March 31, 2026

# Summary Report for

# Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study

*Prepared for:*

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and Monterey County Water Resources Agency

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# EXECUTIVE SUMMARY

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA), in coordination with the Monterey County Water Resources Agency (MCWRA), initiated the Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study (C&E Study) to evaluate if diversion of excess Salinas River flows could support groundwater sustainability under California's Sustainable Groundwater Management Act (SGMA). The study was funded through the Department of Water Resources Sustainable Groundwater Management Implementation Grant and conducted during 2025 and 2026 by a multidisciplinary consultant team.

## Background and Need

The Salinas Valley relies on managed groundwater resources for more than 95% of total water use, with agriculture accounting for approximately 90% of extractions and representing a major driver of the regional economy. Seawater intrusion has been documented in the coastal aquifers since the 1940s and continues to threaten agricultural and municipal water supplies in the 180 Foot and 400 Foot Aquifers. Groundwater levels in the Eastside Subbasin have also declined steadily, creating a persistent groundwater trough. Despite significant past investments—such as the Nacimiento and San Antonio Reservoirs, the Castroville Seawater Intrusion Project (CSIP), and the Salinas Valley Water Project—current conditions and future modeling indicate that additional actions are required to achieve groundwater sustainability by SGMA deadlines (2040 for the 180/400 Subbasin and 2042 for the Eastside and other subbasins).

## Study Purpose and Approach

The C&E Study evaluates the feasibility of using Salinas River surface water—primarily under MCWRA's Water Right Permit 11043—to address 4 prioritized groundwater sustainability goals:

1. Raise groundwater levels in the central and/or southern Eastside and 180/400 Subbasins
2. Raise groundwater levels in the northern Eastside Subbasin
3. Stop seawater intrusion
4. Raise groundwater levels in the Deep Aquifers and seawater intruded area

The Study conducted preliminary analyses to develop 4 project concepts, supported by evaluations of water rights feasibility, historical and projected river flows, infrastructure requirements, groundwater modeling, preliminary cost estimates, and environmental permitting considerations.

## Water Availability and Permit Considerations

Permit 11043 authorizes diversion of up to 400 cubic feet per second (cfs) and 135,000 acre feet per year (AFY) from the Salinas River for irrigation and municipal use, subject to diversion bypass flow requirements. Analyses of historical and projected flows show that divertible water is available primarily during the winter wet season (January through April) and that diversion opportunities are highly variable from year to year. Average annual diversion volumes range from approximately 5,000 AFY at 50 cfs to 25,000–30,000 AFY at 400 cfs—well below the permitted volume.

Because diversion opportunities are intermittent and do not align with peak demand, all viable project concepts require some form of seasonal storage. If a project is pursued that does not fit within the parameters currently defined in Permit 11043 (e.g., needing to add storage), amendments to existing petitions are likely needed, as well as additional amendments and regulatory approvals.

## Project Concepts Evaluated

The C&E Study developed and evaluated 4 project concepts:

**Eastside Recharge Basins (Goal: Raise groundwater levels in the central and/or southern Eastside and 180/400 Subbasins)**

Surface water is diverted near the Castroville Canal Intake and conveyed to recharge basins in the central Eastside Subbasin. Scenarios ranging from 50 to 400 cfs were evaluated. This concept provides the broadest and most cost effective groundwater benefits, significantly reducing the percentage of Eastside wells below SGMA minimum thresholds (from 62% under baseline conditions to as low as 14% in the largest scenario). However, higher volume scenarios require substantial land area, and the groundwater impacts should be investigated further.

**Northern Eastside Injection (Goal: Raise groundwater levels in the northern Eastside Subbasin)**

Diverted water is stored in a new surface reservoir (Merritt Lake or a Gabilan Range site), treated to drinking water standards, and injected into the northern Eastside Subbasin. This approach is well suited to areas where shallow clays limit recharge basin effectiveness; however, significant field investigations would be needed to identify suitable specific sites. Injection scenarios (50 and 100 cfs) provide targeted groundwater level increases but are more costly per acre foot and do not fully eliminate undesirable results by the SGMA deadlines.

**Coastal Injection (Goal: Stop seawater intrusion)**

A 50 cfs diversion upstream of the existing Salinas River Diversion Facility conveys water to Merritt Lake for storage, treatment, and injection into the 400 Foot Aquifer near the seawater intrusion front. Modeling indicates this concept only minimally slows the progression of seawater intrusion and modestly raises groundwater levels; benefits are limited by diversion and storage constraints.

1. **New Seawater Intrusion Project (NSIP) (Goal: Raise groundwater levels in the Deep Aquifers and seawater intruded area)**
   This concept builds on ongoing NSIP planning and uses Permit 11043 water to provide treated surface water directly to agricultural users in the Deep Aquifers and seawater intruded area, reducing groundwater pumping. While this approach reduces groundwater extraction and raises groundwater levels substantially, its seawater intrusion benefits are minimal. The project affects seawater intrusion compared to baseline conditions, but does not stop or push it back.

Table 1 below shows a comparison of the project scenarios.

Table ES-1. Comparison of Project Concepts

| Project Concept | Diversion Size | Diversion Capacity Modeled | Primary Groundwater Goal | Storage and Treatment Required | Primary Benefits | Key Limitations / Constraints | Relative Cost |
|---|---|---|---|---|---|---|---|
| **Eastside Recharge Basins** | 400 cfs | 25,800 AFY | Raise groundwater levels in central Eastside and/or 180/400 Subbasin | Recharge basins serve as immediate storage prior to underground storage. Treatment for sediment only. | Largest area-wide groundwater level benefit; substantial reduction in MT exceedances | Limited effectiveness in northern Eastside; requires large land footprint | **Lowest** |
| | 200 cfs | 17,200 AFY | | | | | |
| | 100 cfs | 9,700 AFY | | | | | |
| | 50 cfs | 5,100 AFY | | | | | |
| **Northern Eastside Injection** | 100 cfs | 9,700 AFY | Raise groundwater levels in northern Eastside, and potentially southern Langley Subbasin | Surface storage in Merritt Lake or Gabilan range reservoir. Treatment to drinking water standards. | Targeted groundwater level improvements near groundwater depression; benefits extend to adjacent subbasins | Higher cost; relies on treatment and extensive distribution; does not eliminate Groundwater Level undesirable results | **High** |
| | 50 cfs | 5,100 AFY | | | | | |
| **Coastal Injection** | 50 cfs | 5,100 AFY | Reduce seawater intrusion in 400-Foot Aquifer | Merritt Lake. Treatment to drinking water standards. | Moderates seawater intrusion rate over time; raises groundwater levels benefit is more localized near coast | Storage constraint limits volume and effectiveness with respect to seawater intrusion isocontour | **Moderate–High** |
| **NSIP Direct Delivery** | 100 cfs, plus other source waters | 9,700 AFY diverted under Permit 11043, plus other sources for a total average supply of 25,100 AFY | Raise groundwater levels in Deep Aquifers and seawater-intruded areas | Merritt Lake (insufficient for full use). Treatment to drinking water standards? | Reduces groundwater extraction; supports agricultural users directly | Storage constraint; requires major distribution system; feasibility dependent on NSIP and treatment design; has little effect on seawater intrusion | **High** |

## Costs, Permitting, and Tradeoffs

All project concepts involve substantial capital investment and complex permitting. Preliminary (Class 5) cost estimates range from approximately $140 million to over $1 billion, with unit costs lowest for recharge basin alternatives and highest for injection based projects. All concepts would require federal and state permits, including Clean Water Act Section 404 authorization, Endangered Species Act consultation, state endangered species approvals, water quality permits, and, where applicable, dam safety approvals. Permitting complexity and risk increase with diversion capacity, reservoir construction, and groundwater injection.

## Key Findings and Path Forward

The C&E Study demonstrates that diversion of excess Salinas River water, when paired with storage and recharge or injection, can meaningfully contribute to SGMA groundwater goals. Among the concepts evaluated, the Eastside Recharge Basins provide the most cost effective and geographically widespread groundwater benefits, while injection based projects offer targeted solutions where surficial recharge is not feasible. No single project is sufficient on its own to fully resolve all groundwater challenges; diversion projects would need to be implemented in coordination with demand management and other GSP actions.

The Study provides a technical and regulatory foundation to inform if further studies should be pursued and identifies clear tradeoffs among cost, benefit, feasibility, and risk. If one or more concepts are chosen to proceed with further scoping, next steps would include refining project sizing and siting, pursuing water right amendments, initiating environmental review, and coordinating with stakeholders and resource agencies to align project development with SGMA timelines.

# 1 INTRODUCTION

In 2025, the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) initiated the Castroville & Eastside Canals and Alternatives Preliminary Feasibility Study (C&E Study, or Study) to evaluate surface water diversion opportunities from the Salinas River that could support implementation of the Sustainable Groundwater Management Act (SGMA). The work is funded through the Department of Water Resources Sustainable Groundwater Management (SGM) Implementation Grant and is being conducted collaboratively with the Monterey County Water Resources Agency (MCWRA).

Seawater intrusion in the Salinas Valley—first documented in 1946—was linked to groundwater elevations falling below sea level in the northern portions of the Valley. Since then, MCWRA has implemented several major initiatives to address seawater intrusion and mitigate groundwater overdraft. These efforts include the construction of the Nacimiento and San Antonio Reservoirs to support flood control and groundwater recharge, the development of the Castroville Seawater Intrusion Project (CSIP) to supply alternative water to impacted areas, and the completion of the Salinas Valley Water Project (SVWP), which enhances surface water contributions to CSIP and increases recharge throughout the Valley.

While these projects have helped slow the progression of seawater intrusion and improve groundwater conditions, parts of the Salinas Valley continue to experience declining groundwater elevations in the coastal area, Eastside Subbasin, and elsewhere, as well as further seawater intrusion. To comply and maintain local control under SGMA, groundwater must be managed sustainably by 2040 for the 180/400-Foot Aquifer (180/400) Subbasin or by 2042 for the Eastside Aquifer Subbasin and other medium and high-priority subbasins in Salinas Valley.

Diversion of available Salinas River water could capture water that would otherwise flow to the ocean and provide additional water 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. Numerous previous studies have proposed river diversions through this Permit or other means.

This C&E Study advanced scoping of a potential river diversion project by conducting a thorough review of the water rights options, historical documents, and infrastructure options, and using the results to develop 4 project concepts: 1 for each of the 4 groundwater goals identified by SVBGSA. If any of these river diversion projects are constructed, diverted flows could partially contribute to the solution for 1 or more of the groundwater goals. This report summarizes the 4 project concepts through which the Permit could be used, outlines 8 project scenarios, conducts preliminary feasibility of the most viable concepts, and highlights tradeoffs and considerations of each.

SVBGSA retained a team of consultants for the C&E Study. Each member of the team has specialized expertise relevant to the study and has provided water resources consulting services to the Agencies in the past and contributed to the content of this report. The team includes:

- **Montgomery & Associates (M&A)** – M&A is the lead consultant providing hydrogeology and water resource services for the Study.
- **Wallace Group (WG)** – WG is providing engineering services for the Study as a subconsultant to M&A.
- **MBK Engineers (MBK)** – MBK is providing water rights expertise for the Study under contracts to the SVBGSA and MCWRA.
- **Denise Duffy & Associates, Inc. (DD&A)** – DD&A is providing environmental permitting services for the Study as a subconsultant to M&A.

This report is jointly developed by all team members to summarize all work conducted for the C&E Study. It was completed jointly with SVBGSA and MCWRA staff to ensure consistency with agency priorities.

# 2 BACKGROUND AND CONTEXT

While the Salinas Valley Basin has a long history of groundwater management, additional actions are necessary to eliminate overdraft in several of its subbasins and address seawater intrusion. The purpose of these additional projects and management actions is to ensure groundwater resources are sustainable for long-term community, economic, and environmental benefits and to avoid undesirable effects like lasting groundwater level declines, loss of groundwater storage, and groundwater quality degradation, including seawater intrusion.

Over 95% of water used within the Salinas Valley is sourced from managed groundwater resources, providing for domestic, agricultural, and other beneficial uses. Reservoirs in the Salinas Valley are managed by the MCWRA in part to contribute to groundwater recharge. Agriculture in Salinas Valley heavily relies on groundwater, attributing to about 90% of the extractions in the basin. Agriculture provides 1 in 5 jobs in Monterey County and is important nationally in growing a diverse selection of produce. Groundwater extraction has been the primary source of water for the Salinas Valley for over 150 years.

The 2 shallowest aquifers by the coast, the 180-Foot and 400-Foot Aquifers, have direct connectivity with the Pacific Ocean, providing a pathway for seawater intrusion. Seawater intrusion into the 180-Foot and 400-Foot Aquifers occurs due to groundwater levels chronically below sea level. The Deep Aquifers are also directly connected with the Pacific Ocean, and though they have not been impacted by seawater intrusion to date, they are at risk of degradation. Over many decades, MCWRA has studied and implemented several projects to slow the progression of seawater intrusion and provide in-lieu water supplies for use instead of groundwater.

Groundwater elevation contour maps document a landward groundwater gradient in the 180-Foot and 400-Foot Aquifers from the coast toward the City of Salinas and the Gabilan Mountain Range, with seawater intrusion reported since the 1940s. A prominent and persistent groundwater characteristic in the Eastside Aquifer (Eastside) Subbasin is the large groundwater depression referred to as the Eastside trough. Groundwater levels east of the seawater intrusion front remain below sea level, including in portions of the shallow and deeper zones of the aquifer in the Eastside Subbasin.

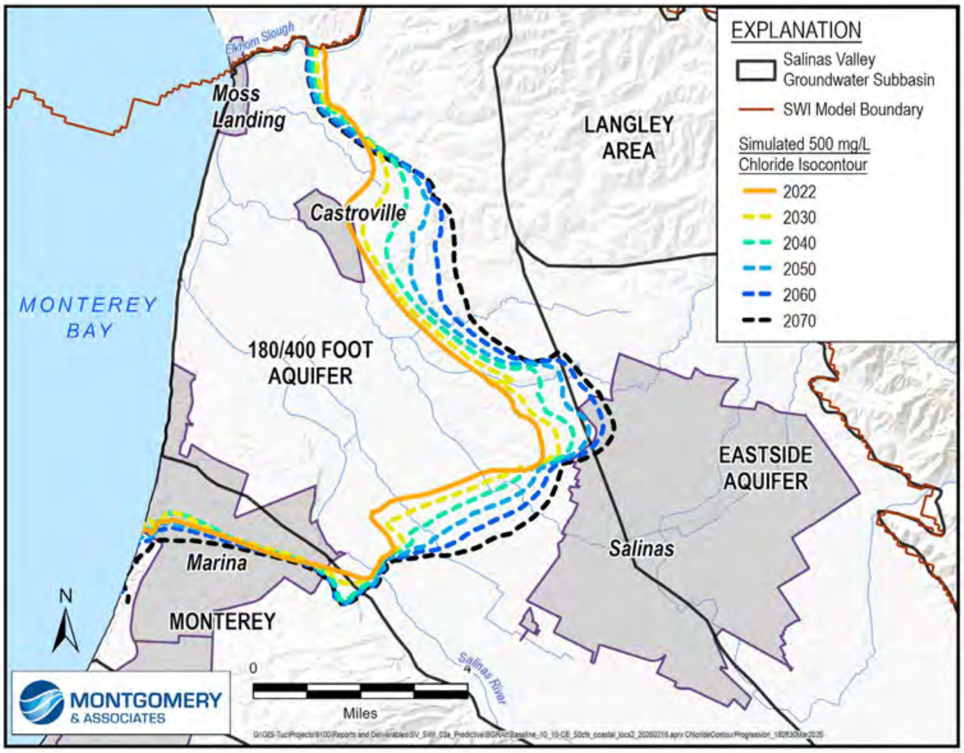
MCWRA owns and operates Nacimiento and San Antonio Reservoirs, which release water into the Salinas River for beneficial uses. In addition, since 1998, MCWRA and Monterey One Water (M1W) have cooperated to implement the Monterey County Water Recycling Projects. This includes the Salinas Valley Reclamation Project (SVRP), which provides tertiary treatment of municipal wastewater and delivers it to CSIP to augment groundwater supplies for agricultural irrigation on about 12,000 acres in the seawater intruded area near Castroville. In 2010, MCWRA began to operate the Salinas River Diversion Facility (SRDF) to add treated surface water to the CSIP water supply. This was done as part of the Salinas Valley Water Project, which resulted in reoperation of the reservoirs to release additional stored water during the summer when it is needed for irrigation. MCWRA operates the reservoirs for multiple purposes including recharge of the Salinas Valley groundwater basin, re-diversion of surface water at the SRDF, recreational use at the reservoirs, and incidental power generation. Reservoir operations also consider flood control and environmental considerations such as fish and wildlife habitat and migration. MCWRA is currently developing the Salinas River Operations Habitat Conservation Plan (SROHCP) to obtain federal Endangered Species Act (ESA) permits for its water management activities.

