply wells. Within the mapped seawater intrusion area there is variability in chloride levels and some wells remain operable.

Figure 1 and Figure 3 also show additional analysis that has been conducted on seawater intrusion since the GSP 2025 Evaluation (MCWRA, 2026). Along with the 500 mg/L and 250 mg/L chloride isocontour in the 180-Foot and 400-Foot Aquifers, respectively, it shows the chloride concentrations in individual samples in 2025 and whether wells are in Phase 1 or Phase 2 of seawater intrusion or not currently intruded.

Figure 2 and Figure 4 show the annual rate of change in chloride concentration for each well in the 2 aquifers respectively (MCWRA, 2026). It illustrates how the advancement is not uniform – both inside and outside the mapped front some wells have increasing chloride concentrations while other wells have decreasing concentrations.

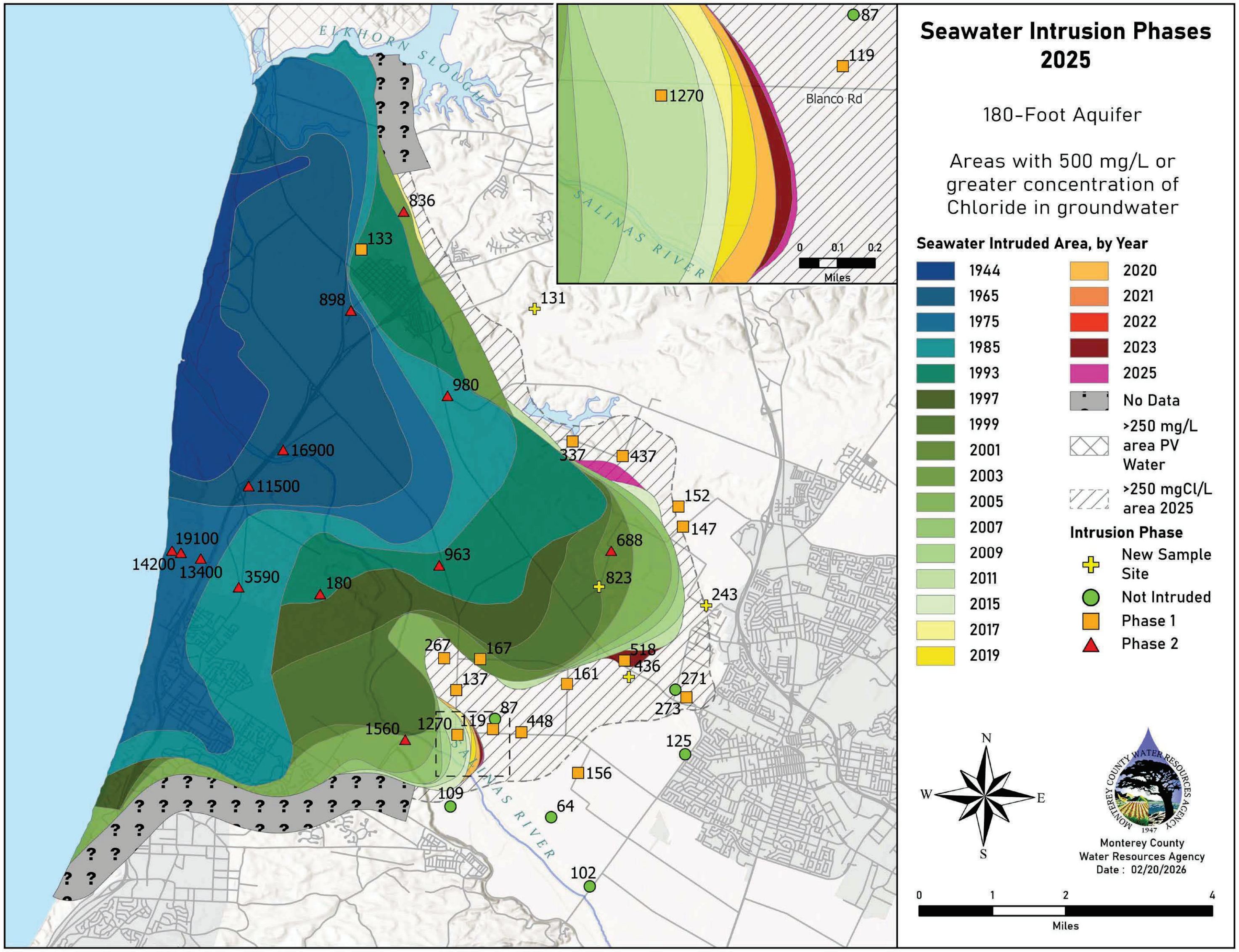


Figure 1. 2025 Seawater Intrusion Phases 180-Foot Aquifer

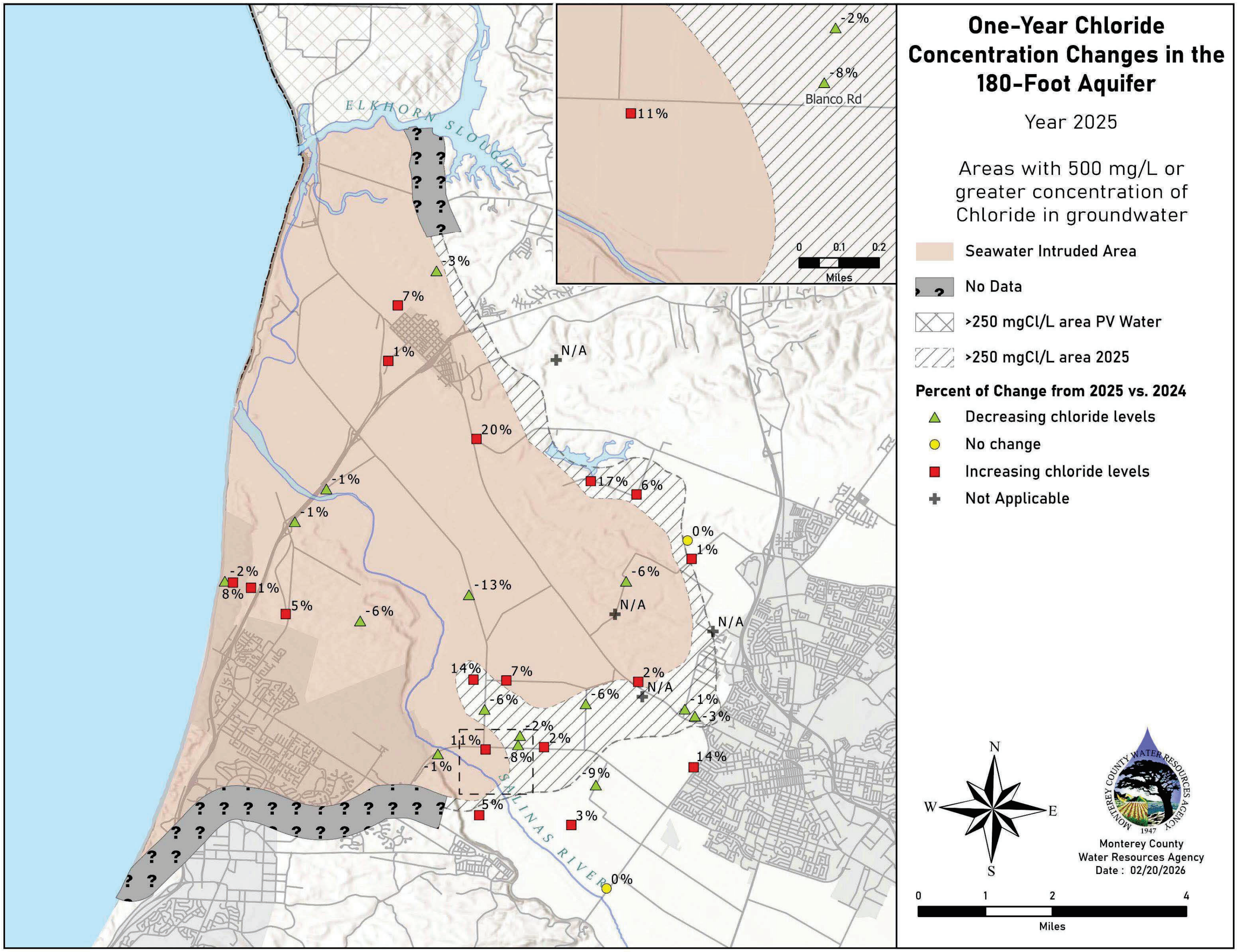


Figure 2. 2025 One-Year Chloride Concentration Changes in the 180-Foot Aquifer

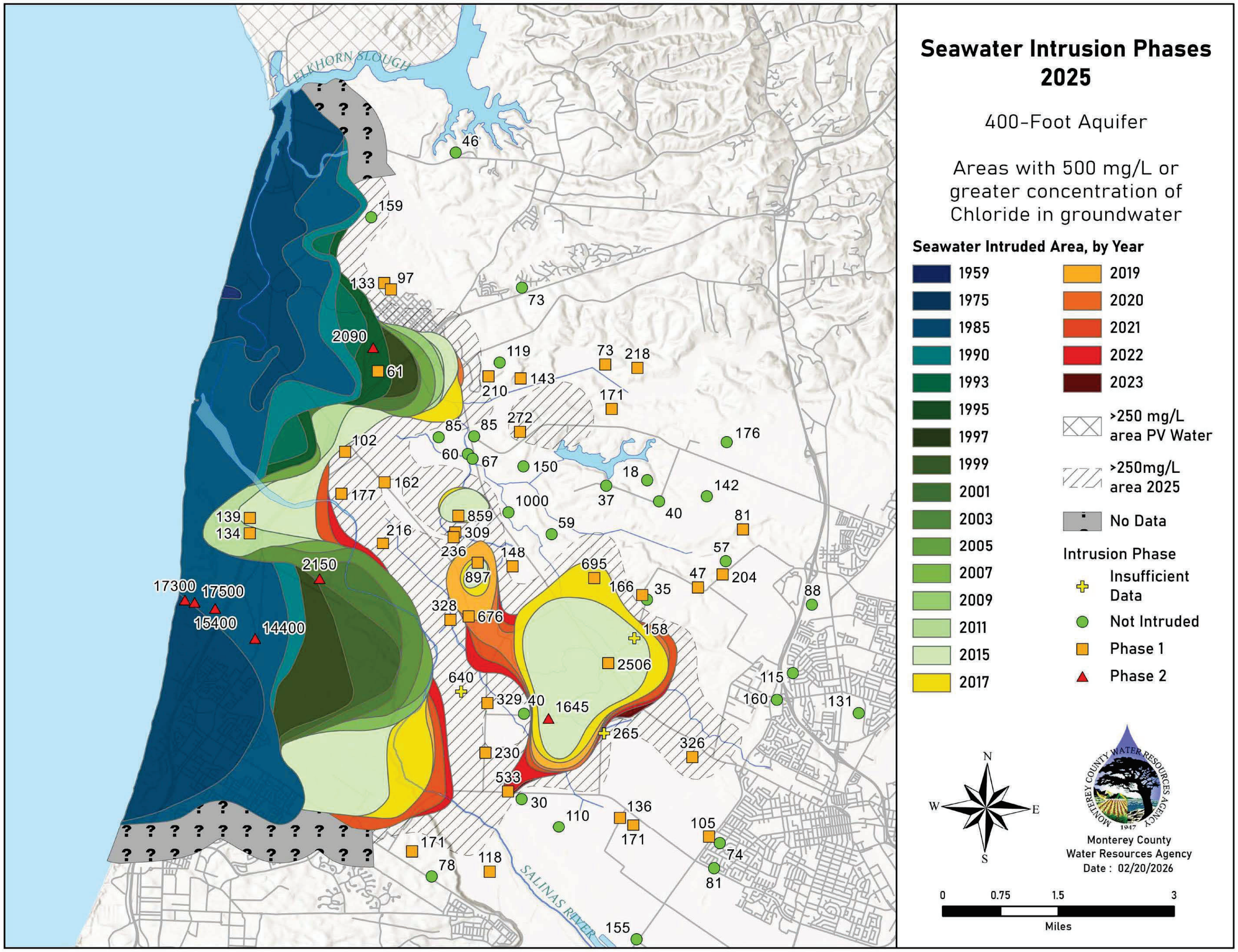


Figure 3. 2025 Seawater Intrusion Phases 180-Foot Aquifer

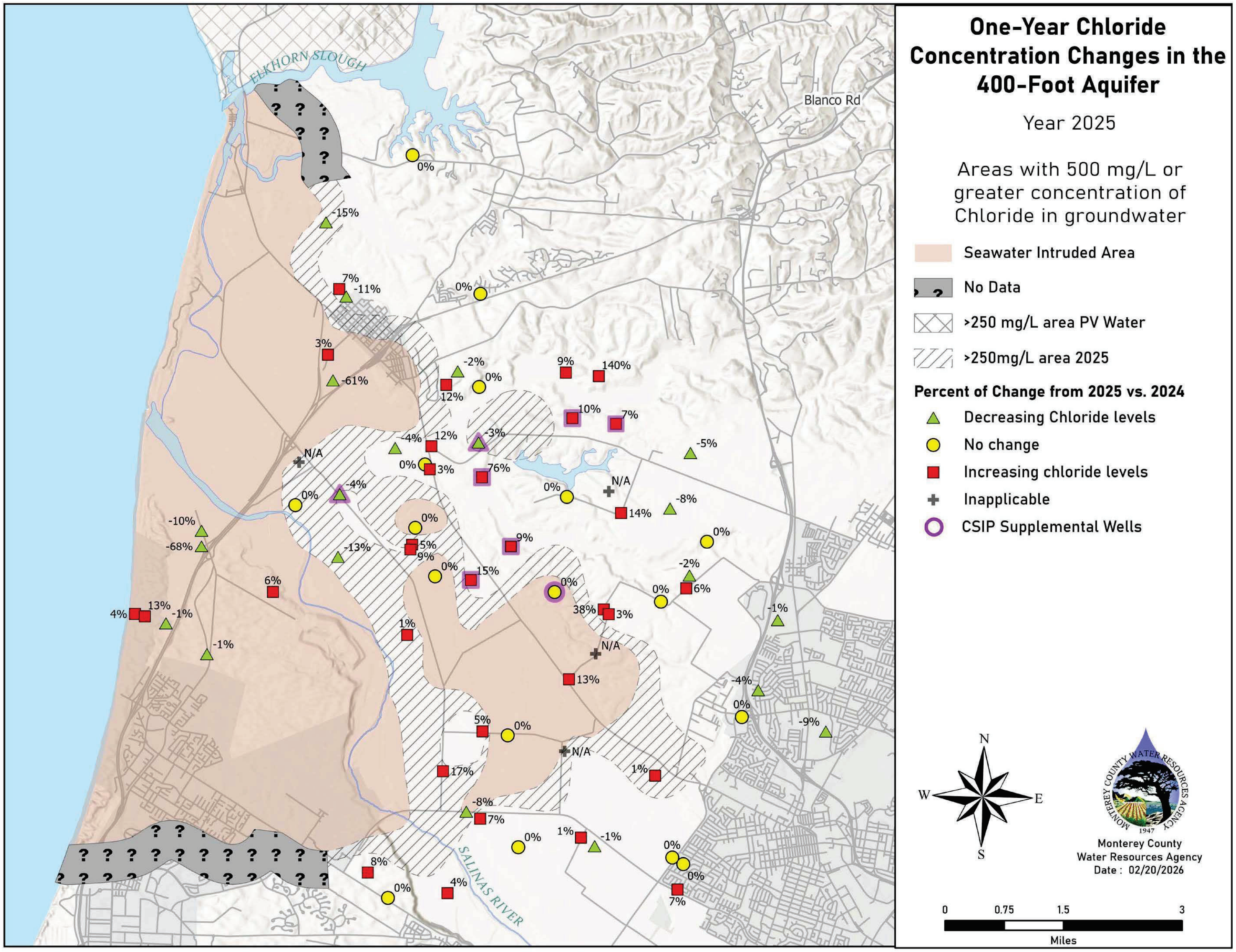


Figure 4. 2025 One-Year Chloride Concentration Changes in the 180-Foot Aquifer

2.2 Seawater Intrusion Model Updates

Since the 2022 Amendment 1, SVBGSA and partner agencies developed the Salinas Valley Seawater Intrusion Model (SWIM), a density-dependent groundwater flow and transport model that incorporates chloride concentrations and density effects. SWIM is an important tool used for evaluating the effects of projects and management actions and their ability to achieve the sustainable management criteria for seawater intrusion.

Multiple hydrologic models have been developed in support of ongoing SGMA planning and implementation efforts within the Salinas Valley. Groundwater models that cover the 180/400 and/or the adjacent Monterey Subbasin include:

- The Salinas Valley Integrated Hydrologic Model (SVIHM)
- The Salinas Valley Operational Model (SVOM)
- The Seawater Intrusion Model (SWIM)
- The Monterey Subbasin Groundwater Flow Model (MBGWFM)

The various groundwater models serve complementary purposes and are often used together. The SVIHM is an integrated hydrologic flow model originally developed by the United States Geological Survey (USGS) to simulate historical groundwater levels and evaluate hydrologic budgets for across the Salinas Valley Basin. The SVOM is the predictive version of the SVIHM designed to evaluate the integration of reservoir operations and projects within the Salinas Valley. The SWIM is a variable-density groundwater flow and transport model developed by SVBGSA that simulates chloride movement within the coastal portion of the Salinas Valley Basin that is affected by seawater intrusion. The MBGWFM is a groundwater flow model developed by Marina Coast Water District Groundwater Sustainability Agency (MCWDGSA) to evaluate groundwater budgets and PMA implementation scenarios within the Monterey Subbasin as part of the 2022 Monterey GSP.

Each of these models were developed by different entities at different timeframes for specific purposes and therefore reflect unique design features and functionalities. However, the models at least partially overlap regionally (including within the 180/400 Subbasin) and temporally, and thus should be aligned to the greatest extent possible in terms of their underlying hydrogeologic framework, aquifer properties, and hydrologic and aquifer stress assumptions (e.g., recharge and pumping rates). This alignment allows the models to reasonably and consistently reflect the best available data and information within the Basin and can continue to serve as useful tools for coordinated, regional SGMA planning and implementation actions within greater Salinas Valley Groundwater Basin.

Since the GSP 20205 Evaluation, multiple rounds of updates were completed to the SVIHM and SWIM to bring the models into greater alignment with each other and the MBGFWM resulting in improved calibration to historical water level and chloride conditions and comparable—though not identical—outputs within the 180/400 Subbasin and greater Salinas Valley Groundwater Basin. A more detailed description of updates completed to each of the models is provided below.

2.1.1 Salinas Valley Integrated Hydrologic Model (SVIHM) Updates

The SVIHM simulates coupled surface water and groundwater processes across the Salinas Valley using MODFLOW-OWHM Version 2, which represents dynamic interactions between water supply, water demand, and groundwater flow. Agricultural demands are estimated internally based on land use and climate inputs and are met through a combination of precipitation, recycled water, surface water diversions and deliveries, and groundwater pumping.