To date, no supplemental supply projects have been implemented by the agencies to specifically address declining groundwater levels in the Eastside Subbasin. While investments in the existing supplemental supply projects have slowed the rate of seawater intrusion, they have not fully addressed the problem. Groundwater elevations remain below sea level and have continued to decline. Landward sloping groundwater level gradients have increased during recent periods of drought. Following the 2014-2016 drought, MCWRA identified new islands of seawater intrusion in the 400-Foot Aquifer, prompting new investigations for actions to slow or halt the advancement of seawater intrusion in this principal aquifer.

Groundwater modeling of projected future conditions was completed to understand likely future conditions if no additional projects or management actions are pursued. As shown on Figure 1, seawater intrusion modeling of these baseline conditions shows that seawater will likely advance inland into the City of Salinas. This will compromise both agricultural and urban water supplies from Salinas to the coast. Continued groundwater extraction within and nearby the seawater intruded area, including in the CSIP supplemental wells, is projected to be impacted by increasing chloride concentrations over time. As seawater intrusion has advanced over the last couple of decades, new wells have been drilled into the Deep Aquifers underlying the 180-Foot and 400-Foot Aquifers for a replacement supply. However, the Deep Aquifers are also overdrafted given that recharge does not occur on a usable timescale and therefore they are not considered a sustainable new source of water supply. Declining groundwater elevations and loss of storage increase the risk of seawater intrusion or subsidence in the Deep Aquifers.

Similar future baseline groundwater modeling of the entire Salinas Valley shows declining groundwater levels in the Eastside, Langley, northern 180/400, and Corral de Tierra Area of the Monterey Subbasin, which will threaten domestic and drinking water system wells. The Salinas Valley Aquitard and shallow clays inhibit direct recharge of surface water to depths within the 180/400 and Eastside Subbasins where groundwater extraction occurs. Figure 2 shows anticipated groundwater level change during a representative future period, and indicates that historical groundwater level declines continue in the northern subbasins. Average annual declines are much smaller in the southern subbasins; however, they experience steep declines during droughts.

Actions will be needed to ensure the long-term viability of current and future water supplies, especially within areas considered to be vulnerable due to the presence of pathways and conduits for seawater intrusion and overdrafted Eastside Subbasin. As required by the State of California, SVBGSA has prepared Groundwater Sustainability Plans (GSPs) that lay out potential projects, including the concept of a river diversion project evaluated in this report, with the goal of addressing these problems and managing groundwater sustainably. While the GSPs were developed based on existing studies and potential projects identified, the C&E Study deepened this analysis by conducting a thorough review of historical documents. The historical review found that most project concepts focused on diverting water for use in the areas of overdraft, outlined the benefit of seasonal storage, and identified the need for demand management. However, earlier concepts did not account for subsequently built infrastructure, nor current regulatory and environmental requirements. The C&E Study provides the necessary framework to modernize and adapt these earlier ideas into feasible, actionable projects as outlined in the following sections.



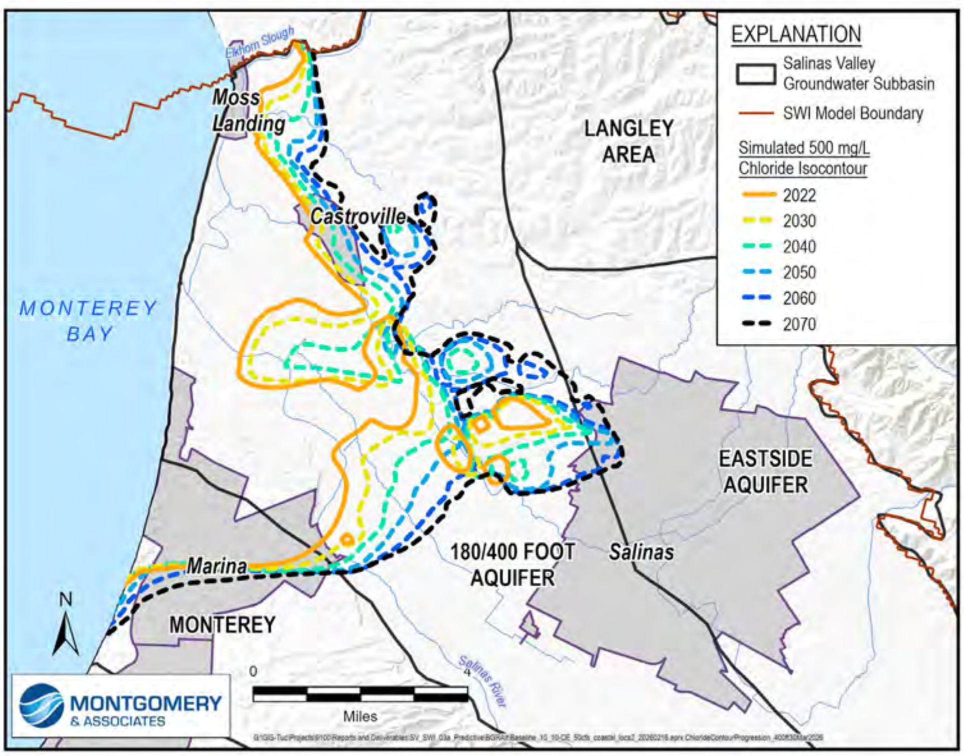




Figure 1. Anticipated Progression of Simulated Seawater Intrusion under the Baseline Scenario (Status Quo)

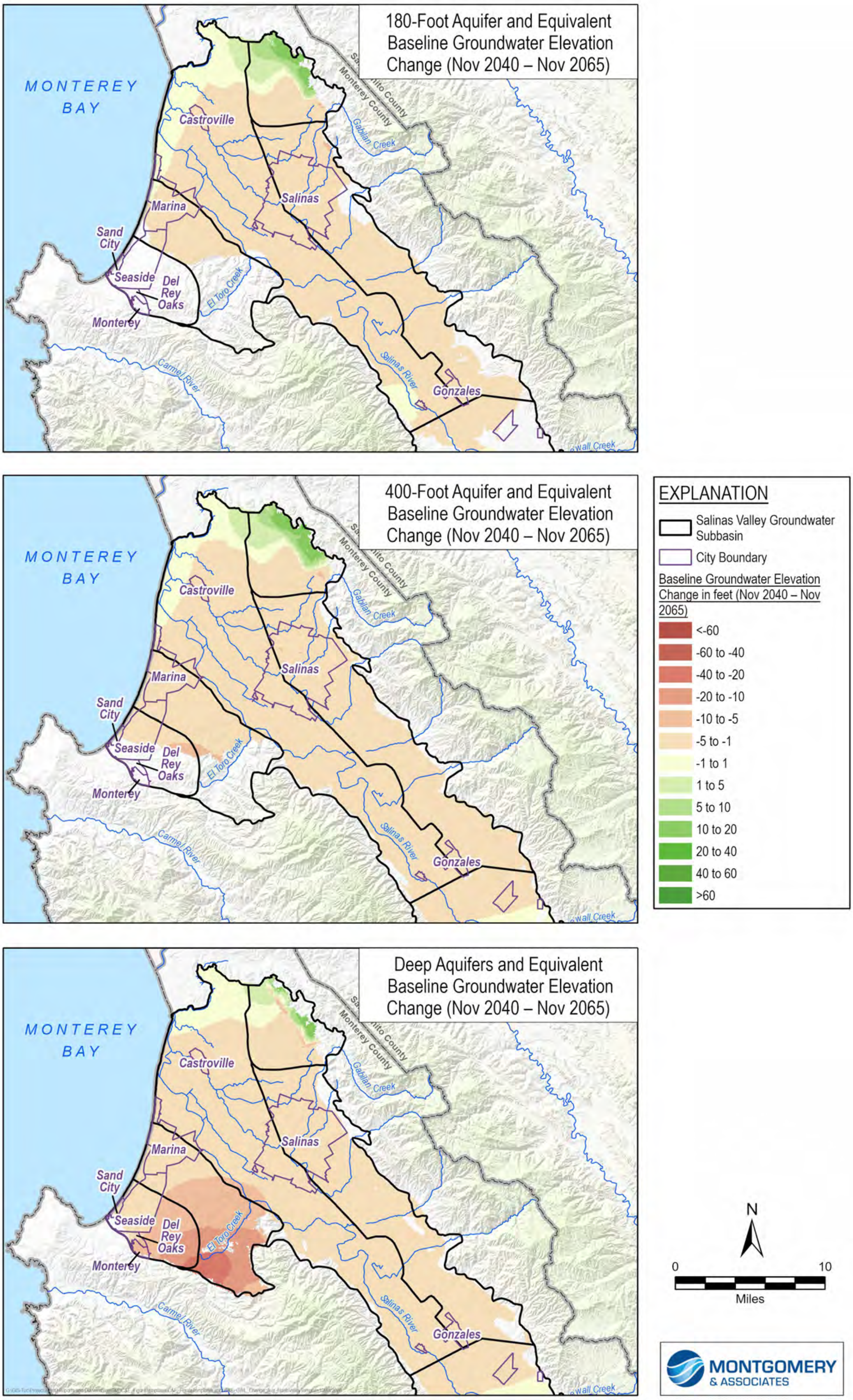



Figure 2. Anticipated Simulated Groundwater Level Change under the Baseline Scenario (Status Quo)

# 3 PURPOSE AND APPROACH

SVBGSA and MCWRA prioritized the C&E Study, acknowledging the groundwater sustainability challenges faced in the Salinas Valley and potential opportunity of excess Salinas River flows and Permit 11043 to address 4 of the key groundwater goals.

## 3.1 C&E Study Purpose

The 2 main purposes of this C&E Study are to:

- Support MCWRA in its use of Permit 11043 for beneficial use
- Understand river diversion project options—including Permit 11043—for achieving groundwater sustainability in the Salinas Valley

Permit 11043 was issued in 1957; however, no water has been diverted or used pursuant to the Permit. SGMA brought a renewed interest in the Permit given the new regulatory requirement to address groundwater conditions, and this study reviews its potential use in this context. It focuses on developing river diversion project concepts that would help meet SGMA goals, including putting the Permit to beneficial use, which would support the eventual use of the water right. Amendments to previously filed petitions are likely needed; additional amendments will also be needed if a project scenario adds parameters not currently defined in the Permit, such as storage. Ultimately, these proactive project concepts that address how the Permit could be used provide the foundation required to transform this long-standing water right into a functional asset for the Salinas Valley.

SGMA 2040/2042 deadlines for sustainable groundwater management are quickly approaching. If relying on new infrastructure projects, the planning, design, permitting, and construction take several years to complete, and after a project becomes operational, it may take years for groundwater conditions to respond and even longer to improve to a level that compensates for the prior decades of overdraft and seawater intrusion.

## 3.2 Groundwater Sustainability Goals for C&E Study

The GSPs for each of the 6 subbasins in the Salinas Valley outlines goals according to the 6 SGMA sustainability indicators and conceptual projects and management actions that could be developed to achieve these goals. As noted above, seawater intrusion and chronic lowering of groundwater levels are pressing challenges that have continued since GSP submittals.

Diverting surface water from the Salinas River pursuant to Permit 11043 was identified as a conceptual project in the 180/400, Eastside, and Langley Subbasin GSPs. This study expanded those scopes to consider other water rights options to divert excess Salinas River flow.

SVBGSA prioritized 4 groundwater goals for development of project scenarios under the C&E Study:

- Raise groundwater levels in the central and/or southern portions of the Eastside Subbasin and/or the180/400 Subbasin
- Raise groundwater levels in the northern Eastside Subbasin, and potentially the southern Langley Subbasin
- Stop seawater intrusion
- Raise groundwater levels in the Deep Aquifers and seawater intruded area

The C&E Study identifies realistic Salinas River diversion concepts designed to address 4 specific groundwater sustainability goals. While the scale of these project concepts varies, each is capable of partially or fully meeting one or more of these goals. Key considerations for development of project concepts included SGMA compliance deadlines and estimated timelines for obtaining water right permits or changes. Because seasonal river flows often do not align with periods of peak groundwater demand, storage was considered an essential component of every project concept. Given that the primary groundwater goals are situated in the northern Salinas Valley, the study prioritized projects with point(s) of diversion at the Castroville Canal Intake or further downstream over the Eastside Canal Intake. By focusing the analysis in these ways, the study establishes a practical roadmap for evaluating the most feasible diversion projects moving forward.

## 3.3 C&E Study Approach

The C&E Study was conducted as 2 phases. Phase 1 included a comprehensive review of earlier water resource studies, the Permit status and conditions, and historical Salinas River flow conditions. Based on those analyses, Phase 1 identified project components and provided a basis for Phase 2. Phase 2 evaluated and refined the analysis, resulting in 4 project concepts and a total of 8 scenarios for further evaluation. This report summarizes the findings from both phases and includes attachments with more detailed analyses.

The project team completed interrelated, and often iterative, workstreams on the following:

- **Water Right Evaluation:** Reviewing the Permit to: 1) understand its history, status, conditions, and limitations; 2) outline the process to use and modify the Permit; and 3) identify other water rights options.
- **Potential Diversion Rates:** Analyzing historical Salinas River flow data, reservoir release data, and Permit conditions to estimate the approximate timing and amount of surface water that likely could be diverted. This includes calculating the maximum quantity of water that could have been diverted from the River under the Permit historically and estimating future potential flow using a surface water-groundwater model.
- **Project Scenarios:** Identifying conceptual project components, component methods, and potential end-uses and users. Evaluation of these components, infrastructure constraints, and groundwater conditions led to the development of project scenarios for each of the 4 groundwater goals.
- **Effect on Groundwater Conditions:** Using groundwater models to assess general project locations, sizes, and effect on groundwater conditions.
- **Cost Estimates:** Estimating the project cost of each scenario.
- **Permitting and Other Considerations:** Outlining the permitting requirements and other aspects of feasibility that may be informative to the agencies in determining whether to advance the scoping of any of the project scenarios after completion of the study.

## 3.4 Report Organization

The remaining portions of this report are organized as follows:

- Section 4 provides an overview of the Permit and alternative water rights options. This summarizes Appendices A and B, which include the 2 reports prepared by MBK related to the Permit.
- Section 5 provides the key findings from the historical Salinas River flow analysis and potential diversion rates based on projected surface water-groundwater modeling. More detailed information from the analysis can be found in the Appendix A technical memorandum prepared by M&A.
- Section 6 provides discussion of component considerations and trade-offs. Building on their review of historical documents and using their engineering expertise, Wallace Group initiated this analysis under Phase 1 and then identified recommended approaches for each scenario in Phase 2.

- Section 7 provides a summary of the 4 project scenarios. This integrates the engineering layout, groundwater modeling, cost estimate, and permitting considerations for each scenario.
- Section 8 summarizes the scenarios, higher level conclusions, and next steps.

# 4 OVERVIEW OF PERMIT 11043 AND OTHER SALINAS RIVER WATER RIGHT ALTERNATIVES

Water rights options for diversion and use of water from the Salinas River and/or its tributaries were identified and evaluated, including under existing water rights held by MCWRA. This focused on the relevant history of Permit 11043 based on a review of the State Water Resources Control Board's (SWRCB) files. The analysis also extended to other potential water right approaches. More details can be found in (1) Appendix B. History of Water Rights – A013225 (Permit 11043), A032263C, A032263D, and A032263E and (2) Appendix C. Evaluation of Salinas River Water Rights and Alternatives.

## 4.1 Permit 11043 History

In 1949, MCWRA submitted applications with the SWRCB for year-round direct diversion of 400 cubic feet per second (cfs) from the Salinas River for municipal and irrigation purposes. Permit 11043 (A013225) and Permit 11044 (A013226) were issued in 1957. Over the years, no water was diverted or used pursuant to these permits, and MCWRA filed many Petitions for Extension of Time. Several SWRCB Orders acted on the various petitions, and a few hearings on proposed revocation were conducted.

An amended permit was issued in 1982 to accommodate the Arroyo Seco Dam Project, which combined the 2 permits and set a maximum amount of 168,538 AF to be diverted each year. After the issuance of the amended permit, there was significant local opposition to the Arroyo Seco Dam Project which complicated the schedule and requirements defined in amended Permit 11043 (A013225). Various Petitions for Extension of Time and Petitions for Change were submitted in the following years, many without subsequent SWRCB Orders. Therefore, the terms of the amended permit relative to the Arroyo Seco Dam Project were never removed.

In 2013, MCWRA and the SWRCB entered into a Settlement Agreement to withdraw another SWRCB Notice of Proposed Revocation and make modifications to Permit 11043, including setting milestones for the development of a project that would use Permit 11043, which was referred to as Phase II of the Salinas Valley Water Project. The Settlement Agreement also decreased the face value of the Permit to 135,000 AF and added diversion bypass flow requirements. Permit 11043, as amended by Order 2013-0030-EXEC, is the current version of Permit 11043 (A013225).

In 2013 and 2015, MCWRA filed Petitions for Extension of Time. At the SWRCB's recommendation, in 2016 MCWRA then filed a Petition for Change and a letter to extend milestones and dates. If approved, the milestone date to complete construction would be extended from July 1, 2026, to July 1, 2030, and the date to complete application of water to beneficial use would be extended from December 1, 2008, to December 31, 2040. There has been no action on these petitions by the SWRCB.

## 4.2 Current Permit Conditions

The water right has on a priority date of July 11, 1949. The Permit authorizes direct diversion from the Salinas River at a maximum rate of 400 cfs, with an annual diversion limit of 135,000 acre-feet (AF). The Permit identifies irrigation and municipal as purposes of use. Diversions are authorized at 2 points of diversion: the Eastside Canal Intake, located approximately 3 miles southeast of Soledad; and the Castroville Canal Intake, located approximately halfway between the community of Spreckels and Spence Road,[1] south of Salinas and north of Chualar. Figure 3 shows a map of the Permit point of diversion locations and United States Geological Survey (USGS) surface water flow gages on the Salinas and Arroyo Seco Rivers, as well as the location of the SRDF for reference.

The Permit includes diversion bypass flow requirements. Diversions under the Permit may occur only when the natural flow of the Salinas River at the Eastside Canal Intake exceeds specified monthly thresholds. Natural flow is defined as the 3-day running average of flow at the Soledad gage, reduced by releases from Nacimiento and San Antonio Reservoirs. Required diversion bypass flows range from 2.64 cfs in December to 24.02 cfs in July.

The Permit currently also includes several development milestones, including those related to construction and complete application of the diverted water to the authorized beneficial uses. In addition, the Permit includes a term that requires the formation of an assessment district and submission of loan applications relative to a prior version of the project. Another Permit term provides that the permit stands revoked if MCWRA fails to meet any of these milestones unless MCWRA petitions for an extension before the applicable date and the SWRCB determines that good cause exists. With no action taken by SWRCB on the Petitions for Extensions of Time and Petition for Change submitted in 2013, 2015, and 2016, the development milestones in the 1980's-2008 remain part of the current Permit conditions.

[1] The coordinates defined in the water right permit indicate a location approximately 1,200 feet north of the riverbank.

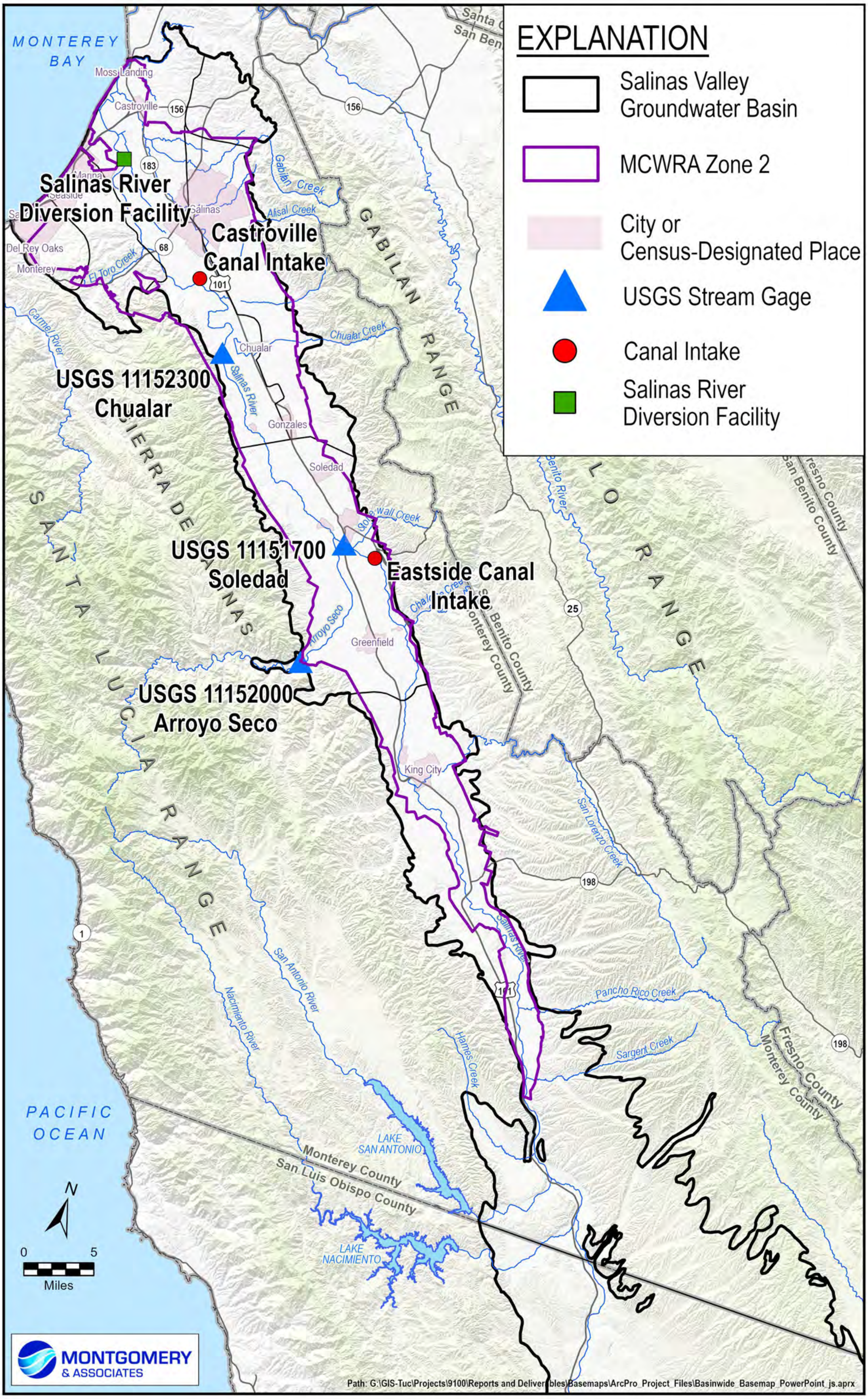



Figure 3. Map of Permit 11043 Diversion Locations and USGS Surface Water Flow Gage

The current Permit conditions are summarized below.

**Priority Date**: July 11, 1949
**Permit Issuance Date**: November 20, 1957
**Source**: Salinas River
**Water Right Type**: Direct Diversion
**Rate**: 400 cfs
**Quantity**: 135,000 AF
**Purpose of Use**: Irrigation, Municipal
**Point of Diversion**:

Eastside Canal Intake - NW1/4 of SW1/4 of Projected S36, Tl7S, R6E, MDBM
Castroville Canal Intake - NW1/4 of NE1/4 of Projected Section 23, T15S, R3E

**Places of Use**:

Irrigation - 86,500 net acres within a gross of 107,000 acres within portions of Zone 2 of the Monterey County Water Resources Agency
Municipal - Within portions of Zone 2 of the Monterey County Water Resources Agency

Box 1. Permit 11043 Terms

## 4.1 Processes to Use and Modify Permit

The SWRCB has not publicly noticed the Petition for Extension of Time and Petition for Change submitted by MCWRA on Permit 11043. Prior to public notice, there may be an opportunity to request changes to the existing petitions to update them based on changed circumstances.

Water right permits issued by the SWRCB define points of diversion, places of use, and purposes of use, but in most cases do not define the infrastructure used to move the water from the point of diversion to the place of use. Therefore, using Permit 11043 for the project currently defined in the permit would limit the project to immediate irrigation and municipal use within portions of Zone 2 of the MCWRA service area.

The most current version of amended Permit 11043 includes multiple terms and limitations, including bypass flow requirements, for which legal counsel should be consulted. Amendments to the previously filed petitions are likely needed, and additional amendments will also be needed if the MCWRA and SVBGSA are to proceed with a project that does not fit within the parameters currently defined in Permit 11043 (e.g., to add storage). Legal counsel should be consulted regarding any amendments.

## 4.2 Other Water Rights Options

If the existing permit cannot be used for a proposed project, a new water right would be needed for surface water diversions. Applying for and obtaining a standard permit with the SWRCB is complicated, time-consuming, and expensive. Applying for and obtaining a temporary permit for groundwater recharge would be a faster process. However, temporary permits are not water rights and are only a conditional approval to divert and use available water that has not been claimed by a water right holder. For both standard and temporary permits, there is a streamlined process for groundwater recharge projects. However, temporary permits are usually obtained for existing facilities or temporary installations; therefore, the approval would not be guaranteed prior to construction of a diversion facility. These would use either the 90/20 Method or Threat of Flood Conditions Method, which would limit diversions to the wettest of times.

## 4.3 Focus on Modification of Permit 11043 for Project Concepts

Project concepts were developed with a focus on modifying the existing Permit to include storage, and potentially other modifications. A new water right would be last in priority, limiting surface water availability to large and infrequent events. In addition, the acquisition timeline and uncertainty around acquiring a new or temporary water right does not align with SGMA deadlines. Therefore, while the use of the existing Permit and modifications of the Permit requires a complex process, it is the most achievable strategy to develop a project to address the groundwater goals.

# 5 AMOUNT AND TIMING OF SALINAS RIVER WATER AVAILABLE FOR DIVERSION

To understand the amount and timing of Salinas River flow that could be diverted pursuant to Permit 11043, the historical and projected Salinas River flows were analyzed. Historical flows were analyzed in 2 ways: 1) considering total reservoir releases from the reservoirs and 2) refined to assess flood control releases. During much of the historical period, reservoir operations were not subject to the same environmental flow and other current requirements of the Salinas Valley Water Project and Nacimiento Dam Operation Policy. Therefore, in addition to the historical analysis, projected Salinas River flows were modeled with current reservoir operational rules and anticipated future environmental flow requirements and evaluated based on the terms and conditions of the Permit. These analyses are not intended to yield precise estimates but rather estimate the timing and general magnitude of flows that could be diverted under the Permit.

## 5.1 Permit Conditions Used in Analyses

The historical and projected analyses of Salinas River flows applied specific conditions from Permit 11043 to determine when diversion was permissible:

- Maximum Diversion Limits - Diversion rates were limited to an instantaneous rate of 400 cfs and a cumulative total of 135,000 acre-feet per year (AFY).
- Natural Flow Condition - Diversion was only allowed when the flow recorded at the Soledad gage was greater than the total releases from the Nacimiento and San Antonio reservoirs (defined as "natural flow"). The refined analysis also subtracts flood control releases from the total releases.
- Minimum Monthly Natural Flow Requirement - The 3-day running average of natural flow at the Soledad gage had to be greater than specified minimum monthly natural flow rates, which vary by month (e.g., 2.64 cfs in December to 24.02 cfs in July).

When the minimum monthly natural flow requirements were met at Soledad gage, the flow above that amount was designated as "excess flow." Only excess flow can be diverted under the Permit. For the historical flow analysis, excess flow at the Chualar gage was calculated as the difference between the 3-day average of natural flow at the Chualar gage and the minimum flow requirement at the Soledad gage, accounting for additional watershed flows between the gages. For the study, it was assumed that diversion would occur at only 1 of the 2 permitted diversion locations.

## 5.2 Historical Flow Analysis

For the historical analysis, daily average Salinas River flow data were obtained from the USGS surface water monitoring gage near Soledad (USGS gage No. 11151700) and near Chualar (USGS gage No. 11152300). The gage locations were used as approximations for the Eastside Canal Intake and Castroville Canal Intake points of diversion, respectively. Daily total reservoir release data from the Nacimiento and San Antonio Reservoirs were obtained from MCWRA (MCWRA, 2025). The water year type was based on the flow data from the USGS Arroyo Seco gage No. 11152000 using unimpaired average annual flow rates (MCWRA, 2018).

The analysis first evaluated Salinas River flows from Water Years (WY) 1969 through 2024. Much of this timeframe predates key regulatory and operational changes, including the 2007 National Marine Fisheries Service's Biological Opinion for construction of the Salinas River Diversion Facility, the 2010 Salinas Valley Water Project, the adoption of the Nacimiento Dam Operation Policy, and the Interim Operations Plan. Therefore, a focused evaluation of WY 2000 through WY 2024 was conducted to better reflect current reservoir operating rules. This more recent period reflects current operating rules for most of the years (over half) and features lower average flow rates, providing a more conservative estimate of available water.

Key findings for the recent period that guided the development of project concepts include:

- Diversion Timing - Diversion of excess flow from the Salinas River could have occurred primarily from January through April, aligning with the typical wet season in the Salinas Valley. During this period, when most of the water could have been diverted, a diversion facility would have typically operated less than 40% of the time due to Permit conditions, specifically the 3-day average diversion bypass flow requirement. If diversions were only made during these months, diversion would occur less than 15% of the year.

- Average Annual Diversion Volumes - On average, a diversion on the Salinas River could have diverted approximately 1,100 to 31,700 AFY, depending on diversion sizes ranging from 10 to 400 cfs. The largest diversion of 400 cfs would, on average, divert less than 25% of the total annual permitted amount of 135,000 AF. For comparison of diversion sizes, the Salinas River Diversion Facility has a maximum diversion capacity of 36 cfs.

- Impact of Water Year Type on Operations - Diversion operations would have varied significantly with the water year type. Wet years could result in nearly continuous diversion from January through April, enabling a diversion to operate an average of 110 to 132 days per year (at Chualar and Soledad respectively). In contrast, dry years would result in little to no diversion, with operations as few as 9 to 22 days per year, and some dry years having no active diversions.

When comparing diversion locations, the results indicate that for diversion sizes larger than 200 cfs, the average annual amount of water that could be diverted from the Castroville Canal Intake could be greater than the Eastside Canal Intake – more than 4,000 AF greater for a 400 cfs diversion. This difference is attributed to tributary flow from the Arroyo Seco watershed, which enters the Salinas River downstream of the Soledad gage and is accounted for at the Chualar gage.