The original version of the SVIHM was developed by the USGS and publicly released in April 2025 (Henson et al., 2025), after both Amendment 1 and the Periodic Evaluation had been finalized. The SVIHM simulates historical conditions and serves as the foundation for its predictive version, the SVOM, which is used for future projections. While SVIHM and SVOM are the best available tools for regional groundwater management evaluations across the Salinas Valley, their development began prior to the development of GSPs and for objectives that were not entirely aligned with SGMA compliance needs. In particular, the SVIHM was poorly calibrated to historical groundwater levels in the Monterey and Seaside Subbasins, did not reflect the most updated hydrogeologic conceptual model of the Basin, and did not incorporate the latest data and information collected within the Basin.

During 2025, SVBGSA modelers completed a comprehensive update and recalibration of the SVIHM in efforts to reflect the most current understanding of groundwater conditions within the groundwater basin and enhance the model's utility for long-term SGMA compliance and implementation efforts. Several aspects of the SVIHM were updated to better align with the current hydrogeologic conceptual model and other existing models within the Basin (such as the SWIM and the MBGWFM) and to improve accuracy of model results. These enhancements included:

- Incorporation of new data unavailable during the original USGS model development
- Structural updates to the model grid, layering, and zonation
- Improved representation of surface water features to simulate groundwater-surface water interactions
- Refined input parameters, including municipal and agricultural pumping
- Updated boundary conditions at the model domain margins

These updates were completed in coordination with MCWDGSA, MCWRA, SGBW, and Arroyo Seco GSA. The SVIHM and SWIM were updated concurrently, using the same aquifer framework and similar model parameters.

2.1.2 Seawater Intrusion Model (SWIM) Updates

The Monterey Subbasin Round 2 Grant supported 2 SWIM updates, resulting in Version 3 (v3) in 2025 and Version 4 (v4) in 2026.

2.1.2.1 SWIM Version 3 (2025)

The SWIM was originally developed by SVBGSA in 2023, after completion of Amendment1, as a tool to assess the effectiveness of projects and management actions that address seawater intrusion in the coastal portions of the Salinas Valley (M&A, 2023). SVBGSA updated the model in 2024 to incorporate improvements to the hydrogeological conceptual model (HCM) and ensure consistency between the SWIM and existing adjacent and overlapping groundwater flow models, resulting in Version 1 and Version 2, respectively.

As mentioned above, during 2025 SVBGSA and MCWDGSA modelers completed an additional round of updates to the SWIM to be consistent with the updated SVIHM v1, referred to herein as SWIM v3, Refinements to the SWIM v3 primarily focused on updating boundary conditions, hydraulic conductivity, and storage model parameters to match the SVIHM, including:

- Updating the model hydrogeologic parameter zonation and active extent
- Adjusting recharge assumptions
- Updating well locations, screen intervals, and pumping data to most recent information available as reflected in the SVIHM and GEMS
- Adding flow barriers to represent faults in Monterey and Seaside subbasins
- Implementing hydraulic conductivity and storage parameters consistent with the SVIHM
- Extending the simulation period to October 2022

Both the SVIHM and SWIM were updated simultaneously as information was passed between the models during calibration. These improvements harmonize both models with the current HCM, creating tools that can interact seamlessly to better simulate historical and future groundwater conditions and seawater intrusion in Salinas Valley. A more detailed description of SWIM v3 updates and calibration results is provided in M&A, 2025b.

2.1.2.2 SWIM Version 4 (2026)

During the update to SWIM v3, it became clear that achieving a tighter water-level calibration across the Deep Aquifers, particularly within the southern Monterey and Seaside Subbasins, and in the Corral de Tierra Area was more challenging than expected. Seawater intrusion drives well owners to pump from lower, unintruded aquifers. The SWIM needed to accurately simulate these unintruded aquifers in order to develop effective programs that both combat seawater intrusion in the upper aquifers and maintain groundwater levels in the Deep Aquifers. Upon further review and analysis of model outputs, it was determined that more in-depth collaboration with the SGBW and MCWDGSA modeling consultants would be necessary to focus on the hydrogeologic representation of the Paso Robles and Santa Margarita Formations to further improve model calibration in these areas.

During late 2025 and early 2026, modelers from MCWDGSA and SVBGSA collaborated with the SGBW's modeler to complete another round of updates to the SWIM in attempts to address the shortcomings described above, resulting in SWIM v4. These revisions focused on improving groundwater level calibration in the Monterey and Seaside Subbasins and in the Deep Aquifers across the entire domain. Refinements to the SWIM v4 included:

- Further adjusting hydrogeologic zonation and fault representations within the Seaside Subbasin and Corral de Tierra Area
- Adjusting recharge assumptions within the Seaside Subbasin
- Modifying offshore general head boundary condition cell extents and conductance properties
- Reconciling Seaside production well locations, screen intervals, and pumping data based on updated data and interpretations from the SGBW
- Reconciling Seaside monitoring well layer assignments and observation data based on updated data and interpretations from the Seaside Watermaster
- Updating hydraulic conductivity and storage properties throughout all model aquifers and subbasins

The updated SWIM v4 reflects a significant improvement in groundwater level calibration within the Deep Aquifers and in the southern Monterey and Seaside Subbasins and continues to meet acceptable water level and chloride-+ calibration criteria throughout the rest of the model domain. The SWIM v4 serves as the primary tool for groundwater modeling of regional projects in the coastal subbasins, as well as for analyses of the Corral de Tierra Area and the Deep Aquifers. Model documentation for SWIM v4 is forthcoming in late spring 2026.

3 PROJECTS AND MANAGEMENT ACTIONS TO MITIGATE SEAWATER INTRUSION

This section describes SVBGSA staff's recommended portfolio of projects and management actions to mitigate seawater intrusion. The purpose of this section is to provide DWR with an update on the leading solution that was included in the 2025 Periodic Evaluation of the 180/400 Subbasin, the BGRP. New information is available from the recently completed U.S. Bureau of Reclamation Title XVI Feasibility Study for the BRGP, which included identification of an equivalently scaled alternative project and analysis of the No Action Alternative with pumping reductions as the mechanism to address the seawater intrusion. This section also provides analysis of contingency PMAs without the BGRP. Additional information about the contingency projects is included in Section 4.

The 180/400 Subbasin GSP and GSP Amendment 1 outline the SMC for 6 sustainability indicators. In the 180/400 Subbasin, the most difficult indicators to meet are seawater intrusion and chronically low groundwater levels. The other sustainability indicators, while important, are either linked to these 2 or are not anticipated to be as challenging to meet.

While low groundwater elevations have drawn seawater inland, reversing this trend is complex. Key challenges include the following:

- *Scale*: Seawater intrusion occurs along a roughly 11-mile-long length of the coastline of the Monterey Bay, and seawater has intruded over 7 miles inland at the furthest extent.
- *Time Lag*: Project benefits may take years or decades to fully manifest.
- *Unique Seawater Intrusion Difficulties*: Balancing the groundwater budget might stabilize groundwater levels, but that is insufficient to reverse seawater intrusion. Efforts significantly greater than simply balancing the groundwater budget are needed to reverse seawater intrusion.
- *Mixing and Density Effects*: Seawater and freshwater have different densities, affecting flow patterns.
- *Continued Pumping*: Even with interventions, ongoing pumping alters gradients and salinity distribution.

SVBGSA has conducted groundwater flow modeling to assess the effect of projects and management actions on seawater intrusion using the SWIM. Project simulations are compared to a projected baseline simulation that includes continued 2022 land uses, anticipated urban growth based on population projections for the region, and no new projects or management actions. The results of this projected baseline are discussed below, followed by an overview of 4 potential projects and management actions, or sets of them, that could be pursued to address seawater intrusion and/or the needs of beneficial users in the 180/400 Subbasin.

This information shows that the Brackish Groundwater Restoration Project can meet the seawater intrusion minimum threshold by 2040. The Alternative Water Supply Project (AWSP) and No Action Alternative (NAA), although not representative of politically or financially viable options, provide quantitative evaluations for both a project that can meet the seawater intrusion minimum threshold to the same extent as the BGRP and the effect of eliminating agricultural pumping on seawater intrusion in the absence of an engineered solution. Finally, this section identifies a portfolio of contingency projects and management actions to address the needs of beneficial uses and users in the coastal region, although together they do not meet the seawater intrusion minimum threshold.

As described further in Section 5, SVBGSA is investigating other combinations of projects and management actions, such as this portfolio, to ensure robust analysis of options.

3.1 Baseline (New Version Since 2025 Submittal)

The potential for PMAs to improve groundwater levels and reduce seawater intrusion is evaluated primarily through groundwater modeling using the SWIM, comparing simulated results to the SWIM Baseline, which has no additional projects or management actions. This Baseline reflects a status quo condition with respect to land use and agricultural pumping, with current infrastructure and water project operations remaining unchanged. Municipal pumping changes based on population projections. As a result, the Baseline Scenarios may identify continued impacts to sustainability indicators, including the potential exceedance of defined minimum thresholds.

The projected hydrology used in the SVOM and SWIM Baseline Scenario is a representative 25-year climate sequence based on historical hydrology, repeated twice over the projection period to support water budget analysis across a range of hydrologic conditions. Actual future climate is unknown; however, this provides a representative estimate through which the effects of potential projects can be assessed. The Baseline Scenario includes estimates of sea level rise, but it does not include potential effects from climate change on precipitation or potential evapotranspiration.

The projected SWIM Baseline Scenario (M&A, 2026) used to assess the effect of PMAs included here was developed with version 3 (v3) of the SWIM, and it includes similar assumptions to the SVOM Baseline Scenario. Municipal pumping, agricultural pumping, recharge, and boundary condition inputs are from the SVOM are included in the SWIM Baseline Scenario.

In the SWIM Baseline Scenario, seawater intrusion in the 180-Foot and 400-Foot Aquifers continues advancing inland from 2020 through 2070, as shown on Figure 5**Error! Reference source not found.**. In both the 180-Foot and 400-Foot Aquifers, seawater intrusion advances inland toward the City of Salinas because groundwater elevations remain below sea level.

Figure 6 shows the projected chloride concentrations for the 180-Foot and 400-Foot Aquifers at 2040. Seawater has a concentration of approximately 19,000 mg/L and the threshold for sustainability is set at 500 mg/L. The color gradation shows the chloride concentration, with the red indicating chloride levels closer to seawater, transitioning to lower chloride concentration in blue. The 500 mg/L chloride isocontour is marked by the black dashed line. The blue colors extend into the Eastside Subbasin, projecting that by 2040, chloride concentrations will begin to increase in the Eastside Aquifer at equivalent depths to the 180-Foot and 400-Foot Aquifers.

Finally, Figure 6**Error! Reference source not found.** marks the seawater intrusion minimum threshold with a black solid line, showing that at 2040 seawater intrusion is inland of the minimum threshold. While the GSP minimum threshold is established based on the mapped 2017 extent of the 500 mg/L chloride isocontour, the SWIM-simulated 2017 500 mg/L chloride isocontour is shown as the minimum threshold for the purposes of comparing modeling results to other modeling results.

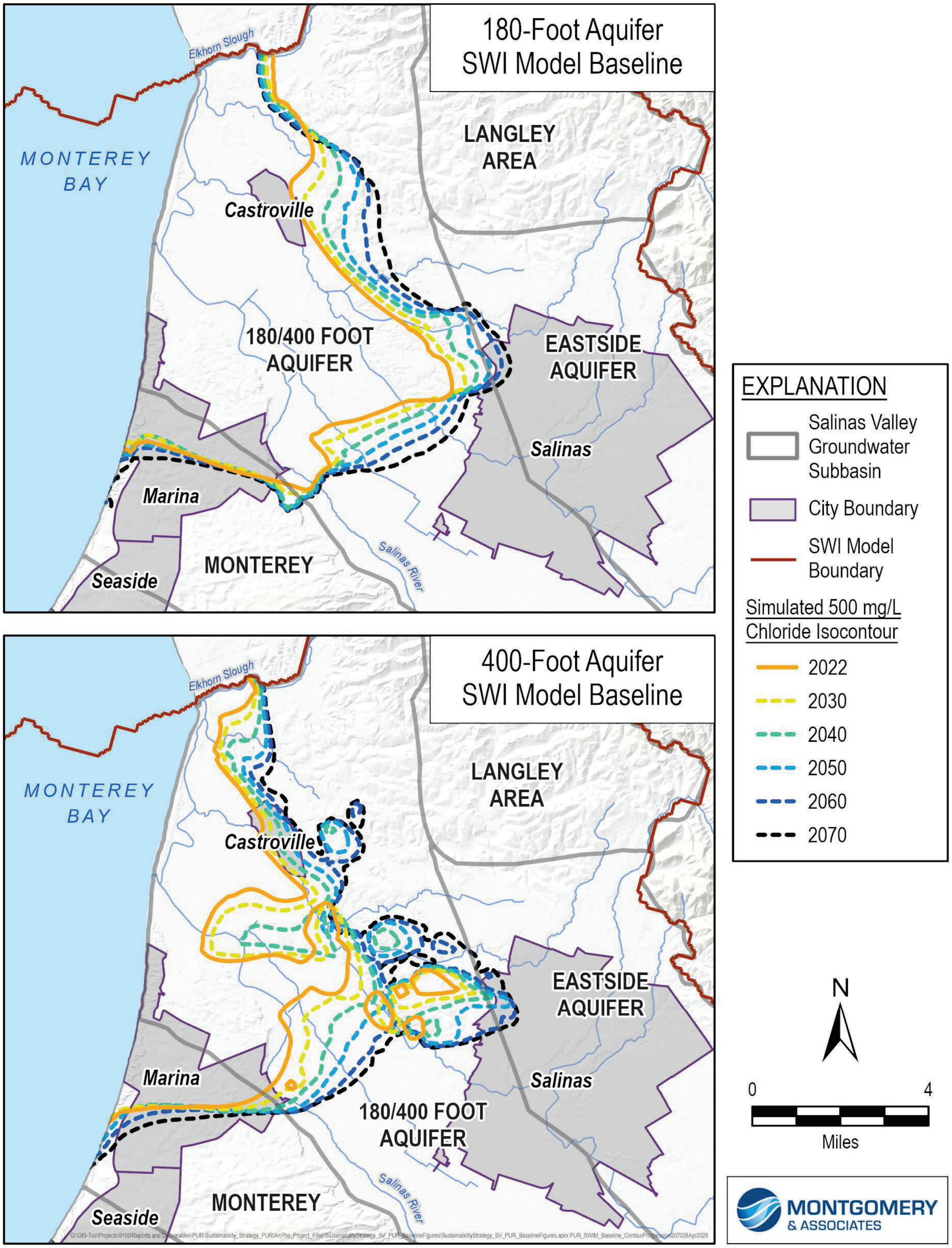


Figure 5. SWIM Baseline Scenario Projected Chloride Isocontour Progression in the 180-Foot and 400-Foot Aquifers

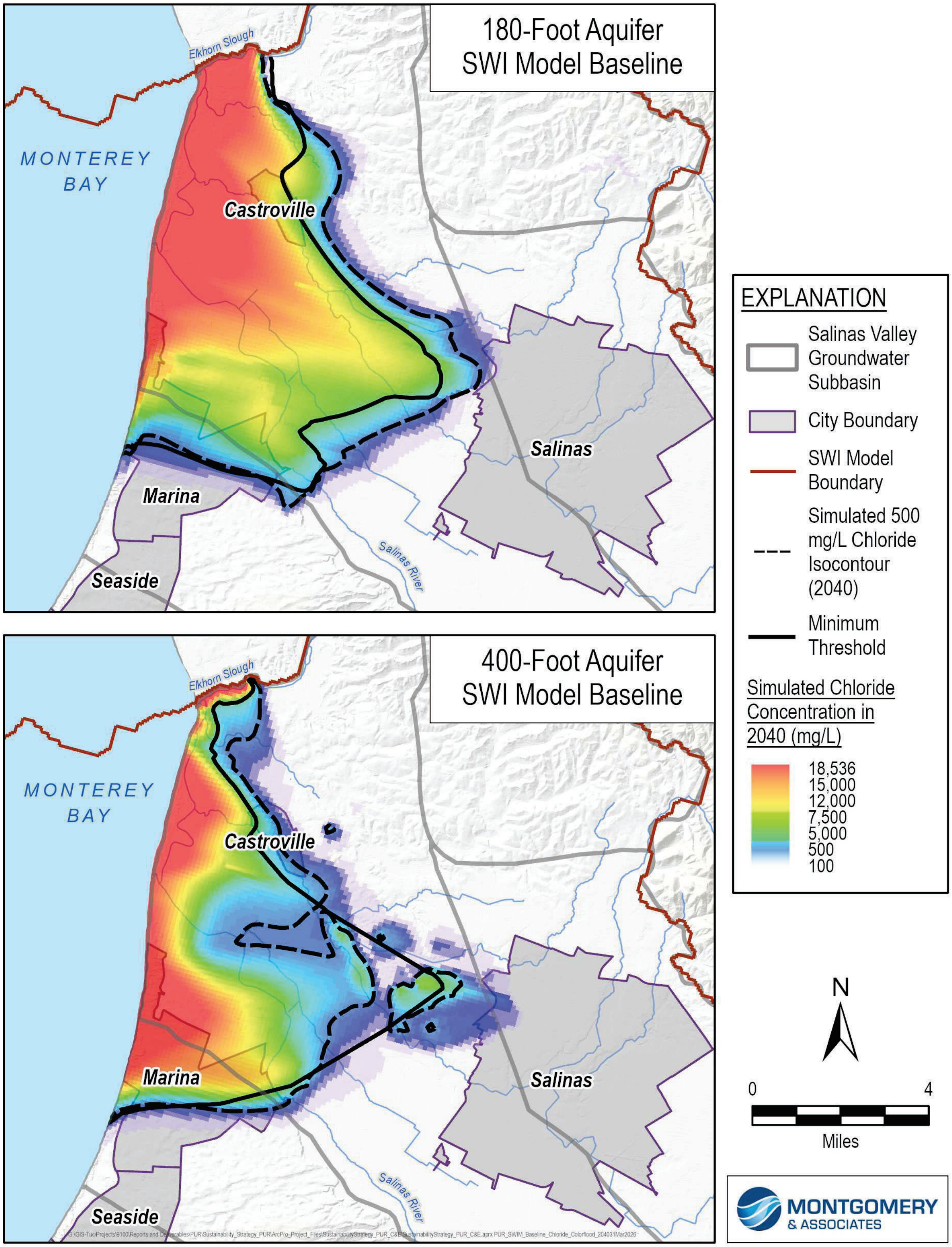


Figure 6. SWIM Baseline Scenario Chloride Concentration in the 180-Foot and 400-Foot Aquifers

3.2 Brackish Groundwater Restoration Project

As reported in the 180/400 2025 GSP Evaluation, the BGRP is the primary project that has been identified that can meet and exceed the minimum threshold for seawater intrusion. The following discussion provides an update on the BGRP, and the progress made on this project since submitting the 180/400 Subbasin 2025 GSP Evaluation.

The BGRP is intended to protect against further intrusion in the 180/400 and Monterey Subbasins, thus preventing seawater from reaching the Eastside or Langley Subbasins. It is designed to improve current groundwater quality within the existing seawater intruded area and push seawater intrusion back to the minimum threshold. The extraction barrier portion of the BGRP includes a series of extraction wells near the coastline in the 180/400 and Monterey Subbasins that continuously extract brackish groundwater (a mixture of freshwater and seawater) and form a hydraulic barrier by lowering groundwater levels and capturing seawater. This prevents seawater from advancing inland of the extraction well barrier. The BGRP would generate significant volumes of brackish water that could be desalted and used as a new potable or non-potable water supply, or for injection back into the 180-Foot and 400-Foot Aquifers.