These estimates provided insight into the potential project sizes and the volume and frequency of diverted flows; however, results are influenced by the hydrology of the years analyzed. Therefore, this assessment was not intended to yield precise estimates, but rather to offer a general understanding of the timing and an upper bound of the magnitude of potential diversions pursuant to the Permit.

The historical flows analysis is included in more detail in Appendix D.

## 5.3 Refined Analysis to Assess Flood Control Releases

MCWRA independently evaluated the amount of Salinas River flow that could have been diverted under Permit 11043 at the Eastside Canal Intake during WY 2010 through 2024 using reservoir release records in combination with daily flow at the USGS Soledad gage. As a refinement to the "total reservoir release" approach used in the historical analysis, MCWRA distinguished reservoir releases by purpose—specifically separating environmental and conservation releases from flood-control releases. The rationale for this is that flood-control releases associated with water stored less than 30 days should be considered potentially available for diversion under the Permit, whereas environmental and conservation releases are treated as releases that must be bypassed when determining natural flow.

In implementing this refinement, MCWRA (1) compiled daily environmental and conservation releases into a total bypass release rate; (2) compared Soledad gage flows to reservoir releases and computed the Permit-required 3-day running average; (3) incorporated flood-control releases into the evaluation of days when "natural flow" exists at Soledad; and (4) identified days when the 3-day average natural flow exceeded the Permit's minimum monthly natural flow thresholds, i.e., when "excess flow" would be available for diversion.

Both historical analyses relied on the same underlying Soledad flow and reservoir release datasets, with the primary differences limited to Permit interpretation details (e.g., the sequencing of the 3-day averaging relative to subtracting releases and the treatment of flood-control releases). As summarized in Table 1, both analyses produced similar estimates of average monthly and annual divertible volumes. Including flood control releases did not meaningfully increase the estimated divertible water because such releases were infrequent during the evaluation period and generally occurred under wet conditions, when river flows already exceeded the Permit's diversion limit of 400 cfs. The lower average annual total shown in Table 1, compared to the recent-period average, reflects differences in the years included in each analysis.

Table 2. Comparison of Average Monthly Diversion Amounts
for Historical Flow Analysis and Refined Analysis to Assess Flood Control Releases

| Month | Average for WY 2010-2024 at Soledad Gage | |
|---|---|---|
| | Historical Flow Analysis (AF) | Flood Control Assessment (AF) |
| Oct | 74 | 167 |
| Nov | 62 | 91 |
| Dec | 506 | 649 |
| Jan | 3,875 | 3,881 |
| Feb | 6,243 | 6,860 |
| Mar | 8,374 | 7,990 |
| Apr | 4,386 | 4,458 |
| May | 702 | 646 |
| Jun | 2 | 5 |
| Jul | 20 | 43 |
| Aug | 3 | - |
| Sep | 108 | 180 |
| **Total Average Annual** | **24,353** | **24,971** |

## 5.4 Projected Flow Analysis

Projected Salinas River flows were modeled with current reservoir operational rules and anticipated future environmental flow requirements. This analysis used the same permit conditions as the historical analysis, together with projected flows from the Salinas Valley Operational Model (SVOM)). Potential diversion amounts were computed at the Castroville Canal Intake location for diversion capacities of 50, 100, 200, and 400 cfs. This differed slightly from the historical analysis, which used flows at the Chualar gage used as a proxy. Diversions were assumed to begin in Water Year 2036 (e.g., beginning in October 2035). Estimated projected diversions are summarized in Table 1 and Figure 1, and further details on the projected analysis can be found in Appendix E.

Diversion opportunities remain concentrated in the wet season and show high year-to-year variability, including years with no diversion and others where increased capacity provides little added benefit due to infrequent flows exceeding flow-past requirements. Projected average annual diversion volumes fall between the 2 historical estimates and are reasonably consistent, supporting the plausibility of the bias-corrected projections despite modest differences in monthly patterns. Increasing diversion capacity yields diminishing returns, with the greatest gains generally occurring at lower capacities and limited additional benefit at higher capacities because qualifying flow conditions are rare. This interannual variability is important for groundwater modeling, where annual and seasonal diversion totals—rather than precise intra-seasonal timing—are most relevant for evaluating long-term recharge benefits.

Table 3. Projected Average Annual Diversions Compared to Historical Annual Diversions

| | **50 cfs capacity (AFY)** | **100 cfs capacity (AFY)** | **200 cfs capacity (AFY)** | **400 cfs capacity (AFY)** |
|---|---|---|---|---|
| WY 2020-2024 Average (Chualar Gage) | 5,300 | 10,000 | 18,200 | 31,700 |
| WY 2010-2024 Average (Chualar Gage) | 4,400 | 8,600 | 16,200 | 29,300 |
| Projected Annual Average (Castroville Canal Intake) | 5,100 | 9,700 | 17,200 | 26,800 |

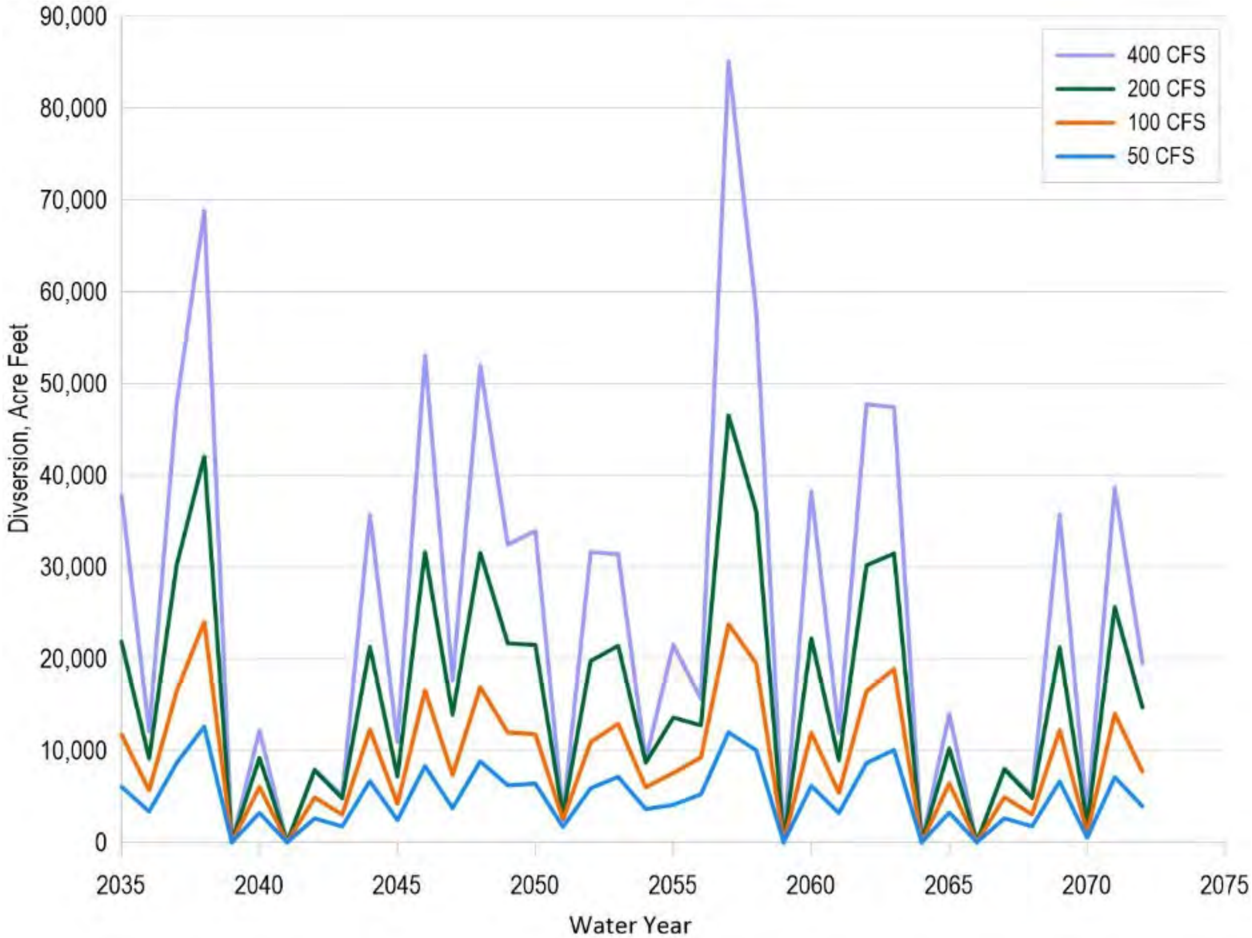



Figure 4. Projected Annual Diversions Under Various Diversion Capacities

## 5.5 Storage Requirements

Flows potentially available for diversion under the Permit occur primarily during the winter, which is not when peak seasonal demand exists. Adding storage would decouple diversion from immediate use, allowing water to be held for summer irrigation or delivered at a steady rate to treatment plant and injection wells for more extended storage. Storage can be provided above-ground in a surface storage reservoir or underground in the groundwater aquifer. However, it should be noted that for project concepts in this study that propose injection to underground storage—and therefore require surface water treatment—some form of surface storage would still be required as a means to regulate flows conveyed to the treatment facilities. Surface storage of diverted flows provides the opportunity for consistent, lower year-round flow rates into treatment facilities that enables design of smaller, more cost-effective treatment facilities. Diversion to recharge basins where water is percolated to underground storage without the need for treatment avoids the need for intermediate surface storage, while still allowing water to be extracted later when irrigation demand is greater.

The volume of water that can be recharged using recharge basins depends on both the infiltration rate and the total infiltrative area of the recharge basins, and must be sized correctly. When treatment and injection is needed prior to underground storage, estimates must factor in the amount of storage that would be required to enable the full use of the river diversion and maintain a feasible operation schedule for a treatment plant. Table 3 shows the treatment plant capacity and surface storage requirement estimated for each diversion rate. Although these calculations do not change the total amount of water diverted (as shown in Table 1), they do alter the rate at which water would be withdrawn from storage for treatment and subsequent injection to underground storage or direct use. Figure 5 illustrates this effect using the 100 cfs diversion rate and 24,000 AF storage capacity, comparing the seasonal timing of the diversion with the lower, more uniform treatment and injection rates made possible by storage. This example is from the Northern Injection Scenario developed in this study.

Table 4. Estimated Maximum Required Storage Capacity for each Diversion Rate

| **Diversion Capacity, cfs** | **50** | **100** | **200** | **400** |
|---|---|---|---|---|
| Treatment Plant and Injection Flow Rate, cfs | 10 | 20 | 35 | 55 |
| Maximum Storage Capacity Needed, AF | 12,500 | 24,000 | 48,500 | 88,500 |

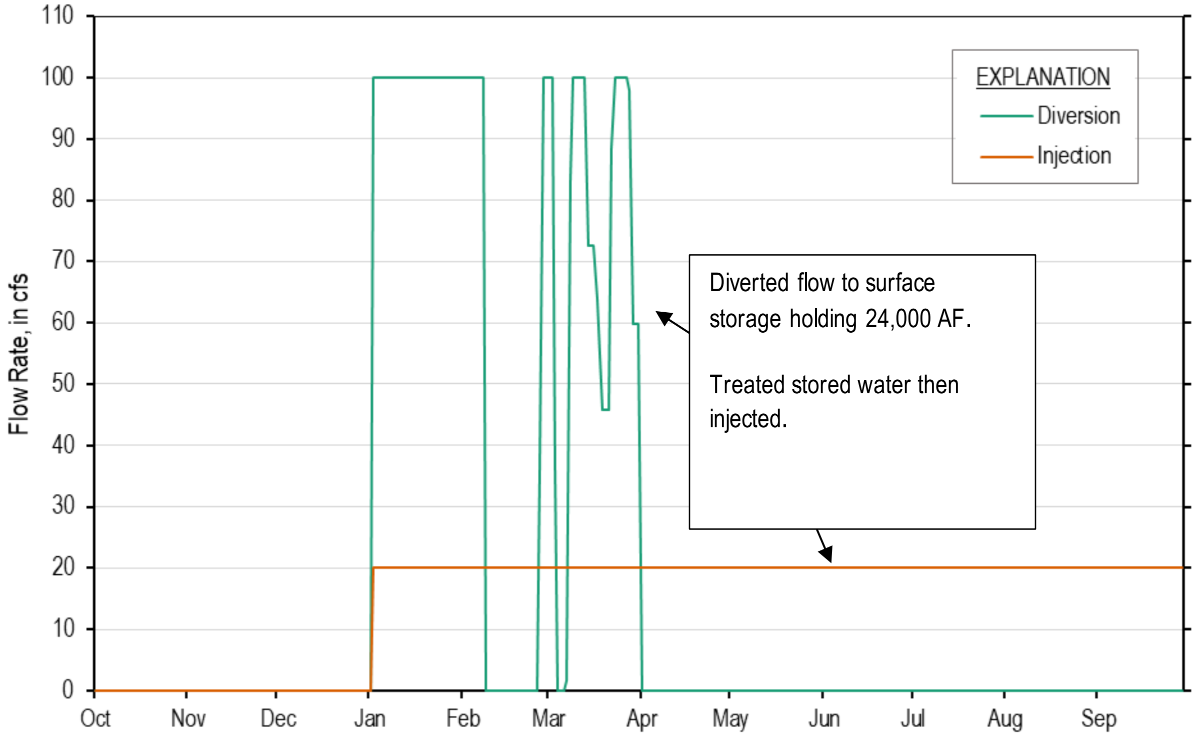



Figure 5. Rates and Timing of Diversion and Injection in Water Year 2044 for the 100 cfs Northern Injection Scenario

# 6 PROJECT COMPONENTS

To identify and select appropriate infrastructure for the project concepts, a range of potential components for a river diversion project were compiled, with considerations and trade-offs related to each. The components were drawn primarily from historical studies and previously proposed water supply projects identified in the Salinas Valley, supplemented by experience from similar projects elsewhere in California. This section summarizes the rationale behind selecting specific components incorporated into the 4 project concepts detailed in Section 7: Eastside Recharge Basins, Northern Eastside Injection, Coastal Injection, and New Seawater Intrusion Project (NSIP). See Appendix F for the full summary and evaluation of project components.

The project components were split into the following 3 primary categories:

5. Diversion
6. Conveyance
7. End Uses

Figure 6 shows the component consideration framework for these 3 categories.

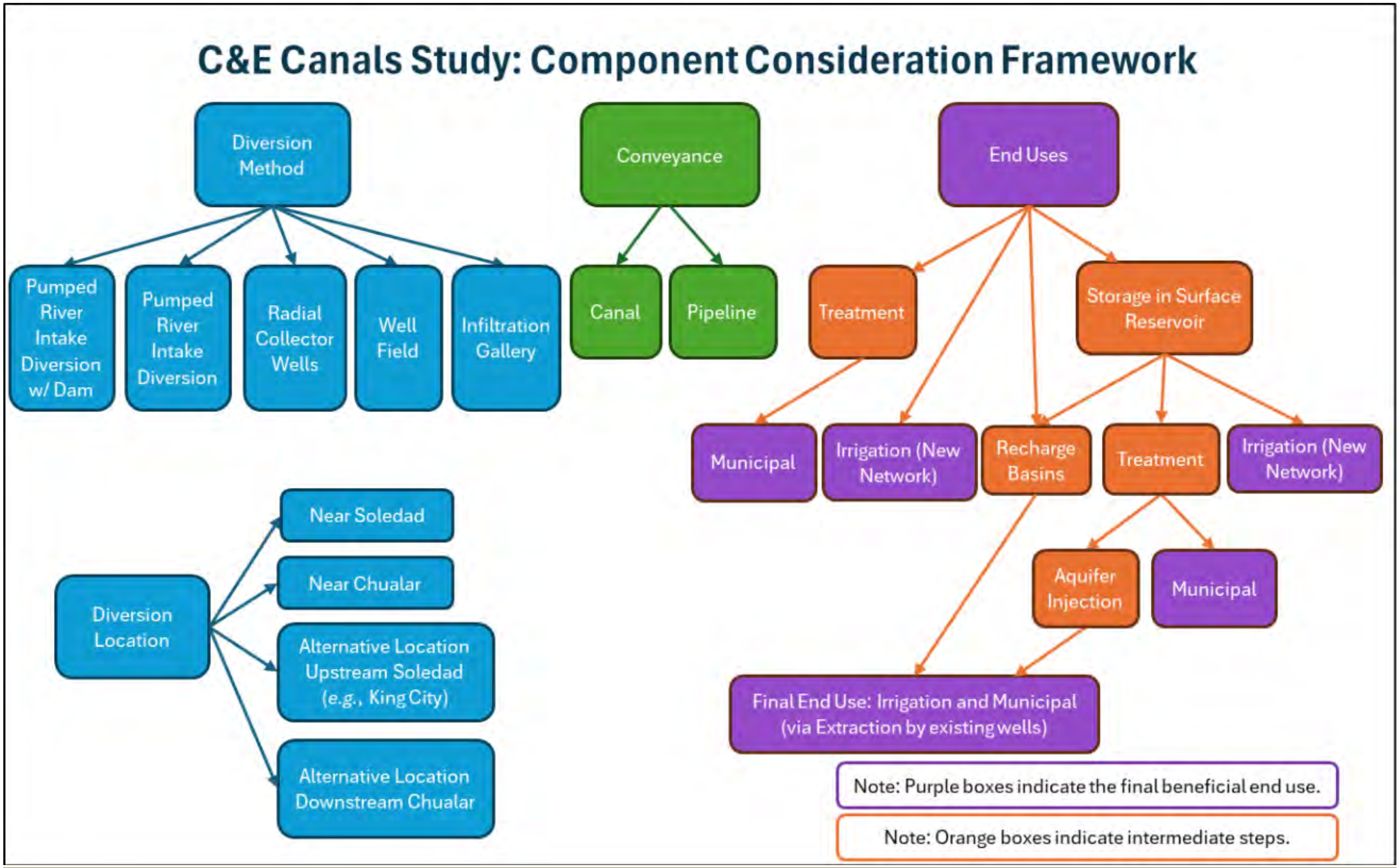



Figure 6. Infrastructure Component Consideration Framework

## 6.1 Diversion

For the diversion component, multiple options were considered for both the method and location of diversion.

The diversion methods identified in previous Salinas Valley studies included 1 surface diversion method (river intake diversion with dam) and 3 sub-surface methods (radial collector wells, infiltration galleries, and shallow well fields). In addition, for this study a fifth option was identified: a river intake diversion without the use of a diversion dam or control structure spanning the river. Across all project concepts, a river intake diversion (without diversion dam) was selected as the preferred method.

Diversion locations were grouped into the 2 permit points of diversion sites near Soledad and Chualar, along with additional alternatives located upstream of Soledad and downstream of Chualar. Because the primary groundwater sustainability goals are concentrated in the northern Salinas Valley, the study prioritized diversion at the Castroville Canal Intake near Chualar or at locations further downstream. Project concepts situated in the Eastside Subbasin near Chualar used the Castroville Canal Intake, while coastal-focused concepts relied on a location downstream of Chualar location to minimize conveyance distance and overall project costs, acknowledging that a Permit change in point of diversion would be required.

### 6.1.1 Diversion Method

Five primary diversion methods were considered for initial screening. Each diversion concept will require pumping, as there were no suitable gravity diversion sites identified in previous studies. Permit 11043 authorizes the diversion of surface water at set points of diversion but does not define the method of direct diversion or conveyance infrastructure. Descriptions of the diversion methods are provided below.

- **River Intake Diversion with Dam** – A river intake diversion with dam is a surface diversion method utilizing a screened pump intake and pump station on the bank of the river, combined with the use of a diversion dam or control structure across the river channel to manipulate water levels or create an impoundment. The diversion dam component is a hydraulic structure built across a river or stream to raise the water level and redirect all or part of the flow for use into another conveyance system—such as a canal, pipeline, tunnel, or other watercourse via the pumping station. Instead of creating a large storage reservoir, the diversion dam component typically generates just enough upstream head to allow gravity flow into the associated pumping facility on or near the riverbank. The diversion dam acts as a control structure across the width of the river that would be used to manipulate water levels in the river and create an upstream impoundment to provide a consistent pool for the pump intake. One example of this concept is the existing SRDF, completed in 2010. The facility consists of:

  - An adjustable spillway gate operated via an inflatable bladder (*i.e.*, Obermeyer Gate also known as rubber dam/inflatable dam)
  - A screened intake to the diversion pump station
  - A bypass fishway for fish passage during migration periods that coincide with stream diversions

- **Radial Collector Wells** – A radial collector well consists of a central concrete caisson, typically 16 feet in diameter, installed adjacent to the river. The caisson is excavated to a target depth (previous studies have identified 40 feet), from which well screens are projected out laterally in a radial pattern beneath the riverbed and which convey flow into the caisson. The wells are designed to maximize the yield per well by maximizing the screened length with multiple laterals as well as leverage the natural filtration provided via the riverbank. High-capacity vertical turbine pumps housed on top of the concrete caissons are designed to lift large volumes of water from the well.
- **Well Field** – This diversion method includes the installation of multiple shallow wells installed adjacent to the river. Shallow wells are positioned within the alluvial deposits or near-stream aquifer where groundwater and surface water are hydraulically connected. By pumping from these wells, a localized gradient is created that induces surface flow away from the river and toward the well field. This type of diversion is particularly useful in settings where direct surface water diversion is constrained by regulatory, environmental, or physical limitations. Design considerations include the hydraulic connectivity between groundwater and surface water, aquifer permeability, well spacing and depth, pumping rates, and seasonal variations in flow.
- **Infiltration Gallery** – This diversion method consists of screened pipes installed beneath and perpendicular to the river channel using traditional open-trench construction methods. The trenches for the perforated pipes would be backfilled with coarse granular material to improve permeability and induce surface water flow into the system. The perforated pipes from several infiltration galleries would be connected to a common manifold for collection and gravity conveyance to a pumping station located at the downstream end of the infiltration galleries.
- **River Intake Diversion –** A river intake diversion is a surface diversion method that employs a screened pump intake and pump station on the bank of the river without the use of a diversion dam or control structure across the river channel to manipulate water levels or create an impoundment.

Considerations for the selection of diversion method are discussed in Appendix F. The key considerations that informed the selection of a river intake diversion method were the flow rate limitations, environmental constraints, land acquisition and facility footprint, and operational difficulty. The river intake without a diversion dam was the configuration selected as the most suitable method for each of the project scenarios for the following reasons:

**Diversion Method: Flow Rate and Hydraulic Limitations**

The subsurface methods proposed in previous studies—including radial collector wells, shallow wells, and infiltration galleries—were found to be highly limited based on flow rate due to the shallow aquifer and low hydraulic conductivity below the Salinas River. Montgomery Watson (1998) conducted an investigation of Salinas River diversion facilities for the Salinas Valley Water Project. Radial collector wells were included as a diversion option because they can be effective in withdrawing groundwater from a shallow aquifer underlying a river. The investigation involved (1) evaluating geotechnical borings for a reach of the shallow aquifer underlying the river between Blanco Road and the Firestone Plant, (2) conducting aquifer pumping tests in the shallow aquifer, and (3) evaluating the potential for collector well diversion. Results of the investigation determined that a long-term average collector well yield would be about 1,500 gallons per minute (gpm) per well, or about 3.3 cfs. This estimated yield is considered low for a collector well, due to the relatively thin and narrow shallow aquifer. Geotechnical borings indicated that the river sediments are generally less than 50 feet thick and relatively narrow in extent, with fine sand generally present to depths of 10-30 feet and clay below those depths. Furthermore, specific capacity tests conducted for the investigation indicate well yields of 1,000 gpm or less. Given these characteristics, it is estimated that the water yield from the sediments underlying the river would be insufficient for collector wells. For example, in order to achieve the C&E Study's range of diversion rates to meet groundwater goals, an 80 cfs diversion would require approximately 24 collector wells spaced at about 1,000 feet apart to minimize pumping interference between the wells. The same hydraulic constraints would be faced in the infiltration gallery and shallow well field options.

In the same investigation, shallow well yields were estimated at 50-65 gpm per well; therefore, approximately 720 individual wells would be required to achieve a diversion rate of 80 cfs. Note that in the Forebay well field described in the 1946 DWR Bulletin 52 and 1968 East Side Canal reports, yields per well were stated to range from 1,800 to 4,000 gpm; however, those estimates were based on information available on existing wells in the area rather than capacity drawdown tests. Site specific capacity testing would be required if this project concept is pursued in the future. Subsurface diversions from deeper wells, upstream of the Eastside Canal Intake, were not evaluated for this Study because of the long distance to where the water is needed to meet groundwater goals.

Surface diversion facilities (river intake diversion with and without dam) would not be limited by the subsurface hydraulic properties of the river and would have higher diversion flow rates compared to subsurface diversions. Diversion dams are also limited to avoid upstream impoundment flood risk and downstream hydromodification risk. Sufficient river stage at river flow rates eligible for diversion must be available regardless of the type of surface diversion proposed.

Dams spanning the river are intended to control the diversion hydraulic conditions whereas river intake diversions without dams rely on the natural river stage. While river intake diversions will have reduced capability to control diversion hydraulic conditions, they do not create increased flood or downstream hydromodification risks associated with diversion dams. A river intake diversion without a diversion dam will be more limited during low river flows, which will correspond to a low river stage, as there will be a specific minimum water level that will be needed to satisfy the fish screen criteria. It is anticipated that the environmental bypass requirements for water that must remain in the Salinas River downstream of the diversion will provide the river stage needed for the river intake diversion. Further site-specific analysis will be required to estimate hydraulic conditions if this diversion method is used.

**Diversion Method: Environmental Constraints / Land Acquisition and Facility Footprint**

The radial collector wells, shallow wells fields, and infiltration galleries considered in previous studies lead to large areal footprints due to the low hydraulic capacities observed. Twenty-four radial collector wells spaced 1,000 feet apart would stretch across over 4 miles. Similarly, infiltration galleries would span a 1- to 3-mile reach of the river depending on configuration. Infiltration galleries would also require excavation and disturbance over this reach for initial construction as well as during annual maintenance activities.

Surface diversion dams create an impediment to flow in the river requiring mitigation for fish passage. Temporary and permanent disturbances of the riverbed are required for construction and operations and maintenance activities. In addition, recreational opportunities are diminished as safety concerns would prohibit the passage of recreational users through the surface diversion facility. Finally, a dam spanning the river creates upstream backwater effects which lead to reduced river conveyance capacity and flood risk which add to the facility footprint

The river intake diversion is considered to have the lowest footprint and environmental impact on the river itself. Addition of sedimentation basins increases this footprint; however, the environmental impacts of these facilities may be more feasible to mitigate. While avoiding all impacts would not be possible, the river intake diversion would be considered to have less impact than the other subsurface and surface facilities proposed.

**Diversion Method: Operational Complexity**

Generally, operations for the widely distributed subsurface diversion methods become more complex as operations are conducted over a wide geographic reach. Operations and maintenance (O&M) for individual shallow well and radial collector wells would be in line with conventional well and pump station activities; however, the quantity of wells drives the complexity for their implementation. Shallow wells in an upstream unconfined aquifer (e.g., Forebay Well Field) may have a higher capacity, reducing the number of wells required. The infiltration galleries would require extensive maintenance within the riverbed on an annual basis to ensure capacity of the perforated lines is maintained. With the dynamic nature of the riverbed's surface sediments, this activity may result in frequent grading of the riverbed which would conflict with establishment and health of natural habitat.

Experience at the existing SRDF provides insight into the operational complexity of surface flow diversion facilities. The SRDF operates from April through October when natural flows are low and the resulting impoundment of the river facilitates diversion. The dam is retracted during the wet weather months to protect the gates from the impacts of high river flows; use of an inflatable dam during the wet weather months would increase the likelihood facility damage to the facilities due to the high river flows. The SRDF undergoes significant maintenance activities each year to ensure mechanical, electrical, and instrumentation and controls processes are in working order as well as to maintain upstream and downstream channel conditions to mitigate impacts from scour, debris and sediment deposition, and high flow rates. These maintenance activities are performed during periods of non-operation and can require river bypass pumping, cofferdam installation, and dewatering to access the dam foundation and apron. The in-river activities are complex and impose impacts on the habitat within the river. Normal operations include monitoring of gates and river water levels and lowering of gates for safety during high flow events, sediment removal from the pump station, fish passage monitoring, and debris clearing. A direct intake would be less intrusive on the river environment and less susceptible to impacts from river flow.

### 6.1.2 Diversion Location

The diversion locations that were considered included the following:

- **Permit Location Near Soledad**. This location is consistent with the point of diversion for the Eastside Canal Intake defined in Permit 11043.
- **Permit Location Near Chualar**. This location is consistent with the point of diversion for the Castroville Canal Intake defined in Permit 11043.

- **Alternative Location Upstream of Soledad (*e.g.*, King City)**. This category encompasses several alternative locations identified upstream of the Soledad permit location.
- **Alternative Location Downstream of Chualar**. This category encompasses any potential diversion location downstream of the Chualar location.

Considerations for selection of diversion location are discussed in Appendix F:

The near Chualar location and alternative location downstream of Chualar were retained for the project concepts primarily for their proximity to the proposed end uses under each of the 4 groundwater goals identified in Section 3.2. Along the river stretch in the central/southern 180/400 Subbasin, priority was given to the existing Permit 11043 point of diversion, as that location presents the simplest permitting pathway. A change in point of diversion requires a water right change petition and adds time and complexity for approval. It might also include a reevaluation of diversion bypass flow requirements. While an alternative location downstream of Chualar would constitute a change in point of diversion and it was retained due to the advantage it offers in terms of proximity to potential end uses and the physical characteristics of the river along that stretch.

**Diversion Location: Length of Conveyance Infrastructure**

With closer proximity to where water would be used (i.e., coastal 180/400 and Eastside Subbasins), conveyance costs would be reduced due to shorter length of pressurized transmission mains and reduced land access costs. Longer conveyance routes would include greater environmental impact, more land access negotiations and cost, and increased material, labor, and operations costs. It is less feasible to construct conveyance facilities from locations near Soledad and further upstream, as in the Forebay well field concept or farther south compared to the proposed locations near Chualar and downstream. In addition, as described in Section 5.3, about the same or potentially more flow is available from the Chualar permit point of diversion location compared to the Soledad location.

**Diversion Location: Channel Stability and Hydraulic Conditions**

A river intake diversion facility should have a location with predictable water stage and flow path. To access eligible excess flows, sufficient head would be required to allow passage through the fish screens, and therefore, a more defined river channel with relatively elevated water levels is more desirable than broad, meandering sections of the river where flow paths may change from season to season due to shifting bedload sediments. With a more stable channel, the stage-discharge relationship can be better understood to facilitate design and future operation of the intake. The suitability of a specific location would need to be assessed.

## 6.2 Conveyance

Two primary conveyance options were evaluated: buried pipelines and open channel canals. Buried pipelines are used in pressurized systems involving pumped flow as well as gravity flow depending on application. Open-channel canals flow by gravity but may incorporate intermediate pumping plants to lift water to downstream reaches of higher elevation. Canals will require more land than a pressurized pipeline conveying the same flow rate. Buried pipelines were selected for each of the project scenarios evaluated because the water must be conveyed uphill from the proposed diversion locations, making pressurized pipelines the more practical and reliable option.