Figure 7 is a conceptual diagram outlining the BGRP. The left side of the figure shows extraction wells drawing water from both the ocean and land sides, as depicted by the arrows. Extraction wells would be placed in the intruded zone where the seawater enters the groundwater basin and mixes with the freshwater. Both brackish water and seawater would be extracted from the barrier of several extraction wells to prevent seawater from continued progression inland toward the City of Salinas. The extracted water is then treated and can be used as a new regional water supply and/or for injection. The figure also shows how groundwater levels at the extraction barrier wells are lower than surrounding groundwater levels, preventing water from moving past the extraction barrier, while inland groundwater levels will rise due to injected water and offsetting pumping with the new supply.

The treated extracted brackish water could be used either in lieu of groundwater for potable or non-potable uses or for groundwater injection directly improving groundwater levels and helping to push the seawater intrusion back toward the ocean. As described below, the preferred scenario is to use the treated brackish water for injection only. This maximizes benefits to all groundwater users in the basin and is effective at raising groundwater levels.

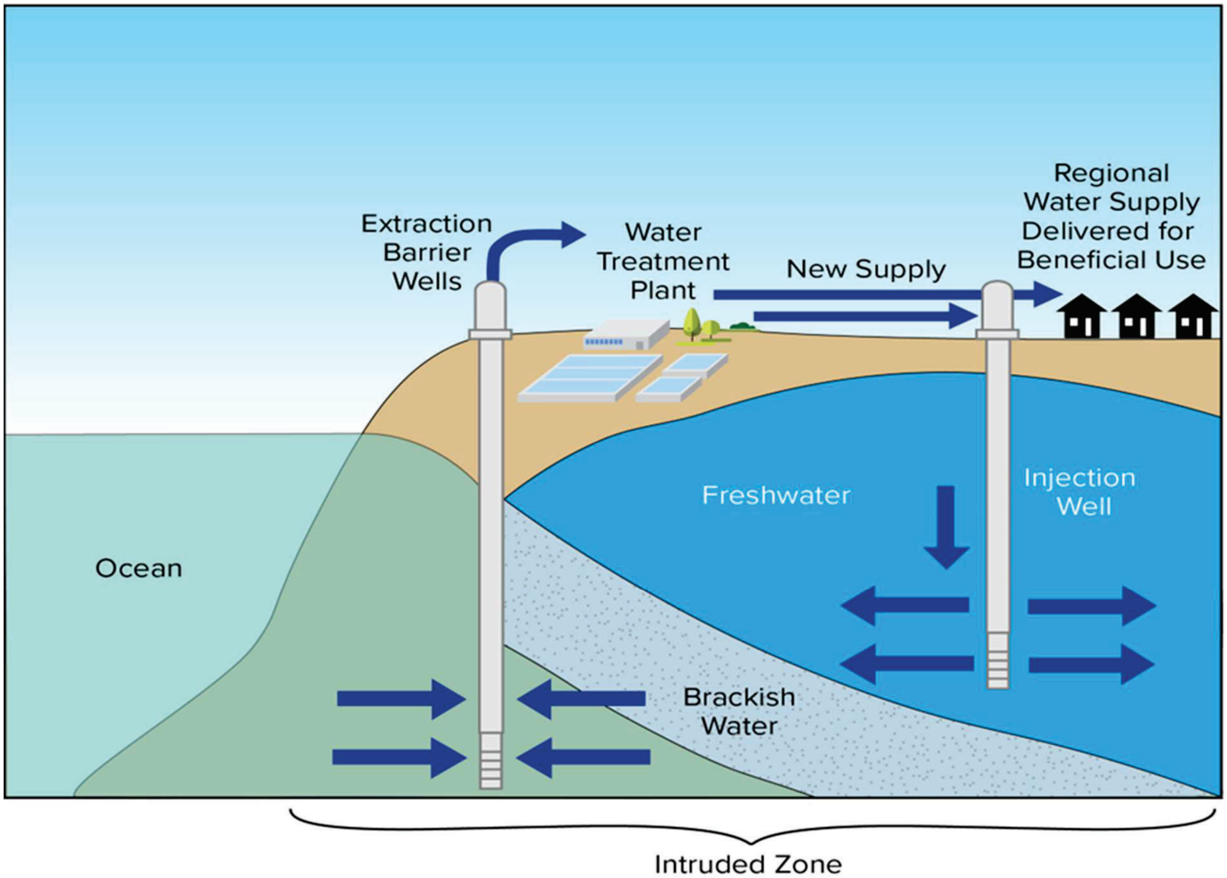


Figure 7. BGRP Concept

Following stakeholder input in early 2025, SVBGSA continued its analysis of different project scenarios and configurations from the small, medium and large project scenarios described in the 2025 GSP periodic evaluation. In October 2025, the SVBGSA Board recommended the "Injection-Only" Project to be carried forward as the preferred project for further evaluation.

SVBGSA has now completed a U.S. Bureau of Reclamation (USBR) Title XVI Feasibility Study Report for Large, Recycled Water, or Desalination Projects (USBR Report)[1] for the BGRP (Carollo, 2026a). The USBR Report includes the preferred Injection-Only Project with refinements, the AWSP as a project alternative that can also meet the seawater intrusion minimum threshold, and evaluation of a NAA, identified as a non-infrastructure state intervention action that would likely occur if SVBGSA does not adequately meet SGMA requirements. The USBR Report includes information on current supplies and demands in the northern area of the Salinas Valley, end user analysis, a description of project alternatives, an economic analysis, an overview of why the injection only scenarios is the preferred project, as

[1] Available at: https://svbgsa.org/wp-content/uploads/2026/04/BGRP-Feasibility-Study-20260331.pdf.

well as discussion on environmental considerations, water rights and legal requirements, project costs and potential funding sources, and research needs.

While complex, the BGRP is legally feasible and capable of successful implementation. Key to navigating the myriad third-party approvals is early coordination and collaboration with the various decision-making agencies, especially prior to the development of an environmental impact report (EIR) under the California Environmental Quality Act (CEQA) and environmental impact statement (EIS) under the National Environmental Policy Act (NEPA). SVBGSA has completed a CEQA Initial Study that identifies the issues that will need to be addressed in the EIR/EIS. The CEQA and NEPA analyses could serve as the clearinghouse for the collection of technical support, environmental impact analyses and mitigation, and other information gathering necessary for each third-party agency to exercise discretion on approval of the proposed BGRP. A multi-party memorandum of understanding setting forth coordination and collaboration in the development of the CEQA and NEPA documents and other information may be necessary for each party to consider approval of the BGRP.

The USBR Report included an initial design and layout for the BGRP Injection Only Scenario, shown on Figure 8. The project infrastructure includes groundwater extraction wells located near Highway 1 parallel to the coastline to establish a barrier where seawater intrusion is observed in the 180/400 Subbasin and Monterey Subbasins. Instead of delivery of desalinated brackish groundwater to urban or agricultural end users coupled with injection, this project only includes injection into the 180-Foot and 400-Foot Aquifers inland of the seawater intrusion front.

The BGRP Injection Only Alternative includes a total of 20 extraction barrier wells, with 10 in the 180-Foot Aquifer and 10 in the 400-Foot Aquifer. The total volume extracted is 41,500 gallons per minute or approximately 67,000 acre-feet per year (AFY). The extracted brackish water is then treated by Reverse Osmosis (RO). The total available treated water volume for injection is approximately 46,900 AFY. All extracted groundwater would be conveyed to a centralized brackish water treatment facility. The BGRP includes a 2-pass, multi-stage RO system to achieve the necessary removal of boron, which could have elevated concentrations in the influent water. Concentrate/Brine produced at the treatment facility is assumed to be discharged using the existing Monterey One Water (M1W) ocean outfall. The injection only BGRP includes a reverse osmosis concentrate (ROC) storage pond that will be used to store ROC if the outfall is offline or is unable to accept additional flows during significant wet weather events. The distribution piping would convey treated brackish groundwater to inland injection wells. As shown on Figure 8, there are a total of 21 injection wells with 11 in the 180-Foot Aquifer and 10 in the 400-Foot Aquifer.

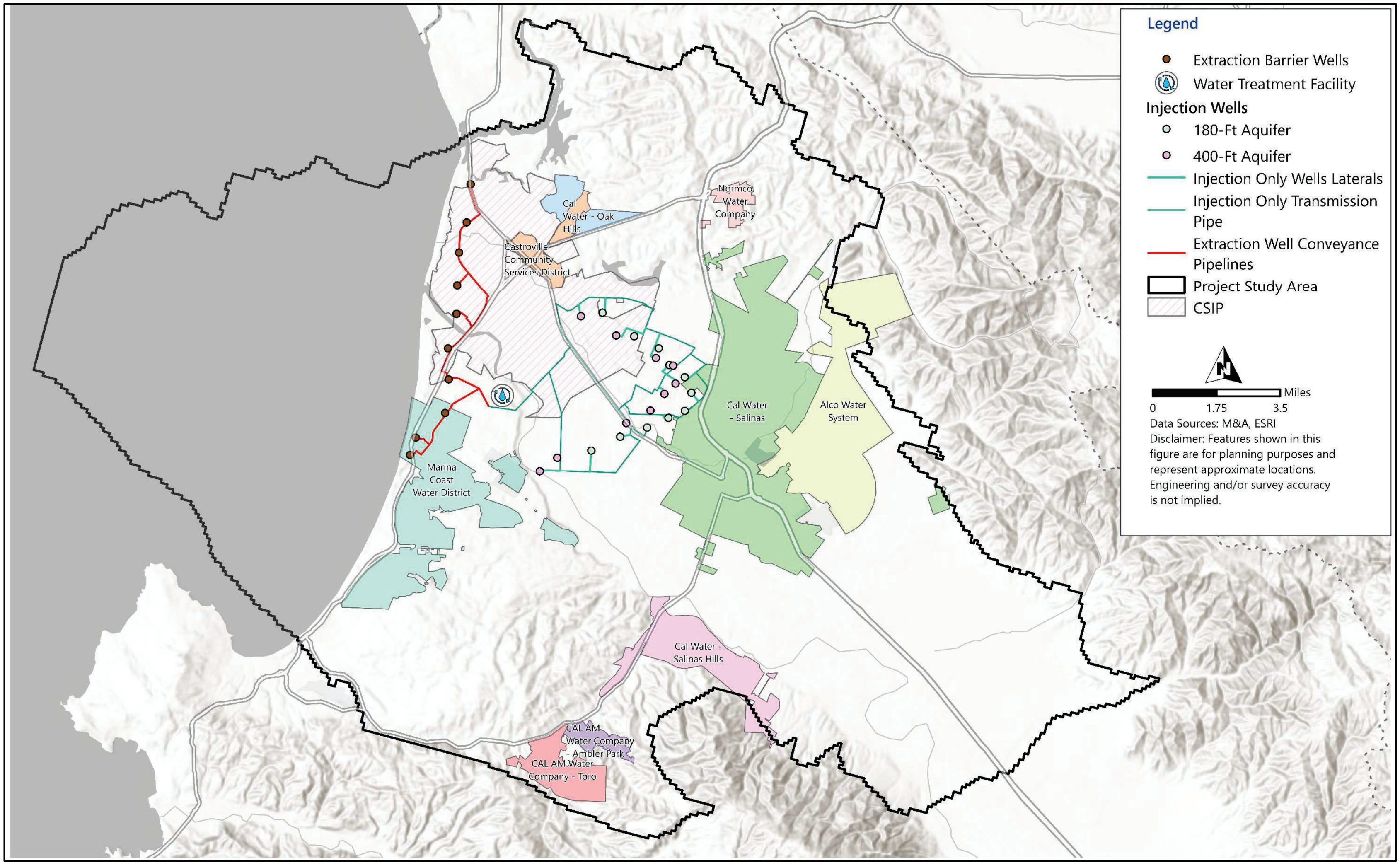


Figure 8. Conceptual Infrastructure Layout for the BGRP Injection Only Alternative

3.2.1 BGRP Injection Only Cost Estimate

Total project costs include both construction direct cost and soft costs. Soft costs included estimated costs for planning, design, administrative, legal, and construction management cost and are based on percentages of the direct construction costs subtotal. Construction costs have a 30% contingency applied on each line item, an escalation to midpoint of a 0.25% cost increase per month (3% annual escalation) on present day costs to a midpoint of construction date of July 2030, and sales tax on an assumed 50% of the total direct costs. The total lifecycle cost is calculated over 40 years of operations starting in 2036.

Table 1 summarizes the standardized costs of the BGRP Injection Only Alternative. The table shows total construction costs (including soft costs), annual operations and maintenance (O&M), and replacement costs. The present value costs are shown, the annualized cost, and the cost per acre-feet (AF) of project yield. Project yield reflects injected water for the BGRP Alternatives. Therefore, the $/AF cost, $3,321, reflects the cost per acre-foot of injected water.

Table 1. BGRP Injection Only Alternative Estimated Economic Lifecyle Costs

Cost Category	Injection Only
Total Construction Cost ($M)	$951
Annual Treatment O&M ($M)	$80
Annual O&M ($M)	$33
Present Value Total Cost ($M)	**$3,459**
Annualized Cost ($M)	$156
Annual Yield (AF)	46,900
$/Acre-Foot Cost	**$3,321**

3.2.2 BGRP Effectiveness

The Injection Only BGRP is effective at reversing seawater intrusion and avoiding undesirable results. Figure 9 shows that in both the 180-Foot and 400-Foot Aquifers, the 2040 extent of seawater intrusion is close to the minimum threshold. Modeling with the SWIM shows how the BGRP Injection Only results in lower chloride concentrations than the Baseline Scenario. This demonstrates the effectiveness of the coastal extraction wells, which both draw existing seawater intrusion toward the coast and prevent any new seawater intrusion.

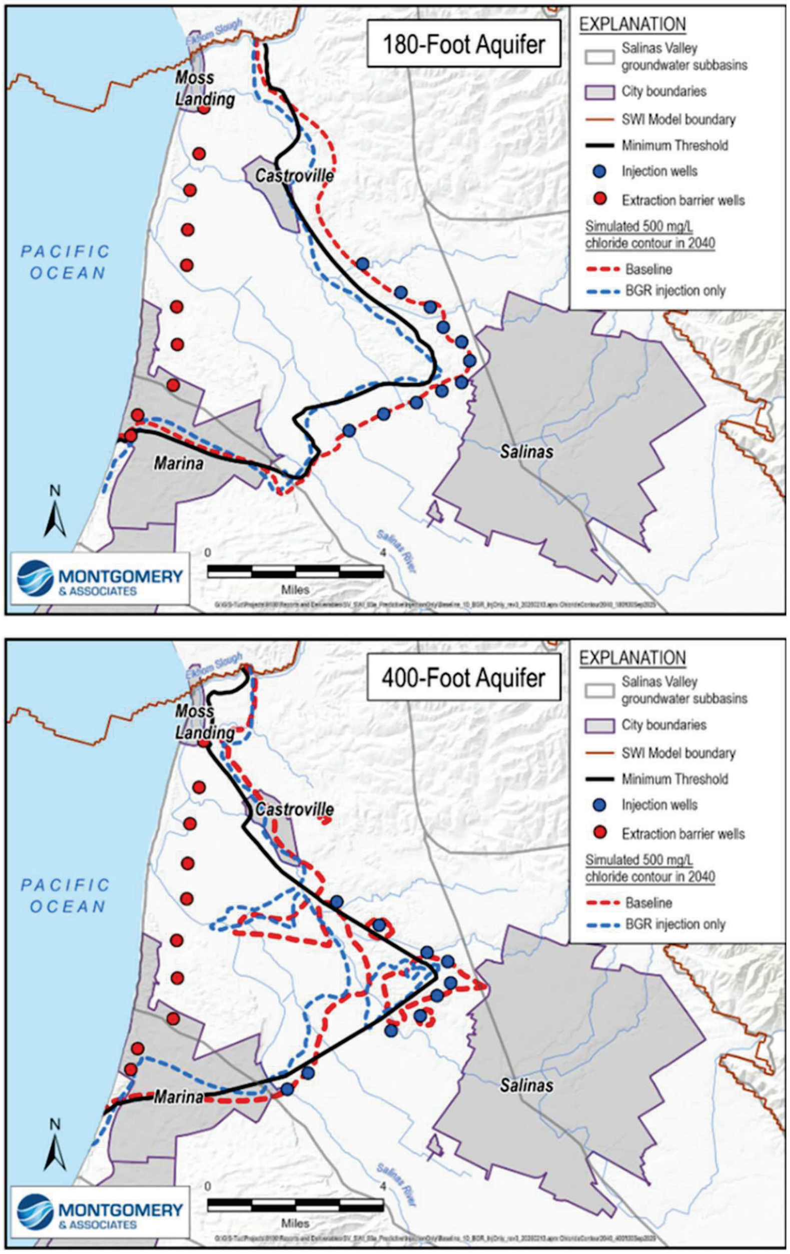


Figure 9. 2040 500 mg/L Chloride Contours Comparison of Preferred BGRP Alternative to Baseline Scenario and Minimum Threshold

3.3 Alternative Water Supply Project

The BGRP Injection Only Project meets the seawater intrusion minimum threshold requirement of holding the 500 mg/L chloride line at, or seaward of, the 2017 extent of seawater intrusion by 2040. The USBR feasibility study requirements include identification of an alternative that can provide benefits equivalent to the BGRP Injection Only Project. The AWSP was developed to meet the same minimum threshold requirements. The AWSP illustrates what would be required to achieve a project of the same size in the absence of desalinated brackish water as a source of supply. The purpose of the AWSP is to demonstrate in the USBR Report that there is not a more cost-effective solution to meeting the project goal of achieving the seawater intrusion minimum threshold as defined in the 180/400 Subbasin GSP.

The AWSP provides an injection barrier inland of existing seawater intrusion. Injection is more effective at halting seawater intrusion than providing in-lieu supplies to reduce pumping because injection directly and immediately targets the areas of seawater intrusion. Providing in-lieu supplies relies on the slower process of natural recharge and might not raise groundwater levels in the specific areas needed to control seawater intrusion. Therefore, any available water supplies are used for injection in this project.

The AWSP includes 4 sources of water: excess river water diverted under a modified Permit 11043 at its maximum capacity, agricultural tile drain water, Salinas industrial wastewater, and water currently passing the Salinas River Diversion Facility (SRDF). The 4 sources provides 44,000 AFY, just slightly less than the preferred BGRP scenario's 47,000 AFY. All of these supplies are used to increase recharge and raise groundwater levels through direct injection of the treated supplies into the groundwater subbasin.

Diverting, treating, storing, and delivering water derived from Permit 11043 will require a 400 cubic feet per second (cfs) diversion structure with fish screen, a sedimentation basin to remove the high turbidity of winter river flows, a pump station and conveyance piping to transfer water to the reservoir, a new 110,000 AF reservoir, and a 21 million gallon per day (MGD) surface water treatment plant to treat surface water diverted under Permit 11043. The other 3 water sources would share a new collection and conveyance piping system, new water tanks and storage ponds, and a 20 MGD brackish water RO plant to remove salt from the agricultural tile drain and Salinas Industrial Waste Pond sources. Stored and treated water from all 4 water sources would require distribution piping and 27 injection wells to inject the water into the 180-Foot and 400-Foot Aquifers. A conceptual layout of the facilities needed for the AWSP are included in the BGRP FS (Carollo, 2026a).