Considerations for selection of conveyance type are included Appendix F.

Conveyance type selection was driven by the locations of the groundwater goals, surface storage, and end use locations; and to a lesser extent the land acquisition requirements, cost, and operational requirements.

**Conveyance: Locations of the groundwater goals, surface storage, and end use locations**

Due to the terrain, pressurized transmission mains would be more effective to convey water to the place of use or intermediate storage location, as each concept involves diversion and conveyance uphill to each respective destination.

None of the concepts have the downhill terrain conducive to use of open-channel canals as a primary transmission component. However, opportunities may exist for inclusion of open-channel canals in the Eastside Subbasin for distribution of conveyed water between infiltration basins that may facilitate their operations and hydraulic control. However, conveyance of water from the proposed diversion facility to the infiltration basins areas would still require installation of buried pipelines.

**Conveyance: Land Acquisition Requirements**

With pipelines, there is greater control of alignment, allowing them to be constructed within county/city roads (i.e., public right of way). Easements for buried pipe across private, agricultural land could be obtained without the need to take land out of production permanently. Installation across active farmland would need to consider activities such as deep ripping to avoid damage to the pipelines which could be mitigated through burial depth and pipeline markers installed at ground surface and warning of the presence of a buried pipeline. Due to the number of landowners that could be involved, priority was given to right of way pipelines as they would present less of a conflict with agricultural operations than canals. Acquiring land and constructing a canal will cause prime farmland to be taken out of production.

**Conveyance: Cost**

With conveyance from diversion facility to delivery location uphill, use of canals becomes impractical and cost prohibitive, due to the number of intermediate pumping plants that would be required in the canal system. The impact of land acquisition on overall project cost may also present an advantage to pipelines over canals. Buried pipes would allow surface activities to continue and there would be less need for property acquisition. Pipeline O&M costs would include those for maintaining pipeline appurtenances such as air release and air/vacuum valves, blow-off facilities, cathodic protection facilities, and valves in addition to pressure and flow monitoring devices, Supervisory Control and Data Acquisition (SCADA) telemetry devices, and access vaults. However, pipelines are anticipated to have less O&M costs than canals. Canal O&M costs are anticipated to be higher due to the frequent need for activities including operation of canal control structures, vegetation, debris, and sediment control, lining and embankment repair, and rodent and vector management. In addition, canals operate less efficiently than pipelines because they lose water due to evaporation and seepage which would drive the need for additional pumping at the diversion source to ensure a volume of delivery equal to that of a pipeline transmission system.

**Conveyance: Operational Difficulty**

System operations are comparatively simpler for a pipeline conveyance system that allows for on-demand water delivery, adding flexibility for operators and potential energy savings. Less flexibility for water deliveries is available through canals, and therefore, a higher level of effort is required for scheduling deliveries and operating the canal to match demand. With canal systems, flow rate changes at the headworks create ripple effects downstream, being that the flow rate changes will take time to arrive at each downstream control structure, and the structures will require adjustment (either manually or automatically) to accommodate the flow change without causing large fluctuations in water level or overtopping the canal banks. Pressurized pipeline conveyance systems do not operate under these same complexities. Pipelines will also operate more efficiently, eliminating water losses due to evaporation and seepage; and because they are enclosed, will preserve water quality better than exposed canals, which are subject to contamination from algae blooms, animal waste, and other pollutant sources.

## 6.3 Storage, Treatment, and End Uses

The storage, treatment, and end use components of each project concept are closely interconnected. Each of the 4 groundwater goals carries its own constraints driven by the timing of flows and demand, as well as physical conditions both above and below ground. The 4 project concepts were developed to align with these goals while also providing variations that fit within a broader suite of potential configurations. Table 4 summarizes the primary component configuration for each groundwater goal. It only includes project-related components, not extraction by individuals or entities that would ultimately put the diverted water to beneficial use. While Appendix F provides a detailed discussion of the considerations and constraints associated with storage, treatment, and end uses, this section outlines the rationale behind the selected approaches.

Table 5. Overview of Project Concept Component Configurations

| Groundwater Goal | Project Concept Component Configuration |
|---|---|
| Raise groundwater levels in the central and/or southern portions of the Eastside Subbasin and/or 180/400 Subbasin | Eastside Recharge Basins:<br>Diversion – Conveyance – Recharge Basins |
| Raise groundwater levels in the northern Eastside Subbasin, and potentially southern Langley Subbasin | Northern Eastside Injection:<br>Diversion – Conveyance – Surface Storage – Treatment - Injection |
| Stop seawater intrusion | Coastal Injection:<br>Diversion – Conveyance – Surface Storage – Treatment - Injection |
| Raise groundwater levels in the Deep Aquifers and seawater intruded area | New Seawater Intrusion Project (NSIP):<br>Diversion – Conveyance – Surface Storage – Treatment – Direct Delivery |

Development of the project concepts considered 4 elements related to storage, treatment, and end uses:

**(1) Storage**

Flow available for potential diversion under Permit 11043 occurs mainly from January through April, which does not align with seasonal irrigation demand. Seasonal storage is therefore needed to match supply with demand. Even for diversions intended for municipal use or groundwater injection, intermediate storage is necessary because diversions may occur only on limited days, and storage allows flows to be regulated and treated.

Without storage, infrastructure would be sized to use all diverted water instantaneously, resulting in facilities that are large and costly. Further, direct delivery without storage faces operational complexity associated with matching the fluctuating available flows with demand and lowers project yield. While municipal water use provides a year-round source of demand, reliable municipal supplies require consistent operation and therefore cannot depend on intermittent shifts from groundwater to surface water or on activating a treatment plant only during periods of surplus river flow. Therefore, direct municipal use without storage was not included in project concepts.

For these reasons, all project concepts include some form of storage, even though doing so would require modification of the Permit. Storage is a key component to align the availability of diverted waters with irrigation season demands, provide stability for municipal demands, and maximize groundwater benefit.

**(2) Storage: Above or Below Ground**

Storage can be created in surface reservoirs or within the aquifer. Capturing high flows requires immediate storage, even if only temporary or regulating storage before water is moved into longer-term storage. Storage above and below ground, and a mix of both, were considered in the project concepts.

Belowground storage requires a method of delivery to the subsurface. The least expensive option is to divert water into recharge basins or creek beds and allow it to infiltrate into the ground, thereby storing it underground. However, across much of the 180/400 and Eastside Subbasins, the Salinas Valley Aquitard and shallow clays limit surficial recharge from reaching the principal aquifers. As a result, these methods are feasible only near the Gabilan Range. Appendix G includes an analysis of where recharge basins would be more appropriate in the Eastside Subbasin. Preliminary groundwater modeling showed that recharge basins provide greater aquifer recharge than creek bed infiltration because, given the widespread clay layers and high groundwater levels from December through April, more water runs off as surface flow when using creek bed infiltration. Recharge basins are sized to accept flows based on the diversion size and infiltration rates, and then the aquifer functions as the longer-term storage location.

Where recharge basins are not viable due to the aquitard or shallow clays, above-ground seasonal storage is required. Surface storage can also serve as an intermediary step before treatment and/or injection for longer-term underground storage. Without a form of regulating surface water storage, the treatment required for injection projects or direct delivery would not be feasible; seasonal surface storage allows for the treatment plant to operate under more steady, predictable conditions with an overall smaller capacity needed than that for treatment of less predictable, large river diversion flows.

Several surface storage locations were evaluated, including excavated areas on the valley floor, natural depressions, and sites in the Gabilan Range. Considerations for the selection of above-ground storage are documented in Appendix H, along with other potential sites considered. Construction of dams at Merritt Lake and a second site in the Gabilan Range were identified as the most viable options for providing above-ground storage reservoirs through this project.

To provide variety within the project concepts, 1 concept incorporates recharge basins where they are feasible. The remaining 3 concepts rely on surface storage, 2 of which also include underground storage following surface storage and treatment.

**(3) Treatment, Underground Storage, and Use**

Following immediate storage in a surface reservoir, water may be delivered to irrigation or municipal uses, or indirectly following subsurface storage and extraction. Methods of delivering water to subsurface storage include the use of recharge basins and injection (injection requires treatment); creek bed percolation was not retained as an option for the reasons outlined above (i.e., inefficiency in delivering water into the aquifer).

The decision to provide water to irrigation or municipal use directly or send to underground storage is driven by the localized demand near the surface storage location, the site suitability for underground storage, and cost. Assuming sufficient, localized agricultural demand, irrigation use following surface storage of diverted water would require the development of a distribution system to serve agricultural water users as is proposed through the NSIP project concept. Treatment needs for irrigation water may be minimal or not required helping to reduce project costs. Treatment to drinking water standards would be required for municipal use and, depending on demand, could be further explored in collaboration with existing water utilities. Whereas injection wells can target specific depths for injection, recharge basins rely on the recharge capability of surficial soils and the vadose zone to achieve connection to the underlying aquifer. Recharge basins are characterized by a much higher areal footprint and potential to have higher levels of environmental impact on surface-level conditions; environmental impacts to water quality would also require site specific investigation. The areal requirements increase land acquisition costs and effort relative to other options. Use of recharge basins would not require treatment to Title 22 drinking water standards and treatment would be limited to silt and sediment removal through the use of sedimentation basins at the diversion facility. The large land area and associated earthwork is anticipated to be the cost driver for use of recharge basins.

Use of underground storage would introduce more long-term availability of stored water as the storage capacity is expected to be much greater than in a surface storage reservoir, meaning more year-to-year carryover is available. Further, it allows users to continue to rely on their own wells for extraction and subsequent use, rather than requiring the installation of a distribution pipe network. Where recharge basins are not viable, underground storage may still be an option through injection, but treatment to drinking water standards is required prior to injection. Injection is characterized by a small area footprint and therefore lower environmental impacts at the land surface; environmental impacts to water quality would require site specific investigation. The smaller area requirement reduces land acquisition cost and effort relative to other options. The need for treatment to Title 22 drinking water standards prior to injection will be a primary driver of cost for use of injection wells. To include a mix of options, indirect use through underground storage was included through the Eastside Recharge Basins, the Northern Eastside Injection, and Coastal Injection concepts, and use immediately following surface storage was included through the NSIP project concept.

**(4) Purpose of Use**

The ultimate use of diverted water in the project concepts evaluated in the C&E Study include municipal and irrigation "Purpose of Use" as allowed under Permit 11043. Delivery to these uses can be done directly, immediately following diversion acting as a mechanism for in-lieu recharge; or indirectly following storage and distribution (also in-lieu recharge) or following storage, recharge, and extraction from individual wells. Under Permit 11043, up to 30 days of regulating storage is allowed for direct uses.

Another potential purpose of use could be groundwater recharge to address seawater intrusion, an undesirable result which is present in the subbasin as identified in the GSP. This use would require acceptance by the SWRCB and modification to Permit 11043. Additional analysis would be needed to determine if the project concept with coastal injection could effectively mitigate seawater intrusion with continued extractions. In contrast to all other project concepts that have irrigation and municipal use, the coastal injection concept uses groundwater recharge to address seawater intrusion.

## 6.4 Components Not Included in Project Concepts

Components for project concepts were selected to study a range of options to divert Salinas River flow to address groundwater challenges. Diversion methods, diversion location, conveyance, storage, treatment and end uses were analyzed to determine the most applicable components. The systematic identification and evaluation of these project components ensure that the project concepts in Section 7 balance technical feasibility with the unique hydrological trade-offs of the Salinas Valley.

Not every combination or component was included, but the approach allows for the expansion or recombination of components in future studies. For example, diversion points could be maintained or modified differently, but the tradeoff will be longer conveyance if farther away from where water is stored or used. Subsurface diversion methods may have higher flow rates south of Soledad, but the permitted diversion amounts would be approximately the same and 20-35 miles of additional conveyance would be needed. Direct delivery to municipal users could also be explored.

There are no components in the project concepts that divert stored reservoir water, modify existing reservoir operations, use groundwater or induce surface water recharge into the aquifer adjacent to the River.

# 7 PROJECT CONCEPTS

The project concepts developed to address the 4 groundwater goals identified by SVBGSA are presented in this section. Two have multiple scenarios within the project concept. The 4 project concepts are: (1) Eastside Recharge Basins, (2) Northern Eastside Injection, (3) Coastal Injection, and (4) NSIP. Each description begins with the infrastructure layout and then summarizes the groundwater benefits, end users, cost estimates, and key permits and water rights modifications.

Common elements across the 4 project concepts include river intake diversion—with the necessary sedimentation facilities—and long-distance pumped conveyance through transmission mains. One project concept involves water diverted to recharge basins for underground storage through recharge basins in the central Eastside Subbasin to improve groundwater levels. The other 3 concepts convey water to surface storage reservoirs for seasonal and year-to-year regulation of diverted flows, allowing the timing of water available for treatment or use to be spread out. Of these 3 concepts, 2 use water stored in surface reservoirs for later injection: one in the northern Eastside Subbasin to raise groundwater levels, and the other in the coastal 180/400 Subbasin to address seawater intrusion. The fourth project concept is intended to raise groundwater levels in the Deep Aquifers and seawater intruded area. The proposed NSIP system delivers water directly to agricultural users after storage, thus replacing extraction.

## 7.1 Groundwater Modeling – Baseline Scenario and Project Evaluation Approach

Surface water-groundwater flow modeling was conducted to assess (1) the water potentially available for diversion, as described in Section 4; (2) the optimal locations for recharge basins and injection wells; and (3) the ability of the project concepts to improve groundwater levels and, where relevant, address seawater intrusion.

Modeling was performed using the Valley-wide SVOM (SVOM version 1.0, see M&A, 2026)—based on the historical Salinas Valley Integrated Hydrologic Model (SVIHM, version 1.0, see M&A, 2025a)—and the Seawater Intrusion Model (SWIM, version 3, see M&A, 2025b, 2026b). The SVOM is a groundwater flow model that covers the entire Salinas Valley and uses climate data to estimate watershed flows, and then simulates surface water and groundwater flows together, including reservoir releases and diversions. The SWIM is a variable density groundwater flow model capable of simulating chloride movement and covers the coastal area south to Chualar. The SVOM was used to estimate several inputs to the SWIM, including water available for diversion, inflows along the southern Chualar boundary, and agricultural extraction and recharge over the projected period.

The projected hydrology used in the SVOM 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. The sequence corresponds to the hydrology of water years 1993, 2019, 1975, and 1999-2020 to best match observed recent conditions and provide a representative mix of wet and dry years. Actual future climate is unknown; however, this provides a representative estimate through which potential projects can be assessed. Additional modeling could evaluate different sequences of wet and dry years and climate change.

Project modeling results were compared to a Baseline Scenario that projects average groundwater conditions through 2072, assuming no new projects or management actions. Agricultural pumping is determined based on land use, the climate, crop demand and efficiency, and availability of alternative sources. Land use and crop efficiencies were set based on 2022 conditions. Reservoir releases are conducted based on current operational rules, and municipal pumping is based on projected population increases. Modeling assumes the project scenarios become operational in 2035, reflecting the time needed for design, permitting, financing, and construction. Modeling assumptions and interpretations are discussed further in Appendix I.

The Baseline Scenario shows that groundwater levels vary year to year, but long-term historical groundwater level trends continue, albeit at a lesser rate. In the 180/400, Eastside, and Monterey Subbasins, groundwater levels decline on average, with greater declines during droughts and lesser declines or increases during wetter years. Seawater intrusion continues to advance inland in the 180-Foot and 400-Foot Aquifers. In general, groundwater levels in the Forebay and Upper Valley Subbasins are slowly declining, but dip quickly during periods of drought or no reservoir releases. Model results in the Langley Subbasin have higher uncertainty due to the fractured bedrock aquifer.

The groundwater benefits of the project concepts are evaluated by reviewing groundwater levels, and, for the concept targeting the coastal 180/400 Subbasin, seawater intrusion. Results are evaluated in several ways. A key metric shown here is the results compared to the Sustainable Management Criteria (SMC) in the GSPs. Based on a set of Representative Monitoring Site (RMS) wells, the Groundwater Level SMC set minimum thresholds (MTs) to be avoided at recent low groundwater levels and measurable objective (MO) goals at recent high groundwater levels. Aiming for MOs is intended to keep groundwater levels high enough that minimum thresholds can be avoided even during droughts. When more than 15% of the RMS wells in any single aquifer have groundwater levels below minimum thresholds, it constitutes an undesirable result under SGMA; except in the Monterey Subbasin where the threshold is 20%.

Projected modeling assesses groundwater levels by comparing simulated outcomes to SMC in RMS wells during the sustainability evaluation period from 2040 to 2041. This period is used to represent both 2040 for the 180/400 Subbasin and 2042 for the other subbasins because it best reflects average anticipated conditions given the climate sequence. Simulated water levels during the evaluation period were calculated as the average of the simulated water levels at the end of November 2040 and 2041, using the bias-correction method described in M&A (2026). This timeframe was selected because it aligns closely with SGMA compliance deadlines and is broadly representative of long-term groundwater levels and trends across the model domain. The period follows several above-average precipitation years, with 2041 representing the first drier year; together, slightly above-average conditions in 2040 and slightly below-average conditions in 2041 balance to reflect typical groundwater conditions. While this provides a common methodology through which to compare the effect of project scenarios on the groundwater level SMC, it is only one metric and other analyses may help supplement, such as average groundwater level change, interannual variation, and different climate sequences.

For the Eastside Subbasin, the baseline (no project) scenario results in 62% of wells below their minimum threshold during the evaluation period. Percentages for all subbasins are shown in Table 2. For greater context, however, the simulated impacts of the projects are additionally described in terms of wider changes in groundwater levels and volumes of groundwater in storage.

Table 6. Percentage of RMS Wells with Water Levels Simulated Below MT During 2040-2041 Evaluation Period for the Baseline Scenario

| Subbasin | Count | Single Well Percentage | Percentage Below MT |
|---|---|---|---|
| Eastside | 29 | 3% | 62% |
| 180/400 | 66 | 2% | 73% |
| Forebay | 34 | 3% | 18% |
| Upper Valley | 15 | 7% | 13% |
| Langley | 11 | 9% | 45% |
| Monterey | 9 | 11% | 100% |

The Seawater Intrusion SMC is based on the 500 mg/L chloride isocontour, with the minimum threshold set at the 2017 extent. The SWIM simulated 500 mg/L chloride isocontour at 2040 is compared to the 2017 simulated minimum threshold for the coastal project concepts.

Summary and example results are included in this report and full modeling results of all scenarios are included in Appendix I.

## 7.2 Eastside Recharge Basins

For the Eastside Recharge Basins project concept, surface water would be diverted under the 11043 Permit from the Salinas River near the Castroville Canal Intake permitted location south of Salinas. Diverted river water would be conveyed to a series of surficial recharge basins located in the Eastside Subbasin. To assess a range of project sizes, 4 flow scenarios are contemplated with diversion flow rates at 400, 200, 100, and 50 cfs.

### 7.2.1 Eastside Recharge Basins - Infrastructure Layout

The infrastructure layout of the Eastside Recharge Basins includes river intake diversion at the Castroville Canal Intake location, conveyance through a pipeline, treatment in sedimentation basins, and the recharge basins.

#### 7.2.1.1 River intake diversion at Castroville Canal Intake

The diversion facility consists of a river intake diversion that would include a fish screen, pump station forebay, low lift pump station, sedimentation basin, and high-lift transfer pump station.

Fish screening criteria (NMFS, 2022) would drive the design of intake facilities with several configurations such as cone screens and plate screens possible. Generally, the fish screens must limit approach velocity to less than 0.33 foot per second (fps), and the sweeping velocity (bypass water parallel to the screen) must be 2 times the approach velocity. The footprint of the facility would vary across the scenarios based on the diversion flow rate, and would depend on the minimum river stage targeted for diversion. For this reason, detailed site-specific studies are needed to develop rating curves for the river flow/stage relationship. For example, if a minimum river depth of 2 feet is assumed at the maximum scale of 400 cfs, the minimum required length of vertical flat-plate fish screens would be about 680 feet, with some additional length of the structure needed to account for pier widths, flushing bays, and redundancy. The series of fish intake screens would be installed along a concrete wall constructed along the right bank of the river separating river flows from the forebay of the low-lift pump station. The low lift pump station transfers the screened, diverted river flow to the sedimentation basins located adjacent to the diversion facility.

The sedimentation basins receive diverted flows from the river pump station and convey water to the downstream transfer pump station at low velocities to promote sedimentation. The sedimentation basins would be configured in a parallel arrangement allowing for operation of 1 basin while the other is being maintained or in standby. Each basin would have an inlet and outlet structure and would require removing deposited sediments seasonally to maintain capacity. The sedimentation basins have a combined footprint ranging from 40 acres for the 400 cfs diversion to 5 acres for the 50 cfs diversion.

Flow from the sedimentation basins is then conveyed to the recharge basins located on the east side of the valley via the high-lift transfer pump station. The transfer pump station flow rate would match the diversion flow rate for each scenario. The pumping head varies with each scenario as the static head and friction loss depend on the pipe layout, recharge basin locations, etc. The total horsepower required for this pump station is estimated to range from 25,000 HP to 1,600 HP for the 400 cfs to 50 cfs scenarios.

#### 7.2.1.2 Conveyance – Pipeline

Diverted waters are conveyed from the diversion facility via a transmission main ranging in diameter from 48 inches (50 cfs scenario) to 132 inches (400 cfs scenario). It would be approximately 4 miles long before branching into mains of smaller diameter serving the distributed recharge basins. The transmission main pipelines would be routed along existing private, agricultural roads, and public rights of way.

The transmission main routing would include an undercrossing of Union Pacific Railroad (UPRR) and Caltrans right-of-way at U.S. Highway 101, approximately 3 miles southeast of Salinas near Spence. Total quantities of pipeline are presented in Table 6, varying based on the length needed to reach the recharge basin locations identified for each scenario.

Table 7. Table Pipeline Lengths

| Scenario | Pipeline Diameters | Total Length, Linear Feet |
|---|---|---|
| 400 cfs | 30”-132” | 128,400 |
| 200 cfs | 30” – 96” | 76,800 |
| 100 cfs | 48” - 66” | 43,800 |
| 50 cfs | 48” | 24,700 |

#### 7.2.1.3 Treatment – Sedimentation Basin

Under these scenarios, no treatment is required other than the initial pass through sedimentation basins described in Section 7.1.1.1 because this project concept does not involve direct injection (which triggers the need to treat to drinking water standards). Based on preliminary river water quality data presented in the ASR Preliminary Feasibility Study (SVBGSA and M&A, 2025), it is assumed that water quality would be suitable for recharge via recharge basins without treatment. Sedimentation basins are designed to reduce sediment load delivered to the recharge basins to preserve infiltrative capacity. The water would not be stored in the sediment basins but held long enough for sedimentation and then pumped to recharge basins.

#### 7.2.1.4 Recharge Basins

The recharge basins are sized based on the projected diversion flow rate for each scenario (i.e., 50, 100, 200, and 400 cfs) assuming an infiltration rate of 0.5 foot per day. Annual diversion volumes vary depending on the diversion rates of the proposed diversion facilities. Because there is no long-term surface storage proposed under this project scenario, the total area of recharge basins for each scenario has been sized to infiltrate the diversion flow rates on a continuous basis, although minimal buffering surface storage would be provided in the shallow water depth of the infiltration basins as recharge is occurring.

The recharge basins are sited in areas where soils have been rated as having “moderately good” to “excellent” recharge potential based on the UC Davis Soil Agricultural Groundwater Banking Index (SAGBI) aquifer recharge potential maps and out of areas underlain by an identified aquitard. The locations are on the eastern side of the valley targeting areas near Chualar Creek, Quail Creek, and Alisal Creek (Figure 7 to Figure 10).

For conceptual design purposes, the recharge basins were assumed to be rectangular, 40-acre basins with up to 4 feet of water depth. Ultimate configuration of the basins would be informed by local topography to minimize earthwork. These conceptual scenarios assume that the basins could be constructed with berm heights under the jurisdictional limits set by the California Division of Safety of Dams (DSOD). Table 7 summarizes the 4 scenarios of preliminary recharge basin sizes that are proposed based on diversion flow rate.

Table 8. Number and Acreage of Recharge Basins

| Scenario | Number of 40-Acre Basins | Acres Required |
|---|---|---|
| 400 cfs | 40 | 1,600 |
| 200 cfs | 20 | 800 |
| 100 cfs | 10 | 400 |
| 50 cfs | 5 | 200 |

Figure 7 to Figure 10 show the preliminary infrastructure layout for the Eastside Recharge Basin scenarios.