3.3.1 AWSP Cost Estimate

Cost estimates for the AWSP are categorized as Class 5 under the Association for the Advancement of Cost Engineering (AACE) framework. Class 5 estimates represent the lowest level of project definition and accuracy, while Class 1 reflects the highest. The estimates provided here reflect an early project definition level of approximately 0–2% and are intended for concept-screening purposes.

The preliminary estimates are largely based on developing unit costs for major project components—such as dollars per unit of flow capacity for a low-lift river pump station, including the intake structure, pumps, electrical systems, and associated facilities—using data from comparable projects with known construction costs. If the project advances and more detailed design information become available, the estimates can be refined using more specific unit costs, material quantities, and other detailed inputs. The AWSP Alternative Costs are presented in Table 2. All costs include 30% construction contingency, Monterey County sales tax of 7.75% applied to 50% of costs, and 3% annual escalation to July 2030 as the estimated midpoint of construction. Costs are presented in current (2026) dollars.

Table 2. AWSP Estimated Economic Lifecyle Costs

Cost Category	AWSP
Total Construction Cost ($M)	$3,847
Annual Treatment O&M ($M)	$34
Annual O&M ($M)	$50
Present Value Total Cost ($M)	$5,730
Annualized Cost ($M)	$258
Annual Yield (AF)	44,208
$/Acre-Foot Cost	**$5,836**

3.3.2 AWSP Groundwater Modeling

While the AWSP was designed to only include injection, 3 AWSP scenarios were simulated to assess different options:

- AWSP with injection only
- AWSP with injection and land fallowing
- AWSP with injection and municipal pumping redistribution

Groundwater modeling showed that the land fallowing and municipal pumping redistribution had insignificant impacts on controlling seawater intrusion when coupled with the AWSP injection.

Figure 10 shows the simulated 500 mg/L isocontour in 2040 in both the 180-Foot and 400-Foot Aquifers, resulting from the 3 AWSP scenarios. This figure additionally uses a black line to show the minimum threshold line that must be achieved by 2040, and a dashed red line to show the location of the 500 mg/L isocontour under the baseline simulation. Results show that the AWSP project is generally as effective as the BGRP Injection Only Alternative at preventing the 500 mg/L isocontour from progressing beyond the minimum threshold line, although the BGRP Alternative is slightly more effective near the community of Castroville. All 3 AWSP scenarios result in about the same 500 mg/L chloride isocontour by 2040, as evidenced by how difficult it is to distinguish between them on the figure.

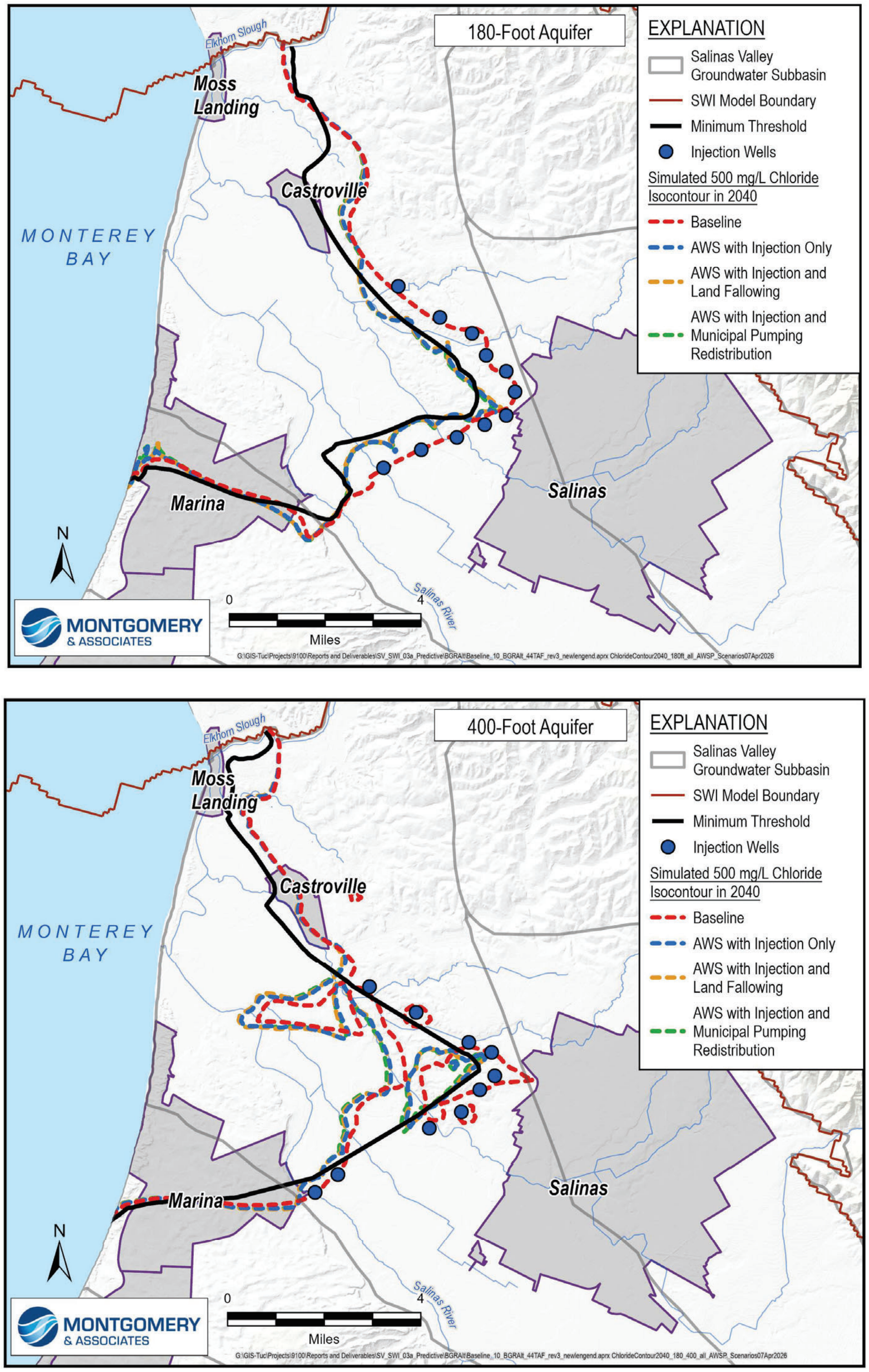


Figure 10. 2040 500 mg/L Chloride Contours Comparison of 3 AWSP Scenarios to Baseline Scenario and Minimum Threshold

3.4 No Action Alternative

To meet the USBR Report requirements, a NAA was developed that includes no new infrastructure. Without constructing a project, the seawater intrusion minimum threshold is projected to be exceeded, causing an undesirable result, and violating SGMA law. Therefore, the NAA considers what might happen with SWRCB intervention. SWRCB would not develop new structural solutions (i.e., projects), but it would impose management actions such as pumping limits. Accordingly, the assumptions underpinning the NAA are:

- Seawater intrusion continues and the minimum threshold is exceeded in the absence of a project.
- The SWRCB designates 1 or more subbasins as probationary and intervenes with management actions.
- SWRCB intervention includes administrative fees, pumping limits/reductions (location, timing, and magnitude not yet specified), and other management actions to address seawater intrusion.
- If necessary, extend pumping limits beyond the 180/400 Subbasin in order to assess the potential economic impact of halting seawater intrusion using only pumping limits. SVBGSA is not stating they know SWRCB would extend pumping limits beyond the 180/400 Subbasin. However, this assumption is important for assessing the cost of doing nothing, and the associated economic benefits of the BGRP.

The NAA assumes that the SWRCB would implement certain pumping reductions to manage seawater intrusion, recognizing that the minimum threshold may not be fully achieved by 2040. Domestic and municipal water users would be limited to the target of 42 gallons per capita per day (gpcd) for indoor use. Since the location and magnitude of agricultural pumping reductions are not known, a range of pumping reductions up to full cessation of pumping were considered.

Groundwater modeling was used to evaluate potential pumping reductions to address seawater intrusion. The groundwater modeling shows that pumping reduction alone, even complete cessation of all agricultural pumping in the entire Salinas Valley, cannot meet the seawater intrusion minimum threshold by 2040. In addition to not meeting the seawater intrusion minimum threshold, the NAA assumption that all agricultural groundwater pumping is eliminated in the 180/400 and other subbasins in the Salinas Valley does not appear to be politically plausible and certainly violates any notion of an economically sustainable solution. Therefore, because ceasing all agricultural pumping is not viable, a reasonable NAA was developed and applied to evaluate project economic benefits.

In summary, the NAA considers what would happen if the 180/400 is put into probation, the SWRCB imposes administrative fees, reduces domestic water use to minimum requirements, and limits agricultural pumping. Although it is unknown if SWRCB could limit pumping in other subbasins to meet SGMA goals, a range of agricultural pumping limits were evaluated and then modified for the economic analysis.

3.4.1 NAA Groundwater Modeling

Under the NAA, the seawater intrusion is controlled using only demand management; however, where pumping would or could be reduced is unclear. To meet SGMA requirements, the pumping may need to be reduced in subbasins that are not currently seawater intruded.

The following 5 pumping reduction scenarios were modeled:

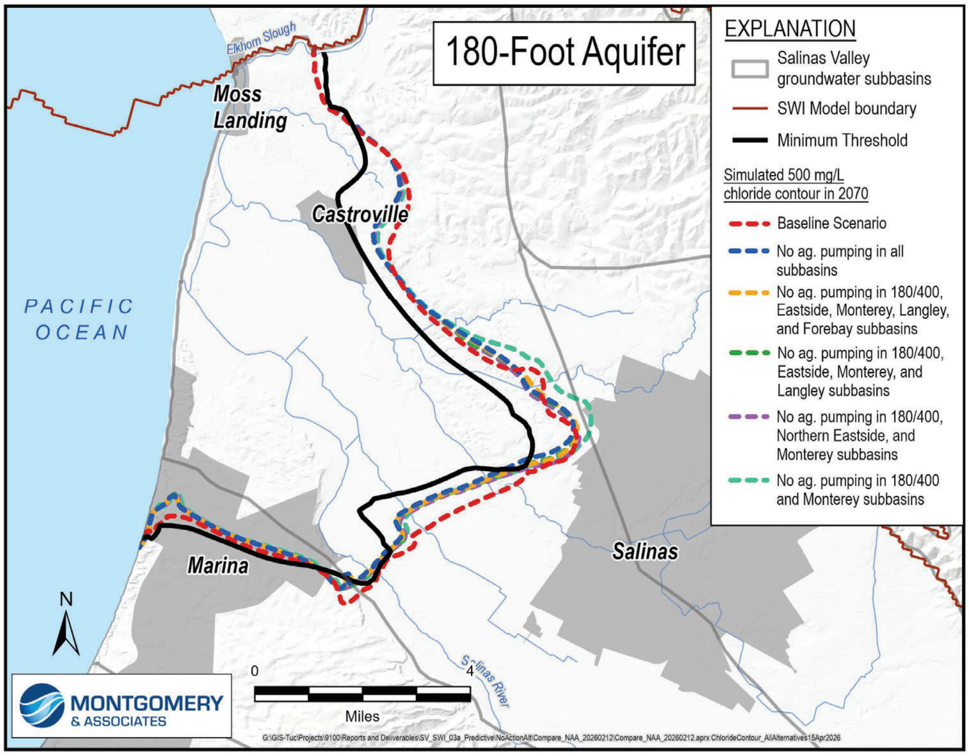
- No agricultural pumping in 180/400 and Monterey Subbasins
- No agricultural pumping in 180/400, Northern Eastside, and Monterey Subbasins
- No agricultural. pumping in 180/400, Eastside, Monterey, and Langley Subbasins
- No agricultural pumping in 180/400, Eastside, Monterey, Langley, and Forebay Subbasins
- No agricultural pumping in all SVBGSA subbasins

Additionally, all 5 NAA scenarios limited municipal pumping to no more than 42 gallons per capita per day matching the California minimum indoor standard for 2030. Domestic pumping from de minimis users is not subject to pumping reductions.

The 5 NAA scenarios were all ineffective at moving the 500 mg/L chloride isocontour in the 180-Foot and 400-Foot Aquifers back to the required minimum threshold line by 2040. Figure 11 shows the simulated 500 mg/L isocontour in 2040 in the 180-Foot and 400-Foot Aquifers resulting from the 5 NAA scenarios. None of these meet the minimum threshold, which is shown by the black line.

Groundwater modeling of the NAA shows that it is not possible to meet the minimum threshold for seawater intrusion by 2040 even under the unrealistic scenario where all agricultural groundwater pumping is eliminated in the Salinas Valley and domestic pumping is limited to 42 gpcd. These scenarios are not intended to represent realistic or politically plausible solutions; rather, they investigate whether agricultural land fallowing by itself could meet the seawater intrusion minimum threshold by 2040 and help establish a financial value of the BGRP. The scenarios do not meet the seawater intrusion minimum threshold due to the slow process of natural recharge resulting from land fallowing, combined with the SGMA 2040 deadline.

As further shown in Appendix B of the USBR Report, given adequate time land fallowing does move the 500 mg/L chloride isocontour toward the coast and to the north. With time, it becomes more evident that fallowing agricultural lands in the 180/400, Monterey, and northern portion of the Eastside Subbasins have the most significant effect on the progression of the 500 mg/L chloride isocontour. Fallowing agricultural lands in the Forebay, Upper Valley, and southern portion of the Eastside Subbasins have lesser, although measurable, effects on the progression of the 500 mg/L chloride isocontour. This study did not specifically address the relative effect of fallowing the limited agricultural lands in the Langley Subbasin.



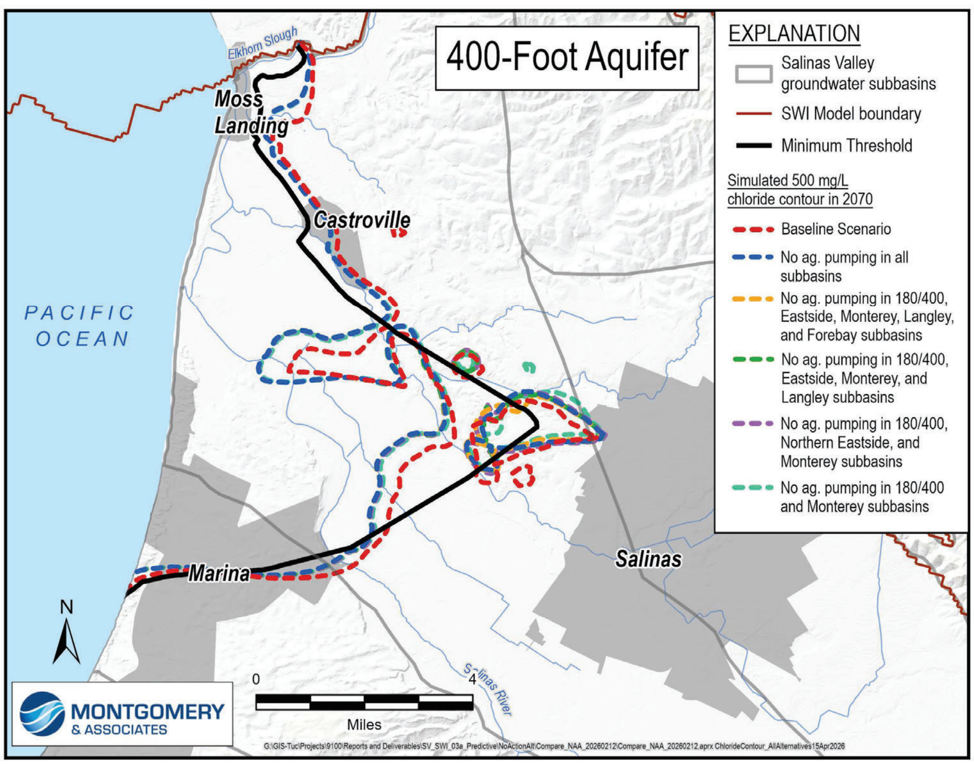


Figure 11. 2040 500 mg/L Chloride Contours Comparison of NAA to Baseline Scenario and Minimum Threshold

3.5 180/400 Contingency PMAs

In addition to the BGRP, the AWSP, and the NAA developed as part of the BGRP feasibility study, SVBGSA has investigated the potential of a portfolio of PMAs that would meet the needs of beneficial users, even if they do not meet the seawater intrusion minimum threshold. This portfolio of projects is referred to as the 180/400 Contingency PMAs. This portfolio is presented as an example of combining multiple PMAs to address the beneficial needs of groundwater users. Other project combinations are under investigation and will be discussed with the SVBGSA Advisory Committee in 2026.

The PMAs included in this portfolio include the following 4 sources of water:

- CSIP Optimization – described further in Section 4.2.2.1, this would eliminate CSIP supplemental well pumping.
- New Seawater Intrusion Project (NSIP) – an alternative irrigation supply that would replace extraction in the area that is seawater intruded or at risk of intrusion, described further in 4.2.2.2.
- Injection of excess river water diverted at 100 cfs under a modified Permit 11043 into northeast Eastside Subbasin, including a portion of the City of Salinas.
- 10% reduction of agricultural demand in the 180/400 and Eastside Subbasins, assumed to be achieved through land fallowing.

The 180/400 Contingency PMAs Scenario was simulated with the SWIM. Results were evaluated for impacts to seawater intrusion and groundwater levels. Groundwater modeling showed that combining multiple PMAs can be effective at raising groundwater levels. The 180/400 Contingency PMAs simulates increases in groundwater levels by WY 2040 of up to 20 to 40 feet in portions of the 180/400 and Eastside Subbasins. Despite increasing groundwater levels, the seawater intrusion results indicate these collections of PMAs will not meet the seawater intrusion minimum threshold by 2040.

Figure 12 shows the simulated 500 mg/L isocontour in 2040 in both the 180-Foot and 400-Foot Aquifers resulting from the 180/400 Contingency PMAs. This portfolio does not meet the minimum threshold by 2040, which is shown by the black line. The extent of seawater intrusion shown by the simulated 500 mg/L isocontour in 2040 is generally similar to the Baseline Scenario, shown by the red dashed line. The difference in seawater intrusion by 2040 is minimal; however, the difference increases over time and the portfolio protects City of Salinas wells from intrusion while it advances in the Baseline Scenario.

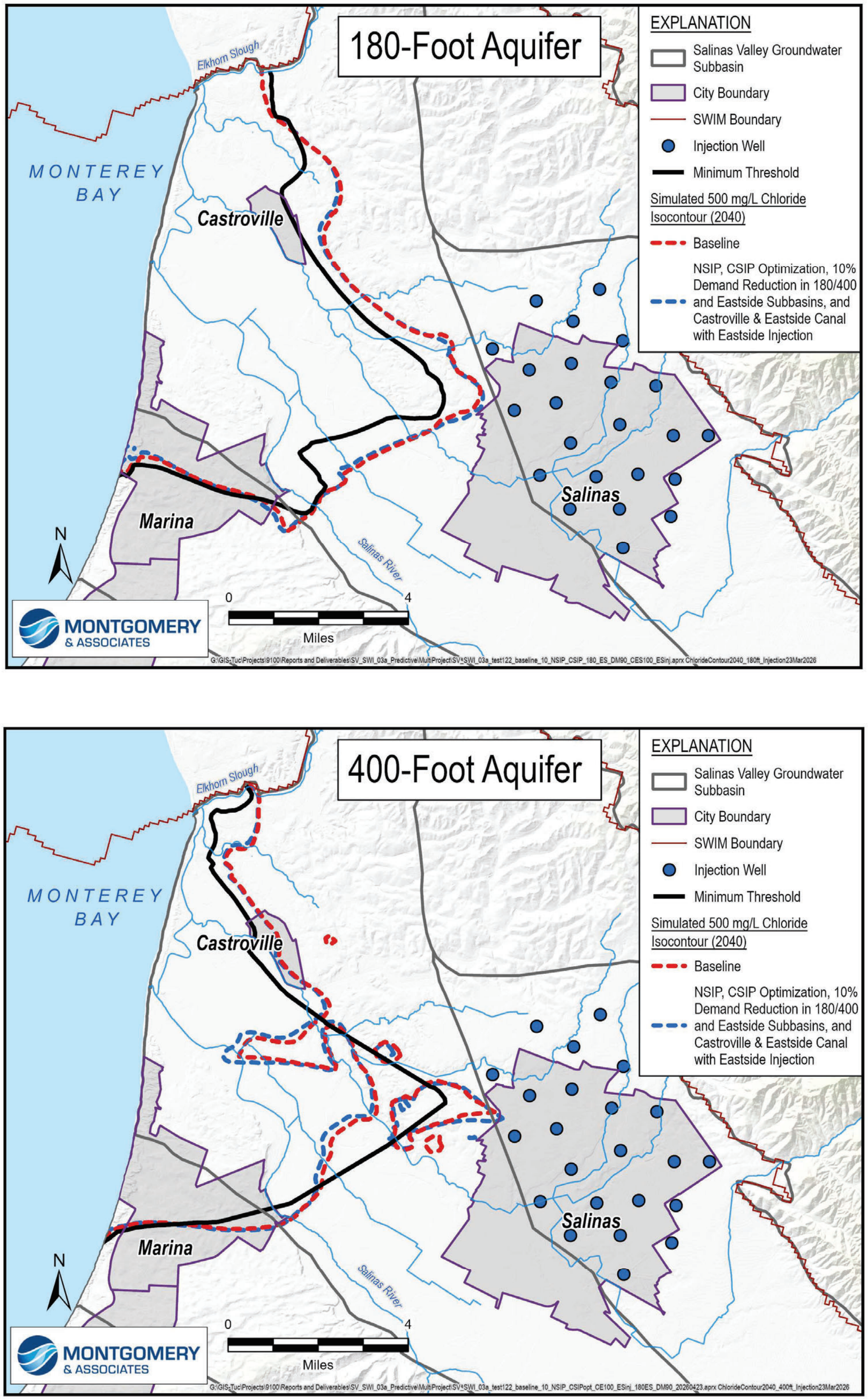


Figure 12. 2040 500 mg/L Chloride Contours Comparison of 180/400 Contingency PMAs to Baseline Scenario and Minimum Threshold

3.6 Summary of PMA Effects on Seawater Intrusion

Under natural conditions, groundwater in 180/400 Subbasin flowed toward the ocean. However, as pumping lowered inland groundwater levels, the hydraulic gradient reversed and, for decades, groundwater has been flowing toward a depression northeast of the City of Salinas. This reversed gradient, coupled with a pathway for seawater to migrate inland, resulted in seawater intrusion.

The NAA, BGRP, and AWSP alternatives represent 3 different approaches to addressing seawater intrusion:

- NAA reduces extraction, allowing groundwater elevations to rise through natural recharge, which alters the steepness of the hydraulic gradient toward the Eastside groundwater level depression.
- AWSP injects water immediately inland of the intrusion to quickly alter the gradient affecting the leading edge of seawater intrusion.
- BGRP couples inland injection with extraction wells near the coast to pull back brackish groundwater and prevent further intrusion of higher saline water.

In addition, the 180/400 Contingency PMAs focus on meeting the needs of beneficial users, although not able to meet the seawater intrusion minimum threshold. This is achieved through delivering alternative irrigation supplies and raising groundwater levels in and around the City of Salinas.

The results across scenarios illustrate a fundamental distinction between groundwater level and seawater intrusion responses to recharge and pumping changes. From a groundwater level standpoint, injecting a given volume near a pumping well is nearly equivalent to reducing pumping by that amount, regardless of source water quality or timing. Chloride concentration responses, however, are driven by flow paths and conduits for seawater intrusion, source water quality, and mixing and spreading processes in ways that are highly sensitive to the extraction and injection configuration and the timing of sources (including recharge and pumping reductions) and sinks (continued pumping). This means scenarios with similar average groundwater level effects may produce markedly different chloride outcomes. For PMAs specifically targeting seawater intrusion, the details of well locations, timing, and water quality therefore matter considerably more than they do for groundwater level management.

Figure 13 compares the chloride concentrations of the Baseline, NAA, BGRP, AWSP, and 180/400 Contingency PMAs. Although multiple scenarios were run, for the NAA the scenario with no agricultural pumping in all subbasins is shown, and for the AWSP, the scenario with injection only is shown. The 180/400 Contingency PMAs is one example of a portfolio of PMAs that could focus on addressing the needs of beneficial users, if the preferred BGRP is not implemented. All simulations were modeled using SWIM v3.

Figure 13 shows the chloride concentration at 2040 for each scenario, with red indicating concentrations close to seawater and the 500 mg/L chloride isocontour marked with a black dashed line. Chloride concentrations of the NAA are almost the same as the Baseline Scenario. The AWSP and BGRP show how effective injection wells are at stopping and pushing the seawater intrusion back with sufficient volumes for injection. However, with the AWSP, high saline water continues to intrude on the coastal side of the injection barrier causing the chloride concentrations west of the injection wells to increase, while the BGRP decreases the chloride concentrations in the existing seawater intruded area east of the extraction barrier wells. With the 180/400 Contingency PMAs, the seawater intrusion minimum threshold is not met and saline water continues to intrude.

Seawater intrusion continued to progress in all scenarios before agricultural pumping was stopped or the project came online. Then, even by 2040, just 5 years into the BGRP and AWSP, the chloride isocontour is already pushed back to where it was in 2022.

Table 3 compares simulated change in chloride mass and change in seawater intruded area between the Baseline, the BGRP, and the AWSP Scenarios. Both the BGRP and AWSP Scenarios reduce the chloride mass and seawater intruded area in the 180-Foot Aquifer. However, according to both metrics, only the BGRP Scenario results in reductions in the 400-Foot Aquifer. The BGRP Scenario results in the greatest reduction in both chloride mass and intruded area of the 3 options. Future studies will refine the project location and extraction and injection rates in association with further feasibility work.

Table 3. BGRP Modeling Results Summary Calculations

Model Run	180-Foot Aquifer		400-Foot Aquifer	
	2035-2040 Change in Chloride Mass (kg)	2035-2040 Change in Seawater Intruded Area (acres)	2035-2040 Change in Chloride Mass (kg)	2035-2040 Change in Seawater Intruded Area (acres)
Baseline Scenario	98,200	900	333,000	1,700
AWSP	-97,300	-1,500	172,200	400
NAA	-81,600	0	36,300	400
BGRP Injection Only	-643,800	-3,800	-320,100	-1,000

Note: Only addresses model areas with >500 mg/L concentration
and east of the extraction barrier regardless of scenario (for comparison purposes).
kg = kilogram
Red cells in this table show areas where chloride mass or intruded area increases. Green cells in this table show areas where chloride mass or intruded area decreases.
Because the 180-Foot Aquifer is simulated by 3 model layers, the change in chloride mass sums the chloride mass in all 3 layers. The change in seawater intruded area is only for Layer 5, which corresponds to the Lower 180-Foot Aquifer and generally presents more advanced seawater intrusion.

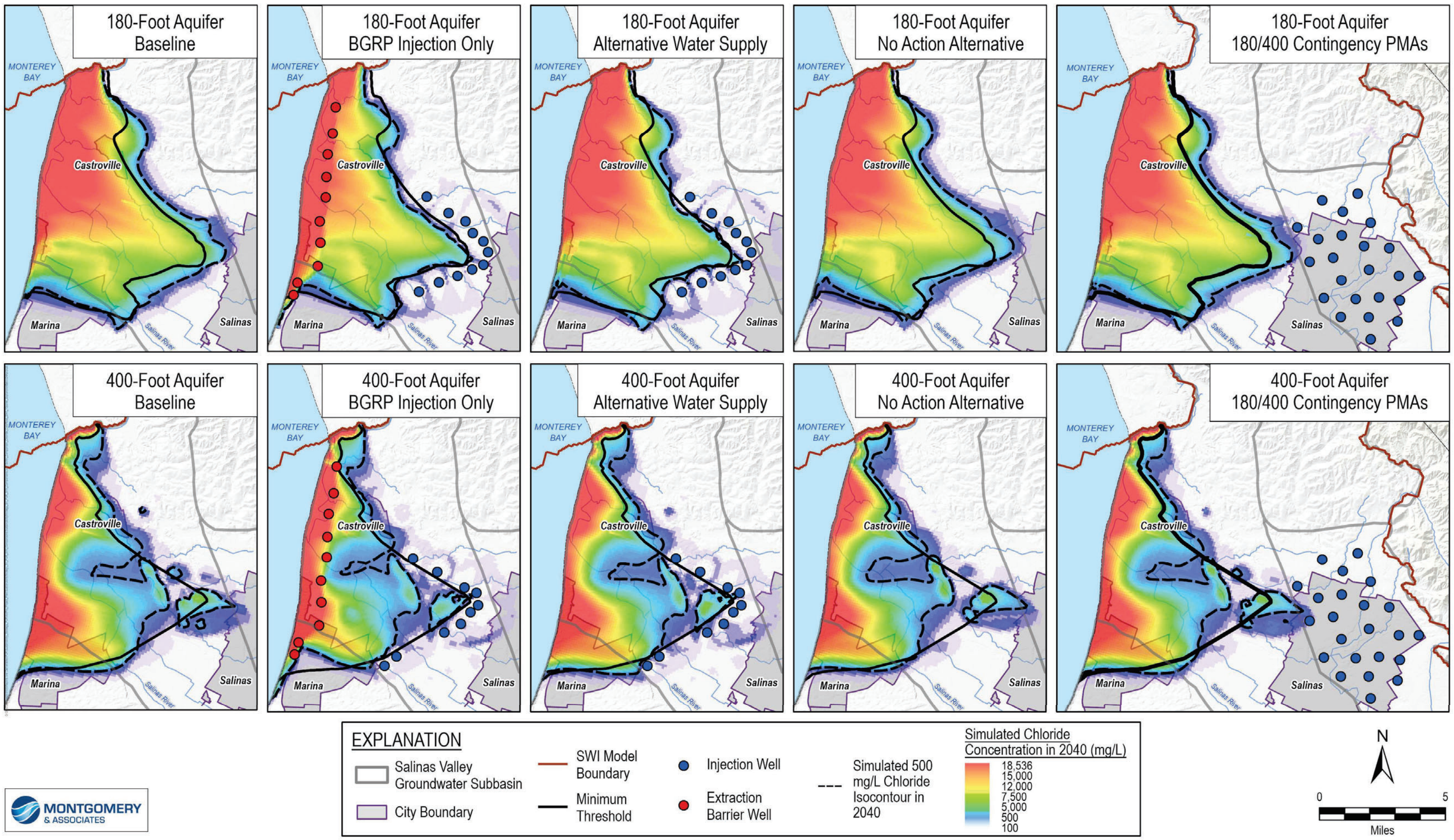


Figure 13. 2040 Chloride Concentrations for the Baseline Scenario, NAA, BGRP, AWSP, and 180/400 Contingency PMA

4 DWR ADDITIONAL INFORMATION REQUEST

This section provides responses to DWR's specific questions identified in its presentation to the SVBGSA dated December 23, 2026. The responses are organized by the sub-questions highlighted during the meeting.

4.1 Seawater Intrusion Advancement – Actions Taken

4.1.1 DWR Question: What actions are being taken given that undesirable results for seawater intrusion have been occurring since GSP implementation, supply wells are being impacted, declining groundwater levels continue to contribute to seawater intrusion, the first interim milestone has not been attained, and PMAs to address seawater intrusion have not been implemented?

SVBGSA and its partner agencies have been taking several actions to address current impacts of seawater intrusion on groundwater uses and users. Recent activities include supporting MCWRA's improvements to the Monterey County Water Recycling Projects to reduce reliance on groundwater pumping in the CSIP area, MCWRA's well destruction program to prevent cross contamination between aquifers, SVBGSA's development of a demand management framework and work plan for acute areas of concern in the 180/400 Subbasin and working closely with other agencies to manage the Deep Aquifers.

4.1.1.1 Monterey County Recycled Water Project Capital Improvements

In 1998, MCWRA and M1W implemented the Monterey County Water Recycling Projects to augment groundwater supplies for agricultural irrigation on about 12,000 acres in the seawater-intruded area near Castroville. One of these projects was the Castroville Seawater Intrusion Project (CSIP), which is a recycled water distribution system that includes surface water conjunctive use and supplemental groundwater as additional sources of water. The projects include the Salinas Valley Reclamation Project (SVRP), which provides tertiary treatment of municipal wastewater and delivers it to CSIP. In 2010, MCWRA began to operate the SRDF to add treated surface water to the CSIP water supply. SRDF was constructed as part of the Salinas Valley Water Project (SVWP), which resulted in reoperation of the reservoirs to release additional stored water during the summer when it is needed for irrigation. These projects have slowed the rate of seawater intrusion as intended, but predated SGMA and the establishment of SMC and minimum thresholds.

The water recycling projects, SRDF, and SVWP were constructed to reduce groundwater extraction in the seawater intruded 180-Foot Aquifer by providing alternative supplies in the

CSIP service area, and its rate of seawater intrusion was slowed through corollary pumping reductions and well destruction. However, in recent years seawater intrusion and other issues have impacted CSIP supplemental wells, and most of the original project wells have been taken offline.

SVBGSA has been working with MCWRA to address to reduce CSIP dependence on groundwater from the 400-foot aquifer as one of the sources of supply. With its Sustainable Groundwater Management Round 1 Grant for 180/400 Subbasin GSP implementation, SVBGSA provided funding to MCWRA for 2 facility improvements, described below. SVBGSA's grant also supported developing an updated hydraulic model of the CSIP system, which included data calibration and field verification of Remote Monitoring Units (RMUs). The CSIP model is being integrated with a scheduling system for CSIP users to improve operations, better manage the timing of demand, and monitor water deliveries. M1W has developed an online scheduling system that has been put into use by CSIP growers.

SVRP Dry Scrubber Upgrade

M1W owns and operates the SVRP, which is co-located at their Regional Treatment Plant. SVRP treats wastewater through a tertiary process, and this recycled water for irrigation is then distributed through the CSIP system. M1W shuts down the SVRP tertiary treatment for a period of up to several weeks every winter to maintain the chlorination system and conduct other annual SVRP maintenance. During this period, groundwater from the CSIP supplemental wells is the only source of water available to CSIP irrigators, putting additional demands on the aquifers and promoting additional seawater intrusion.

The Dry Scrubber Upgrade at the M1W Recycled Water Plant implemented the first phase of the 180/400 Subbasin Project #3: CSIP Winter Modifications, by installing a dry chlorine scrubber system to replace the original wet scrubber system. The previous chlorination system used liquid caustic scrubbers to contain and remove toxic gaseous chlorine from the air in the event of an accidental release from the chlorine containment system. It had no redundancy, was a potential safety hazard to staff, and was subject to corrosion, requiring the annual shutdown for testing and maintenance to comply with hazardous materials plan requirements and to maintain its reliability. In addition, if a chlorine leak should occur during the summer, the entire treatment plant and river diversion facility would be shut down for repairs, also forcing CSIP to rely on groundwater. The new scrubber is a redundant system with 2 scrubbers available and employs an inert dry media to passively scrub any chlorine released.

Construction of the dry scrubber system improves the ability to reliably irrigate agricultural land with recycled water and decreases reliance on groundwater, enabling reduced use of the CSIP Supplemental Wells during wintertime operations. The Dry Scrubber Upgrade is estimated to reduce use of MCWRA's Supplemental Wells during wintertime chlorine system shutdowns by approximately 345 AFY.

CSIP Booster Station Enhancements

SVBGSA also supported MCWRA with grant funding to implement CSIP Booster Station Enhancements. There are 3 booster stations located in the CSIP distribution system that were designed to provide increased pressure during low pressure situations in the system, as well as to aid in circulating water to the far end lines of the system during high demand usage. Because it is a gravity fed distribution system, maintaining adequate pressures can be challenging, especially in high demand situations. Groundwater wells were often used to boost pressure and add additional water volume in the system when the originally configured booster stations could not fully address the low-pressure problems. The booster station pump enhancements provide optimized usage and increased pressure in the system at critical low-pressure areas, which then decreases the need for turning on groundwater wells for addressing the low pressure.

Performance enhancements included retrofitting pumps and upgrading the booster station motor controls to a Variable Frequency Drive (VFD) control unit to allow more variability and control of the station pressure output and flow, equalizing the pressure need and moving away from groundwater pumping pressure usage. The VFD units add great efficiency with electrical usage, resulting in a reduction in electrical consumption.

The Booster Station Enhancements are a component of the 180/400 Subbasin GSP CSIP Optimization Project, which will provide groundwater benefits by reducing total pumping from supplemental wells in a range from a low of 248 AFY to a high of 1,625 AFY, with a long-term average of 1,200 to 1,600 AFY. The Booster Station Enhancements improve existing operations to reduce the need for supplemental well pumping.

4.1.1.2 MCWRA Well Destruction Program

In 2017, MCWRA issued a report titled "Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin" (2017 report). MCWRA's 2017 Report recommended initiating and diligently proceeding with destruction of wells in Agency Zone 2B, in accordance with Agency Ordinance No. 3790, to protect the Salinas Valley Groundwater Basin against further seawater intrusion.

In 2020, MCWRA secured funding for the Protection of Domestic Drinking Water Supplies in the Lower Salinas Valley project, provided in part by Proposition 1- the Water Quality, Supply, and Infrastructure Improvement Act of 2014 through an agreement with the State Water Resources Control Board. The project destroys abandoned or inactive wells to prevent conduits that may allow for vertical migration of seawater- or nitrate-impaired groundwater into drinking water aquifers. The area generally covers an area that includes Castroville, Marina, and Salinas with a southern boundary of Reservation Road and an eastern boundary of Harris Road.

As of November 2025, MCWRA has completed 37 well destructions and has received an extension of the term to complete work using the grant funds through January 31, 2028.

In the 2017 Report, MCWRA documented the presence of wells constructed in a manner that could facilitate vertical movement of seawater intruded groundwater between the 180-Foot and 400-Foot Aquifers. This mechanism, combined with the downward hydraulic gradient between the Deep Aquifers and overlying aquifers, also results in a potential pathway for movement of seawater intrusion into the Deep Aquifers. SVBGSA, MCWDGSA, MCWRA, and Monterey County recommend continued financial support of a well destruction program in the seawater intruded area, in addition to agency support for Monterey County to fully exercise its authority under Monterey County Code Chapter 15.08 to require destruction of wells that are not consistent with the purposes of the ordinance.

4.1.1.3 Demand Management

Over the last several years, SVBGSA has been planning for demand management and engaging a broad audience in the process. Since submittal of the 180/400 GSP evaluation, SVBGSA has continued evaluating a range of potential demand management measures, from efficiency improvements to groundwater allocation, with continued public involvement at the SVBGSA subbasin committees.

From this effort, SVBGSA developed a Demand Management Framework (Framework) that was accepted by the SVBGSA Board in November 2025. The Framework outlines 10 demand management measures and provides a structured approach for further policy and program development. It recognizes that activation of specific measures will depend on localized groundwater conditions and is designed to accommodate variability across subbasins. This flexible structure allows for implementation across the Salinas Valley while accounting for unique subbasin characteristics and conditions.

SVBGSA's Framework provides a structured approach for evaluating, prioritizing, and implementing demand management measures as part of the broader GSP implementation strategy. The Framework articulates key components including stages and triggers, global elements (such as water accounting and measurement systems), and a suite of potential agricultural and domestic measures. A variety of projects and management actions are being studied to assess which can achieve sustainable management criteria in the timeframe stipulated by SGMA.

Importantly, the Framework is a planning tool that sets the foundation for developing rules, guidelines, and implementation activities when and where they are needed to support SGMA compliance.

Under the Framework and based on the observed triggers, the 180/400 Subbasin is in Stage 4 due to having groundwater level SMC undesirable results in the Deep Aquifers every year since GSP implementation. Much of the Deep Aquifers pumping occurs in an area with seawater intrusion in the overlying aquifers, complicating efforts to reduce pumping without alternative supplies. This suggests that deploying demand management may be appropriate and necessary, at least as an interim measure until injection or in-lieu supply projects can be implemented, to reduce extraction from the Deep Aquifers.

SVBGSA FY 2027 workplan includes activities to develop the rules, program structures, and administrative systems for allocations and a demand management fee, with emphasis on areas where seawater intrusion overlies the Deep Aquifers and sustainability concerns are acute. The 180/400 GSP 2025 Periodic Evaluation identified that the Deep Aquifers have had undesirable results for groundwater levels every year since the 180/400 GSP was submitted. The Deep Aquifers Study and subsequent data emphasize that groundwater elevations in the Deep Aquifers are below sea level and groundwater elevations are below those in the overlying 400-Foot Aquifer. In the areas where the overlying 180-Foot and 400-Foot Aquifers are seawater intruded, these conditions increase the risk of both lateral and vertical seawater intrusion and jeopardize the long-term viability of the Deep Aquifers. Measures that directly influence net pumping, such as pumping limits (allocations), fees, and land repurposing, align with the Deep Aquifers Study's core guidance to prevent further degradation by limiting extraction to help stabilize and raise groundwater elevations. Prioritizing development of these tools in specific areas reflects the need to manage demand where the consequences of inaction are most severe.

4.1.1.4 Deep Aquifers Management

As seawater intrusion has moved inland beyond the CSIP distribution system where no in-lieu irrigational supplies are available, more groundwater users have shifted pumping to the Deep Aquifers, an aquifer system that underlies the 180-Foot and 400-Foot Aquifers. Over the past 2 decades, as more users have become reliant on these groundwater resources, groundwater levels in the Deep Aquifers have declined, dropping below the overlying aquifer and increasing the risk of seawater intrusion into the Deep Aquifers. Management of seawater intrusion and the Deep Aquifers are interrelated issues.

In the fall of 2024, following presentations to several governing bodies on the Deep Aquifers Study, SVBGSA and partner agencies formed a multi-agency working group to coordinate monitoring and management of deep aquifers spanning multiple subbasins. MCWRA prepared the Deep Aquifers Monitoring Plan, and SVBGSA and other agencies that collect Deep Aquifers data have signed on to a memorandum of understanding for data sharing across several jurisdictions. The working group has prepared recommendations that will be presented to the agencies' governing bodies beginning in May 2026, following submittal of this response to DWR.

The Deep Aquifers provide groundwater resources to both domestic and agricultural beneficial users. MCWD, Castroville Community Services District, and the CPUC regulated utilities that serve the City of Salinas, California Water Service, and Alisal Water Company, all rely on the Deep Aquifers for a portion of their water supplies. Therefore, the agencies working group continue to recommend treating Deep Aquifers as a strategic reserve rather than a resource for increased pumping.

Several of the recommended actions for Deep Aquifers management have been approved as part of SVBGSA's FY 2027 Work Plan and are discussed further in the next section.

4.1.2 DWR Question: Is there a plan of action for when supply wells (particularly those outside the CSIP service area) get impacted during GSP implementation to address associated impacts on beneficial uses and users?

Seawater intrusion in areas without CSIP alternative supplies has caused beneficial users to shift to deeper groundwater pumping, thus seawater intrusion impacts are tied to increased extraction from to the Deep Aquifers. SVBGSA is working on action plans for wells newly impacted seawater intrusion are related to demand management in seawater intruded area that overlap the Deep Aquifers, developing a Seawater Intrusion Response Plan for continued beneficial uses within the intruded area and domestic well mitigation, and coordinating with partner agencies to strengthen policies, well regulations and well destruction programs.

SVBGSA is working with partners to better understand beneficial uses within existing seawater intruded areas and to assess whether, and to what extent, those users may be impacted, in addition to assessing risks from continued inland progression in areas projected to become intruded in the future. In 2025, MCWRA implemented a well registration program that will, among other things, provide needed information on any domestic wells that may be at risk in these areas, coupled with monitoring to determine if well mitigation may be required.

SVBGSA and partner agencies are working on demand management as an interim measure and are developing a Seawater Intrusion Response Plan to have planned triggers and actions in place to address potential additional seawater intrusion.

4.1.2.1 Well Registration and GMP

MCWRA has been monitoring much of the Salinas Valley Groundwater Basin for decades. However, the geographic boundaries of the historical groundwater monitoring and well registration programs do not fully align with those of the subbasins managed fully or in part by the SVBGSA. As a result, certain areas within the 180/400 Subbasin and other SVBGSA subbasins were not subject to historical well registration requirements, groundwater monitoring or extraction reporting.

In 2024, the Board of Supervisors of the MCWRA adopted Ordinance No. 5426, which repealed prior ordinances related to groundwater monitoring and established a new MCWRA Groundwater Monitoring Program (GMP) that includes data collection covering SVBGSA's jurisdiction. SVBGSA used MCWRA's historical dataset to set SMC. SVBGSA will use the expanded dataset to ensure that SMC are protective of beneficial users and to continue monitoring groundwater conditions.

The GMP includes well registration to ensure that SVBGSA has the best available dataset of active wells within the Subbasin. The well registration effort also informed the expansion of groundwater extraction reporting for non *de minimis* wells. MCWRA began with a review of all existing permit records and developed an online application for well registration. SVBGSA and MCWRA initiated an outreach campaign to inform owners that well registration was required. Well owners registered their wells with MCWRA, and the dataset was expanded with many domestic wells and wells in the northern area of the 180/400. Abandoned wells were also noted. Construction data, including well depth, for the broader dataset of domestic wells will be reevaluated relative to the groundwater level SMC to ensure that the minimum threshold and measurable objective are set at protective levels.

The GMP expanded extraction reporting to include all wells pumping more than 2 AFY and shifted reporting timelines to align with the water year and annual reports. Outreach and coordination will continue with water systems that have 5-14 connections (non *de minimis*) to initiate groundwater extraction reporting requirements and to promote opportunities for increased efficiency. GMP outreach to well owners ensures that if wells are impacted during GSP implementation, well owners know to contact the SVBGSA and MCWRA. Well registration ensures that the locations of active wells are known. Extraction reporting ensures that total demand is accounted for.

4.1.2.2 Demand Management as an Interim Tool

As described in Section 4.1.1.3, SVBGSA is in the process of developing demand management as a groundwater management tool. Some of these measures can be used as interim tools if supply wells are impacted. In fiscal year 2027, SVBGSA prioritized developing allocations and a

Demand Management Fee for intruded areas and areas of overlap with Deep Aquifers where sustainability concerns are acute. This effort will establish demand management policies and programs for if, and when, supply wells are impacted.

Other ongoing interim demand management activities are discussed in Section 4.2.1 below.

4.1.2.3 Seawater Intrusion Response Planning

As noted in Section 2, the 180/400 GSP defines a seawater intrusion undesirable result as any progression of seawater intrusion beyond the 2017 mapped seawater intrusion extent, which is the minimum threshold. SGMA requires the seawater intrusion SMC be based on a chloride isocontour; however, the minimum threshold is not necessarily directly tied to recent impacts to supply wells. Within the mapped seawater intrusion area there is variability in chloride levels and some wells remain operable.

SVBGSA, with continued support from partner agencies, is developing a seawater intrusion response plan (SIRP) to deal with impacts within the seawater intruded area. Based on a monitoring plan, the SIRP will establish triggers and identify response measures if seawater intrusion is detected in new locations or if increased chloride concentrations render currently operable wells unusable. Although not yet established, triggers may include specific thresholds for water quality (e.g., chloride levels) and groundwater elevations that would result in activation of the response plan and groundwater management strategies or implementation of infrastructure solutions.

Potential response measures include, but are not limited to:

- *Water shortage response plan*: Establish a contingency plan that prescribes how water demands will be reduced if seawater intrusion impacts the water supply.
- *Pumping reductions*: Immediately decrease or halt pumping from contaminated wells. Implement mandatory water conservation measures during dry periods to reduce overall demand on the aquifer.
- *Well mitigation*: Implement small-scale treatment systems for domestic wells and small water systems.
- *Relocation of wells*: In severe cases, discontinue the use of contaminated wells and drill new wells in areas less susceptible to intrusion. For existing wells, consider reducing pump depth or using smaller pumps to minimize drawdown.
- *Require well destruction*: If monitoring identifies elevated chloride levels, require well owners to conduct an assessment to determine if intrusion is due to downward vertical migration, and require well destruction if the well increases risk of intrusion in the Deep Aquifers.

- *Pumping schedules*: Where there are multiple wells in a system, operators may alternate pumping times to allow for aquifer recovery and minimize localized drawdown.
- *Development of alternative supplies*: Implementation of water supply projects to provide alternative sources of water.
- *Projects with recharge augmentation*: Implement artificial recharge projects to raise the water table and create a freshwater barrier against saltwater. Sources can include stormwater capture, treated wastewater, or injection wells.

SVBGSA has included establishing a SIRP for the Deep Aquifers to enable rapid assessment and response action if intrusion is detected. Implementation of any response measures will require close coordination between SVBGSA, MCWDGSA, MCWRA, Deep Aquifers well owners, and other relevant agencies, consistent with existing statutory authorities and adopted GSPs.

4.1.2.4 Coordinate with Partner Agencies to Strengthen Policies, Well Regulations, and Well Destruction Programs

The Deep Aquifers Memo has been developed through a staff working group of local agencies with groundwater management authorities in the Salinas Valley, including MCWRA, Monterey County Health Department Environmental Health Bureau (EHB), MCWDGSA, and SVBGSA. Recommendations are intended to serve as a guide for further development of management actions or projects related to the Deep Aquifers and to guide related policy considerations by agency decision-makers, beneficial users, and the interested public.

Based on Monterey County's assessment of the *Protecting Our Water & Environmental Resources v. County of Stanislaus (Cal. Supreme Court, 2020)* decision, which held that well permits are not categorically ministerial, Monterey County is requiring environmental review under the CEQA if permit approval involves discretionary authority. Pursuant to Monterey County Code Chapter 15.08 the EHB has determined that CEQA is required for Deep Aquifers well applications. SVBGSA and MCWDGSA both commented on a recent Notice of Preparation for 2 new Deep Aquifers wells and will remain engaged through the environmental review process.

The purpose of the Monterey County's regulations of water wells, as stated in Section 15.08.010 of the Monterey County Code, is:

> "to provide for the construction, repair, and reconstruction of all wells, including cathodic protection wells, test wells, observation wells, and monitoring wells, to the end that the groundwater of this County will not be polluted or contaminated and that water obtained from such wells will be suitable for the purpose for which used and will not jeopardize the health, safety or welfare of the people of this County. It is also the purpose of this

> Chapter to provide for the destruction of abandoned wells, monitoring wells, observation wells, test wells, and cathodic protection wells found to be public nuisances, or when otherwise appropriate, to the end that all such wells will not cause pollution or contamination of groundwater."

Well permitting is an important groundwater management activity conducted by Monterey County. Monterey County plans to consider amendments to County Code Chapter 15.08 in 2026. Permit review may require analyses of the effects of pumping from new wells, including factors such as both the total volume and seasonal timing of extraction, how the new wells may affect nearby wells and regional groundwater levels, and whether the wells are located in area with overdraft conditions, seawater intrusion, or as already noted in County Code Section 15.08.140, in an area with known groundwater contamination. Generally, SGMA and GSPs have established Sustainable Management Criteria (SMC) that provide quantifiable minimum thresholds that can be used in these evaluations.

Under SGMA, GSPs do not supersede the land use authority of cities and counties, including the city or county general plan, within the overlying basin. However, SGMA also calls for processes to review land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity. Planning agencies must review and consider groundwater sustainability plans, groundwater management plans, or groundwater management court order, judgment, or decree. SVBGSA has been and will continue to encourage Monterey County to review outdated General Plan policies and assess potential amendments to bring them into consistency with SGMA and the GSPs applicable in Monterey County, and for the Deep Aquifers, the findings of the Study.

SVBGSA staff have encouraged County staff to prioritize well permitting policy and regulatory issues for review and updates to ensure consistency with SGMA, the GSPs, as well as the findings of the Study.

4.2 Projects and Management Actions

4.2.1 DWR Question: Because the Brackish Groundwater Restoration Project will take a long time to be constructed and fully be in place, are there other PMAs that will be implemented in the interim to help address seawater intrusion?

The following—discussed in Section 4.1 above—are interim management actions that are already implemented or will be implemented during project development:

- Monterey County Recycled Water Project Capital Improvements - *completed*
- SVRP Dry Scrubber Upgrade - *completed*

- CSIP Booster Station Enhancements - *completed*
- MCWRA Well Destruction Program – *37 wells destroyed; funding for additional well destruction available*
- Demand Management – *Demand Management Framework was developed; demand management measures in the 180/400 Subbasin were prioritized for the Deep Aquifers and area of/near seawater intrusion and included in SVBGSA FY 2027 work plan and budget.*
- Deep Aquifers Management – *Deep Aquifers agency working group meeting regularly; demand management measures for the Deep Aquifers included in SVBGSA FY 2027 work plan and budget*

Contingency projects are discussed below in Section 4.2.2. These are not all mutually exclusive with interim measures and the following may be implemented alongside and likely in advance of the BGRP:

- CSIP Optimization – *these capital improvements to CSIP will help reduce and/or eliminate CSIP supplemental well pumping and may be implemented both as an interim measure to enable continued CSIP operation and help prevent additional seawater intrusion*
- Demand Management – *along with demand management in the seawater intruded area and Deep Aquifers, broader demand management across a larger area is being considered. These activities are discussed below.*

As described in Section 4.1.1.3, SVBGSA is in the process of developing demand management as a groundwater management tool, beginning with the Demand Management Framework. The Framework articulates key components including stages and triggers, global elements (such as water accounting and measurement systems), and a suite of potential agricultural and domestic measures. A variety of projects and management actions are being studied to assess which can achieve sustainable management criteria in the timeframe stipulated by SGMA. Some of these measures can be used as interim tools if supply wells are impacted. Four demand management measures are prioritized for development in fiscal year 2027:

- Allocations and Demand Management Fee, with emphasis on seawater intruded areas and area of overlap with Deep Aquifers where sustainability concerns are acute.
- Land Repurposing, leveraging the California Multi-Benefit Land Repurposing Program (MLRP) for identified lands across all subbasins.
- On-Farm Water Use Efficiency activities to support agricultural water demand reductions.

- Incentivized Domestic Water Use Efficiency programs to encourage conservation at the household level.

The following discussion provides information on SVBGSA's work on the other 3 demand management actions, land repurposing, agricultural best management practices and rural domestic water use efficiencies. However, as previously discussed, demand management alone is insufficient to address seawater intrusion.

MLRP is a state-funded initiative to reduce reliance on overdrafted groundwater basins. The multibenefit land repurposing concept supports the strategic transition of the least productive, most flood-prone irrigated land to new, lower-water uses that will help reestablish sustainable groundwater supplies and benefit landowners, adjacent communities, and freshwater ecosystems. The Greater Monterey County Integrated Regional Water Management (IRWM) Group was awarded a $10 million grant by the California Department of Conservation through MLRP to strategically and voluntarily acquire and repurpose the least viable portions of irrigated agricultural lands in the lower Salinas Valley.

IRWM is partnering with SVBGSA, the Central Coast Wetlands Group, the California Marine Sanctuary Foundation and the Resource Conservation District of Monterey County to develop and implement this program. The Salinas Valley MLRP will support the acquisition of portions of agricultural ranches where targeted landowners who wish to transition farmlands to projects that increase groundwater recharge and storage, reduce flooding, and enhance water quality and base flow. Additional benefits can include habitat enhancement and public recreation opportunities. The program is focused on the 180/400, and also the Eastside and Langley subbasins. Several project locations have been identified in the 180/400 and planning and landowner coordination are underway. If there are parcels of land with wells that get impacted during GSP implementation, the landowner could pursue repurposing through the MLRP program.

On-farm Water Use Efficiencies, also referred to as Agricultural Best Management Practices (Ag BMPs), encourages growers to adopt more efficient irrigation practices. As a demand management measure developed by SVBGSA, Ag BMPs may include technical assistance or financial incentives to support implementation. Currently, the SVBGSA supports Ag BMPs through the extension of information about irrigation management tools. For example, SVBGSA supported the development of University of California Cooperative Extension (UCCE) CropManage landing page (see https://cropmanage.ucanr.edu/). CropManage is a free online decision-support tool (or BMP) for irrigation and nutrient management that growers can use to maximize their on-farm water use efficiency.

Lastly, in the fall of 2024, SVBGSA staff designed the Water Efficiency Pilot Program (WEPP) to assess what progress could be made by increasing water use efficiency among rural residents. The WEPP was established to achieve the following objectives:

- Build awareness on water use efficiency among rural residential users.
- Leverage successful urban water efficiency strategies for rural application.
- Increase adoption of water-efficient practices.
- Empower rural residents to contribute to sustainable water management.

SVBGSA identified that while large water systems (3,000+ connections) were required to provide water efficiency resources to their users per the Urban Water Management Planning Act, others including private water systems (1-4 connections), state small water systems (5-14 connections), small public water systems (15-199 connections), and medium public water systems (200-2,999 connections) did not have the same regulatory requirement. This presents an opportunity to make gains in water efficiency that had previously been underexplored. Staff identified the target audience for WEPP as households in rural residential areas where many residents are served by either a private well or water systems with less than 3,000 connections. WEPP has a 3-pronged approach: a water use efficiency webpage, a water use survey, and home assessments. This program will continue to be undertaken.

4.2.2 DWR Question: If the Brackish Groundwater Restoration Project does not get selected for implementation, what contingency project(s)and/or management action(s) will be implemented to halt and mitigate seawater intrusion?

SVBGSA's integrated implementation strategy includes contingency projects. As discussed in previous sections, SVBGSA is carrying out management actions, but even the most extreme pumping reduction scenario analyzed for the No Action Alternative will not halt or mitigate seawater intrusion. Several contingency projects have been identified to mitigate seawater intrusion impacts on beneficial uses and users; however as discussed in Section 3.6 above, these projects combined do not halt seawater intrusion. The following sections describe the contingency projects, including the CSIP Optimization, with an update on progress since the 2025 GSP evaluation, the New Seawater Intrusion Project (NSIP, referred to in the GSP and Amendment 1 as CSIP Expansion), and Demand Management.

4.2.2.1 CSIP Optimization

CSIP Optimization is included in the portfolio of contingency projects to meet the needs of beneficial uses and users impacted by seawater intrusion.

SVBGSA has supported MCWRA with grant funding to refine the CSIP Optimization Project identified in the 180/400 GSP and Amendment 1. In addition to capital improvements already discussed, MCWRA completed the CSIP Hydraulic Modeling and Analysis Report prepared by E2 Consulting Engineers and Schaaf & Wheeler in July 2025. This report documents the development, calibration, and application of a new hydraulic model of the CSIP recycled and surface water distribution system. A primary objective of the model was to evaluate the system's ability to meet peak agricultural irrigation demands while reducing reliance on supplemental groundwater pumping, in alignment with SGMA objectives. The analysis concludes with recommended near-term and long-term improvements to increase system capacity, improve hydraulic reliability, and further reduce groundwater pumping.

The CSIP Basis of Design Report (BODR) presents preliminary engineering designs and cost estimates for 3 capital improvement projects identified through the 2025 CSIP Hydraulic Modeling and Analysis. The goals of these improvements include reducing reliance on supplemental groundwater wells during peak summer irrigation demand, improving hydraulic reliability, and enhancing system redundancy in support of seawater intrusion management.

The CSIP distribution system currently relies on an 80-acre-foot storage pond supplied by recycled water (SVRP) and diverted SRDF. During peak demand, these sources are insufficient, requiring operation of up to 8 supplemental groundwater wells. Hydraulic modeling identified specific system constraints—particularly at Rodgers Loop, the Salinas River crossing, and overall system head loss—that limit non-groundwater supply capacity.

The BODR advances 3 capital improvement projects (CIPs) from concept to preliminary design and provides Class B and Class C construction cost estimates. The CSIP Optimization projects are:

- CIP 1 – Rodgers Loop Check Valve and Pressure Relief Valve: Allows more efficient use of existing pumps and increases deliverable flow under both gravity and pumped conditions.

  Cost Estimate (60% Design – Class B): Total Construction Cost of ~$1.1 million (includes contractor overhead and profit, contingencies, and allowances).

- CIP 2 – Second CSIP Storage Pond Outlet Pipeline: Increases conveyance capacity across the Salinas River and provide operational redundancy

  Cost Estimate (30% Design – Class C): Total Construction Cost of ~$26.2 million (includes 25% contingency and contractor overhead and profit).

- CIP 3 – In-System Storage Tank and Booster Pump Station: Represents the most effective long-term solution for eliminating supplemental well use.

Cost Estimate (30% Design – Class C): Total Construction Cost of ~$33.7 million.

The CSIP Optimization Projects are included in the portfolio of projects to meet the SMC for seawater intrusion.

4.2.2.2 New Seawater Intrusion Project

SVBGSA contracted Carollo Engineers to assess the feasibility of expanding CSIP or developing a new water supply and delivery system—referred to as the New Seawater Intrusion Project (NSIP)—to address ongoing seawater intrusion and groundwater overdraft in the Salinas Valley. It would replace pumping in all aquifers, enabling groundwater levels to rise over time through natural recharge. This project could offset demands in the Deep Aquifers where it overlaps with the seawater intruded area. These improvements to groundwater conditions in the 180/400 Subbasin may also improve groundwater conditions in adjacent subbasins.

The NSIP Evaluation[2] (Carollo, 2026b) identifies the need for supplemental, non-groundwater irrigation supplies to stabilize aquifer conditions and sustain agricultural productivity in the study area, which was prioritized to cover areas experiencing or at risk of seawater intrusion not served by CSIP. Current groundwater demand in the study area averages approximately 28,000 AFY, with peak seasonal demands in summer months. Five-year monthly average demands for all wells in the study area are shown on Figure 14. However, available alternative water supplies—such as recycled water, river diversions, industrial wastewater, and agricultural drainage—are highly variable and largely concentrated in winter months, creating a mismatch between supply availability and irrigation demand.

[2] Available at: https://svbgsa.org/nsip/

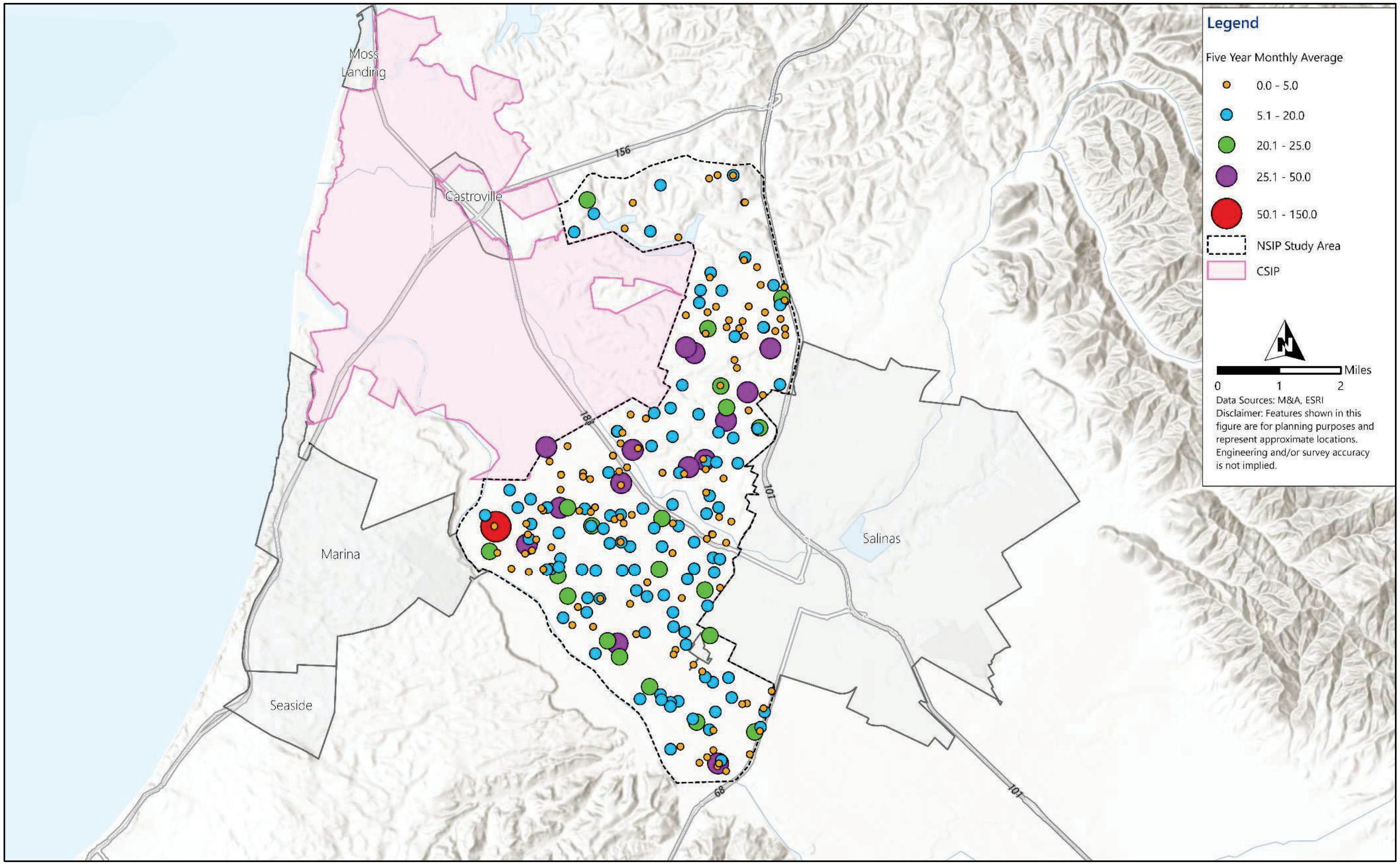


Figure 14. Five-Year Monthly Average Demand of All Wells in NSIP Study Area

To address this imbalance, the NSIP Evaluation assesses the availability, reliability, and water quality of multiple regional supply sources and their ability to offset groundwater pumping. The analysis indicates that while sufficient total annual supply may be available under representative hydrologic conditions, seasonal variability necessitates substantial storage or demand management strategies to ensure reliable delivery during peak irrigation periods. Conceptual analysis identifies a storage requirement on the order of 15,000 acre-feet to balance seasonal supply and demand under full build-out.

MCWRA prepared a source water analysis focused on quantifying the volume, reliability, seasonality, and operational constraints associated with multiple candidate source waters under MCWRA control or influence. The evaluation is based primarily on historical hydrologic and operational data spanning approximately 2016 through 2025, supplemented with longer-term datasets where available. This approach captures a representative range of hydrologic conditions while reflecting current system operations and regulatory frameworks. Seven primary source water categories were evaluated:

- Secondary effluent from the Monterey One Water Regional Treatment Plant
- Industrial wastewater from the City of Salinas
- Excess reservoir releases available for rediversion at the SRDF
- Reclamation Ditch flows (Application A032263D)
- Tembladero Slough flows (Applications A032263C/D)
- Blanco Drain return flows (Application A032263D)
- Salinas River diversions under Permit 11043

For each source, MCWRA developed estimates of usable supply by applying water rights constraints, operational limitations, instream bypass requirements, diversion capacities, and data availability.

NSIP Scenarios

NSIP defined the study area as the area with agricultural users historically reliant on groundwater pumping in or near the seawater intruded area and from the Deep Aquifers. It targets the area of heavy agricultural use in the area between the City of Salinas, CSIP service area, and north of the Salinas River and south of the rural communities of Oak Hills and Prunedale. The 5-year total annual usage of the wells within the study area is between 27,000 and 30,000 AFY with peak uses in the summer months between April to November.

This study identifies 3 project scenarios:

1) *CSIP Expansion (Recycled Water Direct Delivery)* focuses on conveying excess recycled water from the SVRP directly to select new NSIP users. Given the limited capacity of the existing infrastructure, it would require a new, single recycled water conveyance system directly from SVRP to be used year-round with the available recycled water supplies. This provides a relatively low-cost, near-term option that primarily benefits winter demands and serves as a supplemental or first-phase project.

2) *Maximum (Max) Size NSIP (Standalone System)* envisions a fully independent regional system sized to offset all groundwater pumping within the NSIP area by serving approximately 248 wells. This scenario integrates multiple water sources, centralized treatment, and large-scale storage (e.g., Merritt Lake Reservoir with multiple source waters, centralized treatment, and substantial seasonal storage on the order of 15,000 AF) to reliably meet peak irrigation demands. For the Salinas River surface water source diverted using Permit 11043, there would need to be a permit modification to allow storage. The analysis considers supply availability ranges of high, medium, and low.

3) *NSIP Serving Wells Only Within 500 mg/L Chloride Isocontour Zone (Phased or Hybrid NSIP Implementation)* bridges these approaches by initially delivering recycled water directly to users and incrementally expanding infrastructure, storage, and treatment over time—potentially incorporating direct capture of available supplies during high-flow periods—to ultimately transition toward a comprehensive NSIP system while managing costs and adapting to supply availability and user needs. This targets service to regions within the NSIP Study Area that are affected by seawater intrusion in the 180- and 400-foot aquifers, as defined by the 500 milligrams per liter (mg/L) chloride isocontour. It includes surface water diverted using Permit 11043 as source water under the current permit conditions (no storage over 30 days). The analysis considers supply availability ranges of high, medium, and low.

The maximum size NSIP is included in the 180/400 Contingency PMAs because it provides alternative supplies to replace irrigation well pumping in the intruded area, areas at risk, and the Deep Aquifers.

NSIP Cost Estimates

NSIP could serve up to approximately 17,600 acres in the area between the existing CSIP system and the City of Salinas. The NSIP project water is defined as the average annual volume of water that the project delivers. NSIP developed new or reallocated surface and recycled supplies that partially offset groundwater extraction. These estimates are considered conceptual and are expected to be refined as project configurations, infrastructure requirements, and operational assumptions are further developed.

Two project concepts—Intruded Area Only and Max NSIP—were developed with scenarios considering supply availability ranges of high, medium, and low. Due to the limited ability of the CSIP Expansion Scenario to offset demands in the seawater intruded zone, it was clear that this scenario would not meet minimum thresholds and therefore lifecycle costs for it as a standalone scenario were not developed.

The cost estimates for the Intruded Area Only and Max NSIP scenarios reflect preliminary construction costs organized by major infrastructure components. Storage costs include the improvements needed at Merritt Lake to provide the required impoundments and associated facilities. Treatment costs include on-site treatment facilities and related process infrastructure. These estimates are expressed in current dollars and include a 30% construction contingency, Monterey County sales tax of 7.75% applied to half of construction costs, and 15% for contractor general conditions, overhead, and profit. Land acquisition costs are not included.

Table 4 summarizes the standardized economic costs of the NSIP scenarios. The table shows total construction costs (including soft costs), annual O&M, and replacement costs. The NSIP scenarios (High, Medium, and Low) vary by the annual yield (acre-feet); O&M costs have been scaled by the corresponding yield for each scenario. The present value costs, the annualized cost, and the cost per AF of project water are shown. Economic costs range from $2,957 per AF to $7,434 per AF.

Table 4. Max NSIP and Intruded Wells Only Estimated Economic Lifecyle Costs

Cost Category	Intruded Only			Max		
	High	Medium	Low	High	Medium	Low
Total Construction Cost ($M)	$698	$698	$698	$1,428	$1,428	$1,428
Annual Treatment O&M ($M)	$6	$5	$3	$11	$9	$5
Annual O&M ($M)	$13	$12	$7	$7	$6	$3
Present Value Total Cost ($M)	$1,120	$1,087	$910	$1,840	$1,761	$1,618
Annualized Cost ($M)	$50	$49	$41	$83	$79	$73
Annual Yield (AF)	11,020	10,160	5,512	28,020	22,570	12,790
$/Acre-Foot Cost	**$4,575**	**$4,818**	**$7,434**	**$2,957**	**$3,513**	**$5,697**

Notes:
Lifecyle costs are for 40 years of operations with replacement costs at 20 years of operations
Comparable costs have not been developed for the CSIP Expansion Scenario

4.2.2.3 Northern Eastside Injection

SVBGSA contracted a team to assess the potential feasibility of a river diversion project and develop project scenarios to help meet SGMA goals. The team consisted of Montgomery & Associates (M&A), Wallace Group Engineering, MBK Engineers, and Denise Duffy & Associates. Diversion of available Salinas River water could capture surface water that would otherwise flow to the ocean and provide additional water supplies to areas with low groundwater levels or seawater intrusion. MCWRA holds Water Right Permit 11043 (Permit 11043, or Permit), which provides a conditional right to divert excess Salinas River flows for irrigation and municipal use.

The Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study[3] (C&E Study, M&A, *et al.*, 2026) advanced scoping of a potential river diversion project to help address 4 potential groundwater goals and developed 4 corresponding project concepts. One of those concepts—Northern Eastside Injection—is included in the 180/400 Contingency PMAs.

The Northern Eastside Injection project concept addresses low groundwater levels in the northern Eastside Subbasin by injecting diverted, stored, and treated Salinas River water into the aquifer underneath and around the City of Salinas. By raising groundwater levels in the groundwater level depression, it reduces the hydraulic gradient that drives seawater intrusion and helps raise groundwater levels in the adjacent portions of the Langley and 180/400 Subbasins.

This project would divert surface water through a pumped direct diversion under a modified 11043 Permit from the Castroville Canal Intake location. Diverted water would be conveyed to a surface storage reservoir to allow for regulation of flows to a treatment plant and more consistent injection. A network of injection wells located in the northern Eastside Subbasin enable recharge below shallow clays that would inhibit infiltration from recharge basins in this area. Two scenarios were scoped: a 50 cfs diversion sized around capacity of a new surface reservoir at Merritt Lake and a 100 cfs diversion sized around capacity of a new surface reservoir in the Gabilan Range near Alisal Creek. The 100 cfs diversion scenario is included in the 180/400 Contingency PMAs to increase the effect on seawater intrusion, which results in 9,700 AFY injected on average.

Northern Eastside Injection Cost Estimates

Planning-level cost estimates for the C&E project scenarios were developed by the engineering teams (C&E Study Appendix J). Project economic costs were developed using a standardized framework that includes and schedules out capital (construction and soft costs), O&M, and long-term replacement components. Project costs are expressed as the present value and the annualized cost per acre-foot of project water. The C&E project water is defined as the average

[3] Available at: https://svbgsa.org/castroville-and-eastside-canals-and-alternatives/.

annual volume of water that the project delivers to the groundwater system through recharge or injection. These estimates are considered conceptual and are expected to be refined as project configurations, infrastructure requirements, and operational assumptions are further developed. Land acquisition costs are included.

Table 5**Error! Reference source not found.** summarizes the standardized costs of the Northern Eastside Injection C&E scenario. This estimate has substantially higher unit costs than some other C&E scenarios due to added treatment, storage, and well infrastructure requirements.

Table 5. Northern Eastside Injection Estimated Economic Lifecyle Costs

Cost Category	100 cfs
Total Construction Cost ($M)	$1,017
Annual O&M ($M)	$10
Present Value Total Cost ($M)	$1,343
Annualized Cost ($M)	$60
Annual Yield (AF)	9,700
$/Acre-Foot Cost	**$6,232**

4.2.2.4 Demand Management

SVBGSA considered demand management as an interim approach to slowing seawater intrusion and modeled the potential benefits of demand management and pumping reductions on seawater intrusion. The NAA modeling showed that pumping reductions have minimal benefits to seawater intrusion due to the relatively slow process of natural recharge coupled with the short timeframe for meeting the sustainability goal. These results were true if agricultural pumping was eliminated in only the 180/400 Subbasin, or if agricultural pumping was eliminated throughout the Salians Valley. SVBGSA determined that the economic impact from lost income to growers that will need to fund the ultimate solution was not worth the insignificant gains from pumping reductions.

While demand management will not address seawater intrusion alone, SVBGSA is pursuing it as an interim measure for specific issues and specific locations, and it is among the contingency actions if the BGRP is not implemented. SVBGSA is taking parallel tracks for demand management:

- Demand management in the Deep Aquifers – *this is in part aimed at raising groundwater levels in the Deep Aquifers to prevent downward vertical migration of seawater intrusion*

- Seawater Intrusion Response Plan – *this would provide for quick response to any observed additional seawater intrusion*
- Additional demand management measures – *the scale at which these measures are implemented will depend on the other PMAs*

A 10% agricultural demand reduction across the 180/400 and Eastside Subbasins is included in the 180/400 Contingency PMAs. Groundwater modeling has shown that if reductions occur in the 180/400 Subbasin and not the Eastside Subbasin, independent of other PMAs, seawater intrusion at the leading edge advances more rapidly into the City of Salinas due to an even steeper inland hydraulic gradient. This is addressed through reducing demand in both subbasins simultaneously, and including the agricultural areas of the Langley and Monterey Subbasin in these demand reductions is under evaluation. Reduction in agricultural demand by approximately 10% is based on preliminary groundwater modeling and the exact percentage of reductions will be refined as measures are developed.

4.2.3 DWR Question: Provide specifics of what the Demand Planning management action will entail, including triggers and the quantified benefit expected.

The SVBGSA Board accepted the Demand Management Framework in fall 2025 and prioritized which demand management measures to develop. The Demand Management Framework includes triggers that are used to place subbasins in stages according to their observed and projected groundwater levels. According to the triggers established in the Framework, the 180/400 Subbasin is in the highest, most severe stage.

Groundwater modeling results of the NAA showed that reducing extraction is not sufficient to meet GSP seawater intrusion goals under all NAA scenarios, which ranged from eliminating agricultural extraction in the seawater intruded subbasins to eliminating agricultural extraction across the whole Salinas Valley. Therefore, it cannot address seawater intrusion alone. However, demand reductions could address groundwater level declines and help prevent seawater intrusion from migrating down from the 400-Foot Aquifer into the Deep Aquifers.

In addition, the Seawater Intrusion Response Plan will provide triggers and actions that can be implemented quickly in response to additional seawater intrusion being observed. This will be complementary to the long-term measures above. Reductions that result will depend on where seawater intrusion is observed, the effect of nearby pumping, and potential impact on domestic wells.

4.2.4 DWR Question: To fully assess PMAs and whether they will achieve the sustainability goal for the Subbasin, staff need to know which projects for addressing seawater intrusion will be moved forward for implementation, including their initiation and completion dates, and timelines for accrual of expected benefits in relation to the 2040 deadline for achieving sustainability.

As part of the integrated implementation strategy, SVBGSA is evaluating a comprehensive portfolio of projects and management actions to identify the most effective and coordinated path to sustainability. This process involves SVBGSA staff presenting candidate projects and management actions to the Advisory Committee, which is charged with evaluating the proposed portfolios and recommending a preferred portfolio for consideration by the SVBGSA Board of Directors. The Advisory Committee's evaluation weighs factors including technical feasibility, cost-effectiveness, stakeholder impacts, and the ability of each project or management action to contribute to meeting sustainable management criteria within SGMA-mandated deadlines. This integrated approach recognizes that achieving sustainability in the 180/400 Subbasin cannot be addressed in isolation, and that a coordinated strategy spanning all subbasins under SVBGSA's jurisdiction is essential to long-term groundwater management success.

SVBGSA intends to open the 90-day public comment period for the planned GSP amendments following the August 2026 SVBGSA Board of Directors meeting. At that meeting, the SVBGSA Board will be asked to approve preferred implementation strategy for meeting sustainable management criteria for all subbasins in SVBGSA jurisdiction.

Therefore, while responding to many of DWR’s questions with this response, SVBGSA requests an extension of time to September 15, 2026, to complete this process and respond to this question. SVBGSA staff have communicated to DWR staff in meetings that it is preparing 180/400 GSP Amendment 2 and the corresponding GSP periodic evaluation for the 180/400 Subbasin concurrent with GSP amendments and periodic evaluations for the other 5 subbasins that are due to DWR in January 2027. This additional time is needed for Board approval of the preferred portfolio of PMAs that will be incorporated into the 2027 GSP periodic evaluations.

4.2.5 DWR Question: Update the PMA module on the SGMA Portal with any new/additional information that has become available.

Update of the PMA module on the SGMA Portal was completed as part of the WY 2025 Annual Report submittal. SVBGSA will continue to update it in the future.

4.3 Reduction of Groundwater in Storage

4.3.1 DWR Question: Explain the mistake found in the calculations used to assess SMC for reduction of groundwater storage and how it was corrected.

During the preparation of the WY 2024 Annual Report for the 180/400-Foot Aquifer (180/400) Subbasin, a mistake was identified in the spreadsheet used to assess the reduction in storage SMC for previous years, including in the GSP 2025 Periodic Evaluation. The estimate of groundwater in storage in WY 2019 was calculated using incorrect groundwater elevations. Instead of comparing 2019 groundwater elevations to the minimum threshold, the change in groundwater elevations from 2018 to 2019 was used. This incorrect methodology was followed for subsequent years. In the WY 2024 Annual Report, the table was revised to correctly compare annual conditions to the SMC (i.e. annual groundwater elevations measured at RMS wells were compared to the minimum thresholds).

Table 6 shows the components used to prepare the comparison between annual groundwater storage conditions and the SMC in the GSP 2025 Periodic Evaluation. Table 7 shows the components used in the WY 2024 Annual Report. The incorrect groundwater elevations are highlighted in Table 6. Note that the difference in average annual groundwater elevations included in Table 7 do not exactly match the annual change in groundwater elevations in Table 6. This is because the calculations in the WY 2024 Annual Report were for the current Representative Monitoring Sites, which have been updated over the years for the 180/400 Subbasin.

The difference between minimum threshold and measurable objective is approximately 626,000 AF. As the 2 tables show, there were 4 undesirable results out of the 5 years based on the incorrect calculation and 1 undesirable result out of 5 years with the corrected calculation. This is because the change in storage due to groundwater levels was much greater with the corrected calculation. In all years the average groundwater elevations were above the minimum threshold; however, the loss in usable storage due to the advancement of seawater intrusion beyond the minimum threshold was great in WY 2022.

This calculation uses average groundwater elevations in RMS wells and a subbasin-wide storage coefficient based on previous reports. Now that groundwater model updates are complete, SVBGSA is investigating using model-calibrated storage parameters to complete the calculation with spatial and aquifer differentiation.

Table 6. Components Used to Compare Annual Storage Conditions to SMC in 2025 Periodic Evaluation

Component	2019	2020	2021	2022	2023
Subbasin Average GWLs (feet) (THIS IS ACTUALLY THE AVERAGE ANNUAL CHANGE)	-1.7	-1.8	-3.0	-3.5	6.5
Subbasin Average GWLs subtracted by the MT Average GWLs (~ -0.405 feet)	-1.3	-1.4	-2.6	-3.1	6.8
Change in storage due to GWLs since MT year (AF) *(Difference in GWLs above*Non-SWI Area [~76000 acres]*Storage Coefficient [0.078])*	-7,676.8	-8,269.6	-15,383.2	-18,347.2	40,340.0
Total SWI Volume (AF)	773,646.3	779,524.9	789,700.9	799,036.9	801,173.7
Change in storage due to SWI since MT year (AF) (~765,487 AF of SWI in 2017)	-8,159.2	-14,037.8	-24,213.8	-33,549.8	-35,686.6
Total change in storage since MT year (AF)	-16,000	-22,000	-40,000	-52,000	5,000
Water needed in storage to reach MO (AF) (Difference between MT and MO ~626,000 AF)	**642,000**	**648,000**	**666,000**	**678,000**	**621,000**

GWLs = Groundwater Levels; MT = Minimum Threshold; MO= Measurable Objective; SWI = Seawater Intrusion/Intruded
Note: Components that were corrected in the 180/400 Subbasin WY 2024 Annual Report are highlighted.

Table 7. Corrected Components Used to Compare Annual Storage Conditions to SMC in 180/400 Subbasin WY 2024 Annual Report

Component	2019	2020	2021	2022	2023
Subbasin Average GWLs (feet) (THIS IS ACTUALLY THE AVERAGE ANNUAL CHANGE)	11.8	10.3	7.4	4.0	10.5
Subbasin Average GWLs subtracted by the MT Average GWLs (~ -0.405 ft)	12.2	10.7	7.9	4.4	10.9
Change in storage due to GWLs since MT year (AF) *(Difference in GWLs above*Non-SWI Area [~76000 acres]*Storage Coefficient [0.078])*	72,351.2	63,459.2	46,268.0	26,112.8	64,644.8
Total SWI Volume (AF)	773,646.3	779,524.9	789,700.9	799,036.9	801,173.7
Change in storage due to SWI since MT year (AF) (~765,487 AF of SWI in 2017)	-8,159.2	-14,037.8	-24,213.8	-33,549.8	-35,686.6
Total change in storage since MT year (AF)	64,000	49,000	22,000	-7,000	29,000
Water needed in storage to reach MO (AF) (Difference between MT and MO ~626,000 AF)	**562,000**	**577,000**	**604,000**	**633,000**	**597,000**

GWLs = Groundwater Levels; MT = Minimum Threshold; MO= Measurable Objective; SWI = Seawater Intrusion/Intruded
Note: Difference between the average annual groundwater elevations in this table do not match the ones in Table 1 because the representative monitoring sites (RMS) have changed slightly in each annual report; Table 2 shows the average annual groundwater levels for the RMS wells included in WY 2024 Annual Report.

4.4 Degraded Water Quality

4.4.1 DWR Question: Provide rationale for excluding small water systems from the evaluation of degraded water quality in the Subbasin.

With respect to DWR's second request on degraded water quality, the 2020 GSP stated that state and local small water systems, which are monitored by the EHB extended period, would be included in the assessment of degraded water quality in the 180/400 Subbasin. These water systems are shown below on the top half of Figure 15. The bottom half of Figure 15 shows these water systems overlapped with the drinking water system wells that report to the Division of Drinking Water (DDW) as the purple dots and Irrigated Lands Program (ILP) on-farm domestic wells as the green dots. In GSP Amendment 1, this statement was removed because the DDW and ILP monitoring provides sufficient spatial coverage of the Subbasin as shown on Figure 1. Additionally, the EHB mainly samples for nitrate and arsenic, which are widely sampled through the DDW and ILP, and the data would require significant effort to organize and incorporate annually.

Furthermore, review of multiple approved GSPs show that DWR has approved other GSPs that do not include state and local small water systems in their assessment of degradation of water quality.

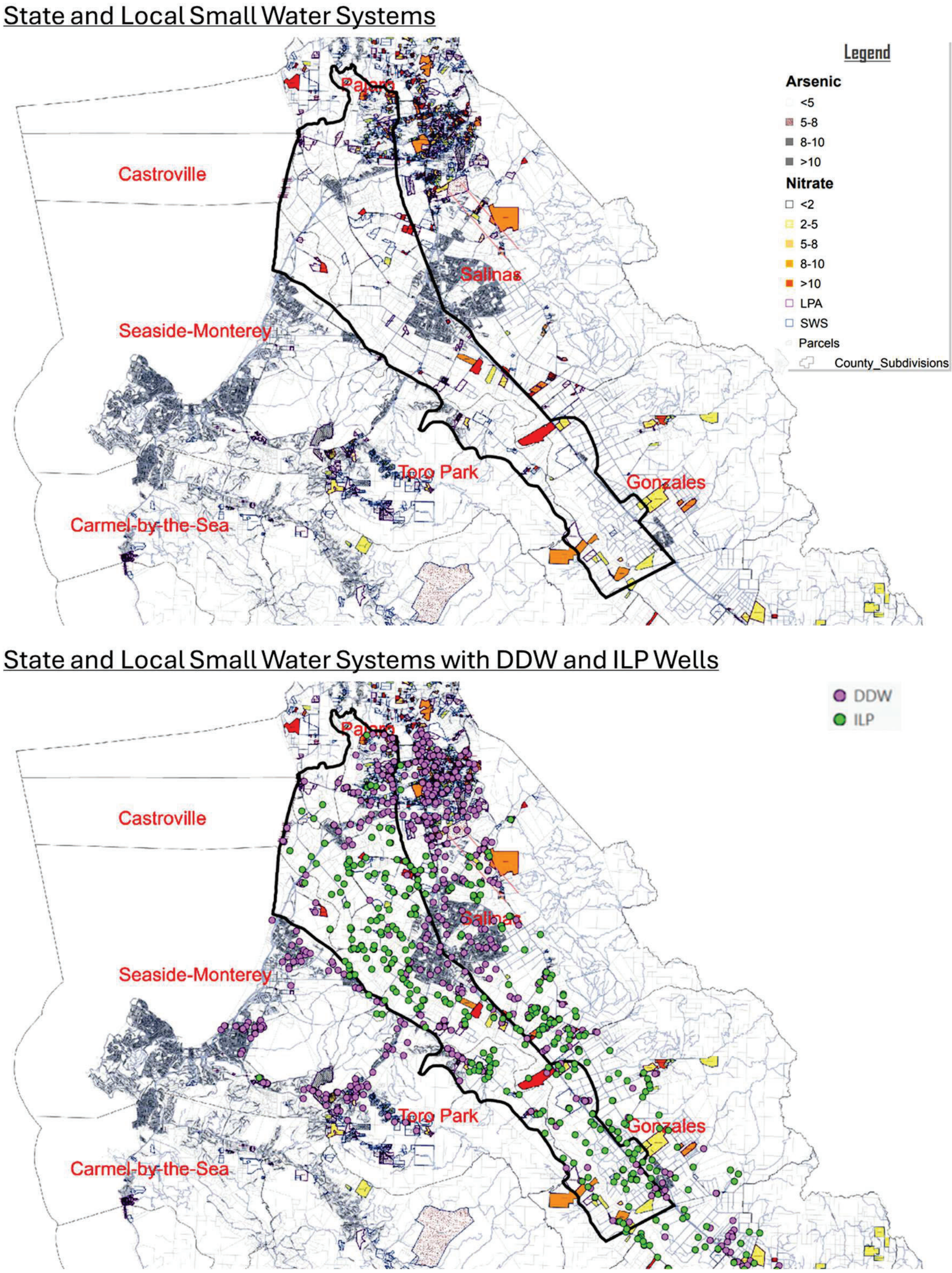


Figure 15. State and Local Small Water Systems (Adapted from County of Monterey map[4])

[4] See: https://www.countyofmonterey.gov/home/showpublisheddocument/67378/638340033904570000.

4.4.2 Provide the outcome of the Water Quality Coordination Group meetings held thus far to discuss minimum threshold exceedances and assess whether groundwater management and extraction in the Subbasin is resulting in degraded water quality in the Subbasin.

SVBGSA collaborated with other agencies with water quality regulatory authorities to establish the Water Quality Coordination Group. The Group meets at least annually to review annual water quality conditions summarized in the SVBGSA annual reports. This helps ensure water quality conditions are reflected consistently across reports and identify if any data is missing. In addition, each agency shares the status of efforts related to groundwater quality.

SVBGSA has shared the results of analyses to address DWR Recommended Corrective Actions (RCAs) related to groundwater quality with the Coordination Group. After SVBGSA submitted GSPs for the non-critically overdrafted subbasins in the Salinas Valley in 2022, DWR issued an approval letter that included several RCAs. One of the RCAs was for SVBGSA to conduct necessary investigations or studies to understand the degree to which groundwater extraction affects groundwater quality in the Subbasin. Since the GSP for the 180/400 Subbasin followed a similar approach for the Water Quality Sustainable Management Criteria (SMC) as the 2022 Salinas Valley GSPs, SVBGSA undertook the same analysis for the 180/400 Subbasin as it did for the other subbasins.

SVBSGA completed a water quality trend analysis to evaluate if groundwater extraction and groundwater level declines are correlated with groundwater quality trends. The analysis evaluates the impact of groundwater extraction on water quality in 2 ways: by evaluating the relationship between trends in groundwater quality and groundwater elevations, and between groundwater quality trends and annual average extraction rates.

For the 180/400 Subbasin, 30 years of data (1995–2024) for nitrate, arsenic, gross alpha radioactivity (gross alpha), and hexavalent chromium were analyzed using the Mann-Kendall test, which identifies statistically significant upward, downward, or stable trends over time. The same test was applied to groundwater level data for the same period to compare water quality trends with groundwater elevation trends. Average annual extraction rates were calculated and compared to water quality trends.

Elevated nitrate concentrations in groundwater are typically associated with anthropogenic sources, such as fertilizer application and irrigation return flows. The remaining constituents are typically naturally occurring in groundwater. Analysis of the available data after outliers were removed indicates no statistically significant evidence that water quality in the 180/400 Subbasin is further degraded by increased extraction rates or declining groundwater levels. The results suggest that other factors such as land management practices may be contributing to varied water quality conditions throughout the Subbasin. SVBGSA plans to continue monitoring and periodically reassess these relationships.

5 REFERENCES

Carollo Engineers. 2026a. Completing a Feasibility Study for a Seawater Extraction Barrier to Address Seawater Intrusion in the 180/400-Foot Aquifer Subbasin in Monterey County. March. Available at: https://svbgsa.org/wp-content/uploads/2026/04/BGRP-Feasibility-Study-20260331.pdf.

_______. 2026b. New Seawater Intrusion Project Evaluation. March. Retrieved from: https://svbgsa.org/nsip/.

E2 Consulting Engineers, Inc. 2025.Basin of Design Report Castroville Seawater Intrusion Project Improvements, 2025 Capital Improvement Projects. Prepared for MCWRA.

E2 Consulting Engineers, Inc. and Schaaf & Wheeler Consulting Civil Engineers. 2025. Hydraulic Modeling and Analysis Report Castroville Sea Water Intrusion Project Hydraulic Modeling and Analysis. Prepared for MCWRA.

Henson, W.R., R. Hanson, S. Boyce, J. Hevesi, and E.R. Jachens. 2025. Salinas Valley Integrated Hydrologic and Reservoir Operations Models, Monterey and San Luis Obispo Counties, California, prepared in cooperation with Monterey County Resources Agency, Monterey County and the Salinas Valley Basin Groundwater Sustainability Agency, preprint version released April 2, 2025.

Monterey County Water Resources Agency (MCWRA). 2026. MCWRA 2025 Seawater Intrusion Contour Maps, presented to MCWRA BOD on April 20, 2026. Retrieved from: https://monterey.legistar.com/LegislationDetail.aspx?ID=7981057&GUID=D5DE0BA2-2090-492C-9059-51DB684E77A1&Options=&Search=.

Montgomery & Associates (M&A). 2023. Salinas Valley Seawater Intrusion Model Development. Prepared for SVBGSA. Retrieved from: https://svbgsa.org/wp-content/uploads/2024/11/SWIModelReport_combined_Final_withAppendices.pdf.

______. 2025a. Updates to the Salinas Valley Integrated Hydrologic and Reservoir Operations Models. Prepared for SVBGSA. Retrieved from: https://svbgsa.org/wp-content/uploads/2025/11/SVIHM-2025-Update-Report.pdf.

______. 2025b. 2025 Seawater Intrusion Model Updates (Addendum 3 to the Salinas Valley Seawater Intrusion Model Report). Prepared for SVBGSA. Retrieved from: https://svbgsa.org/wp-content/uploads/2025/10/SWI-Model_2025_Update_TM_20251016.pdf.

______. 2026. SWIM v3 Projected Baseline Simulation. Attachment 2 to Addendum 3 of the Salinas Valley Seawater Intrusion Model Development Report. Retrieved from: SWIM-v3-Predictive-Model-Report-20260327.pdf.

Montgomery & Associates (M&A), MBK Engineers, Wallace Group Engineers, and Denise Duffy & Associates. 2026. Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study. Retrieved from: https://svbgsa.org/castroville-and-eastside-canals-and-alternatives/.

Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA). 2025. 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan 2025 Periodic Evaluation. Available at: 180/400 Foot Aquifer Subbasin – Salinas Valley Basin Groundwater Sustainability Agency.