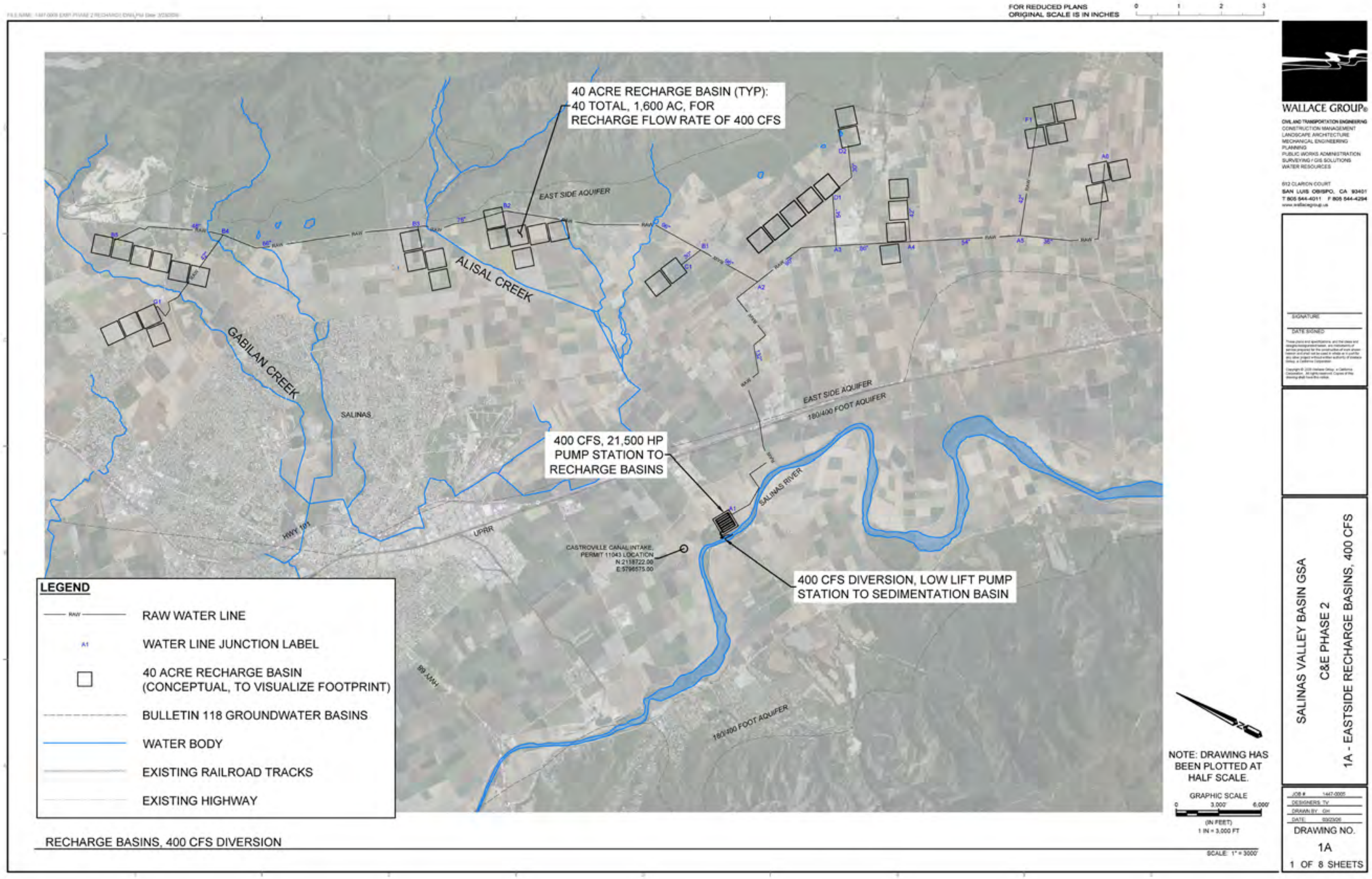



Figure 7. Infrastructure Layout for Recharge Basins, 400 CFS Scenario

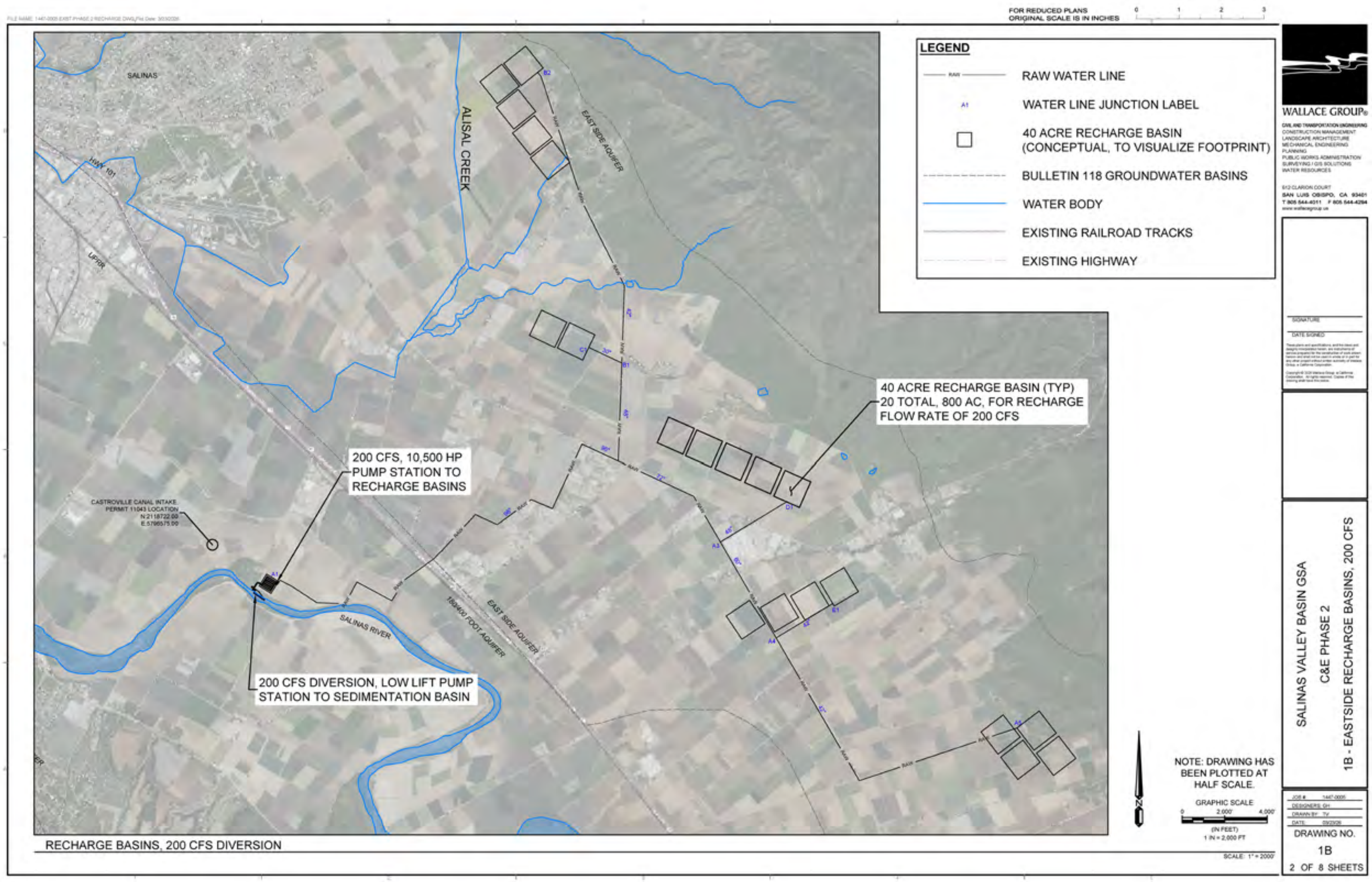



Figure 8. Infrastructure Layout for Recharge Basins, 200 CFS Scenario

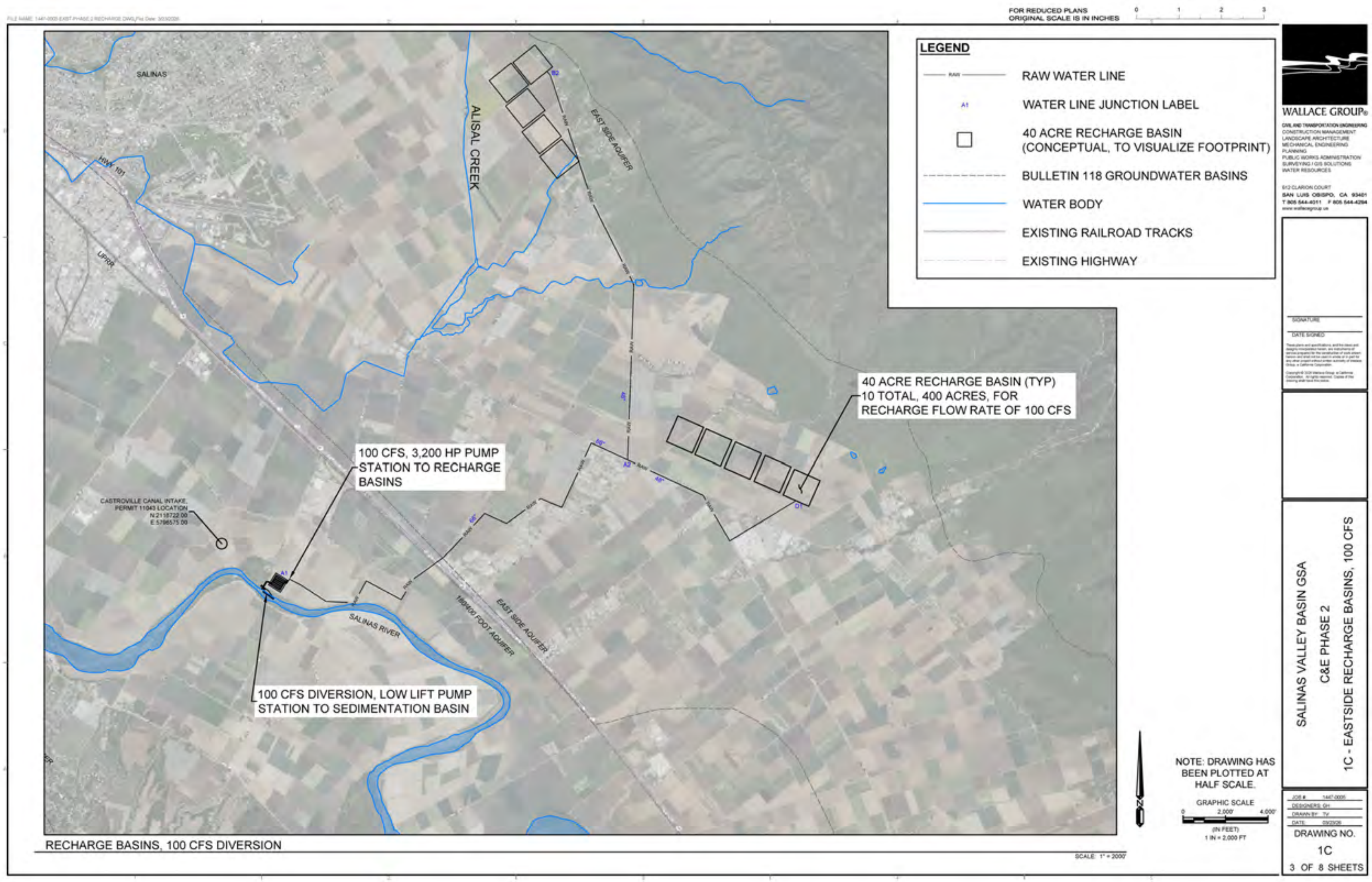



Figure 9. Infrastructure Layout for Recharge Basins, 100 CFS Scenario

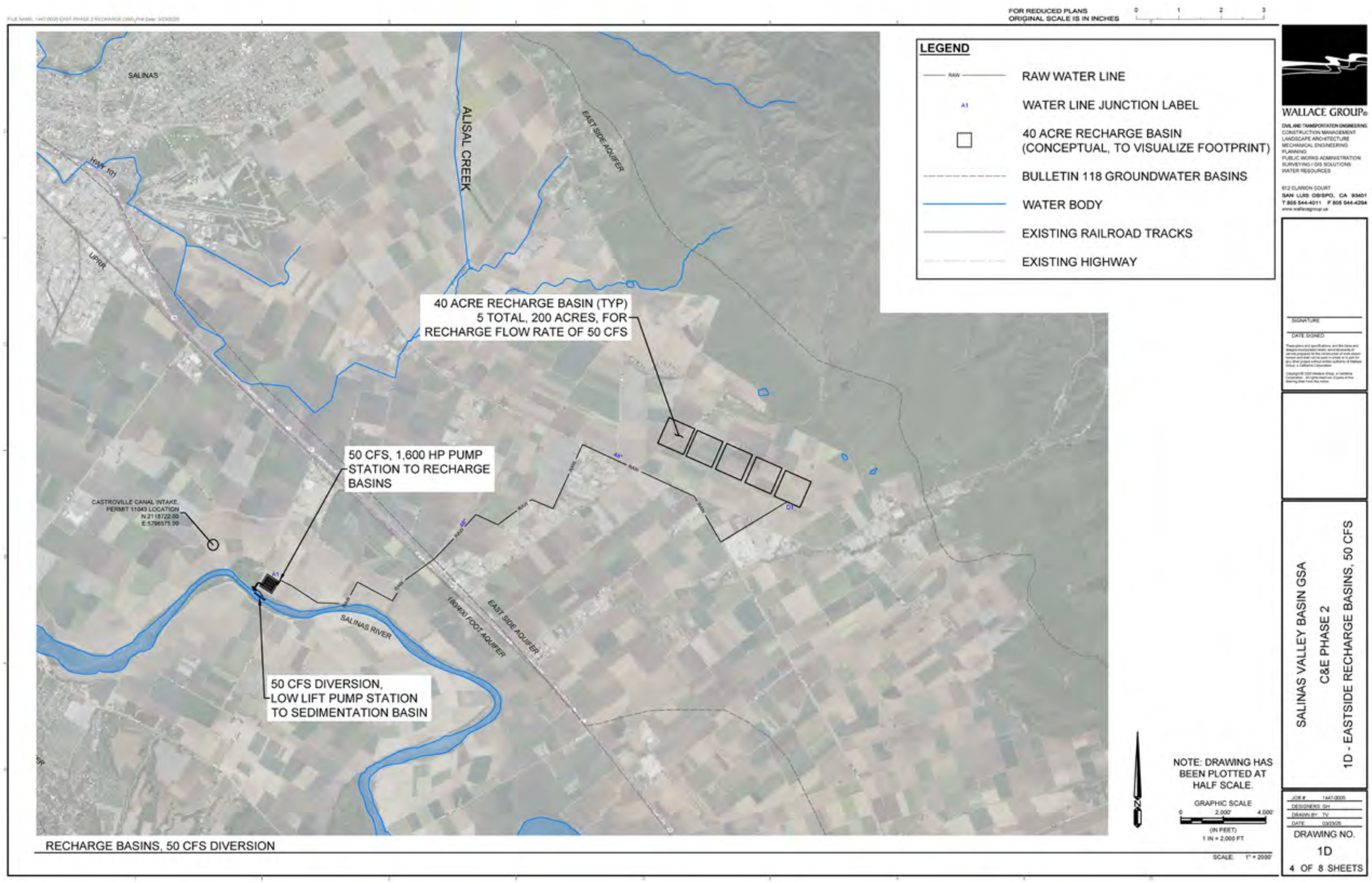



Figure 10. Infrastructure Layout for Recharge Basins, 50 CFS Scenario

### 7.2.2 Eastside Recharge Basins – Groundwater Benefit

Projected groundwater modeling of the recharge basin project scenarios was completed to estimate the groundwater benefits and compare them to the Baseline Scenario conditions.

#### 7.2.2.1 Groundwater Levels

Model results show that all 4 Eastside Recharge Basin scenarios lead to higher groundwater levels compared to the non-project (baseline) scenario. Groundwater levels are projected to increase or stabilize in many cases. In other areas, the gains relative to baseline reflect reduced drawdown rather than a full recovery of groundwater levels. The biggest increases occur closest to the recharge basins and are larger in scenarios with higher diversion rates and more recharge. These increases are not limited to shallow groundwater; they extend down through most of the aquifer system, with groundwater level changes generally becoming slightly smaller at greater depths but remaining noticeable in deeper layers. The higher-rate scenarios also include basins spread farther north and south of Quail and Alisal Creeks, which—together with the greater recharge volumes—helps groundwater level increases extend over a wider area. Groundwater responses are not evenly distributed in all directions, reflecting differences in subsurface conditions and the influence of nearby streams. Groundwater level increases are also seen along the Salinas River, which could reduce seepage losses from the river and increase baseflow in some areas.

Figure 11 shows an example of groundwater level change in 1 of the Eastside recharge basin scenarios—the 100 cfs scenario. Similar figures for all scenarios are included in Appendix I. It shows how within 5 years of project operation groundwater levels rise across most of the Eastside Subbasin. Rises are greatest closest to the recharge basin locations; however, measurable increases also occur in adjacent 180/400 Subbasin.

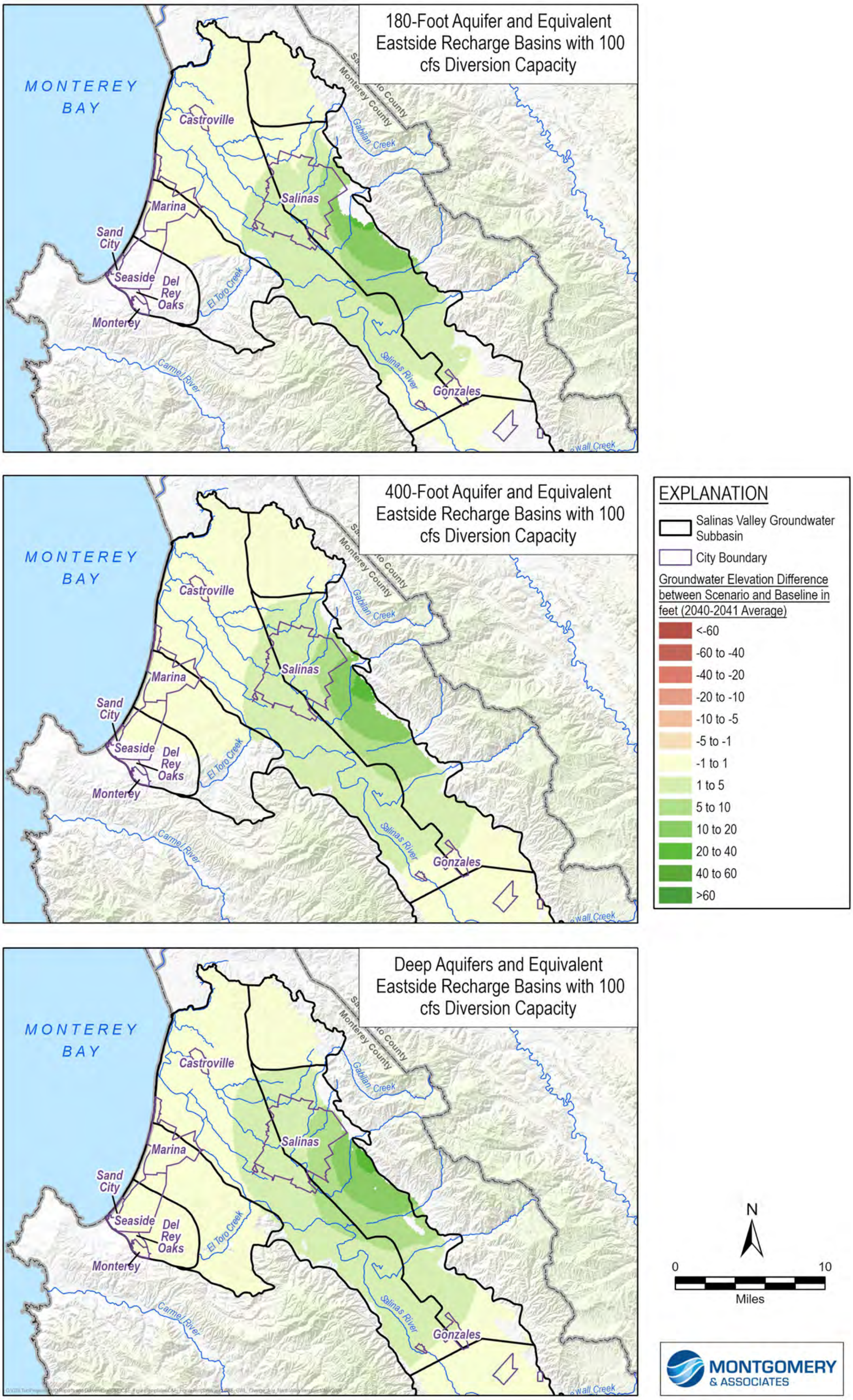



Figure 11. Groundwater Level Difference from Baseline for Eastside Recharge Basin 100 cfs Scenario During 2040-2041 Evaluation Period

Simulated groundwater levels rise and fall over the projected simulation period, reflecting the combined influence of climate-driven wet and dry periods and the cumulative effects of long-term trends and project recharge over time. The amount of river water available for diversion fluctuates with wet and dry years. As described in Section 7.1, there are several years with above-average precipitation in the 2030s of the climate sequence, followed by several years of below-average precipitation in the 2040s. The resulting groundwater responses at individual wells, including both short-term variability and longer-term accumulation following project initiation in 2035, are illustrated by the simulated hydrographs shown on Figure 12 through Figure 15. These figures demonstrate how benefits accumulate over time with relative increases over the baseline punctuated during wet years with high diversions and recharge. The relative increase can also be seen higher in scenarios with greater recharge volumes and vary by location.

Several factors drive the fluctuating patterns. First, the climate sequence used for the future projections (M&A, 2026) is a primary driver of both annual and multi-year variability. Drought years tend to draw down groundwater levels, increasing the number of wells below their minimum threshold MT, while wet years generally have the opposite effect. Climate-driven patterns that are evident in the baseline scenario are amplified in the project scenarios because diversion and recharge volumes, and the associated groundwater level increases, are greater during wet years than during dry years.

Elapsed time also influences the projected patterns. In many wells and across all scenarios, time allows longer-term trends—primarily drawdown, but in some cases recovery—to become more fully expressed, resulting in wells falling progressively farther below their minimum threshold. In the project scenarios, however, time allows groundwater level increases caused by the project's recharge to accumulate after it begins 2035. This cumulative effect is evident in the simulated hydrographs for individual wells. While representative of historical climate, this climate sequence represents only 1 potential future climate sequence.

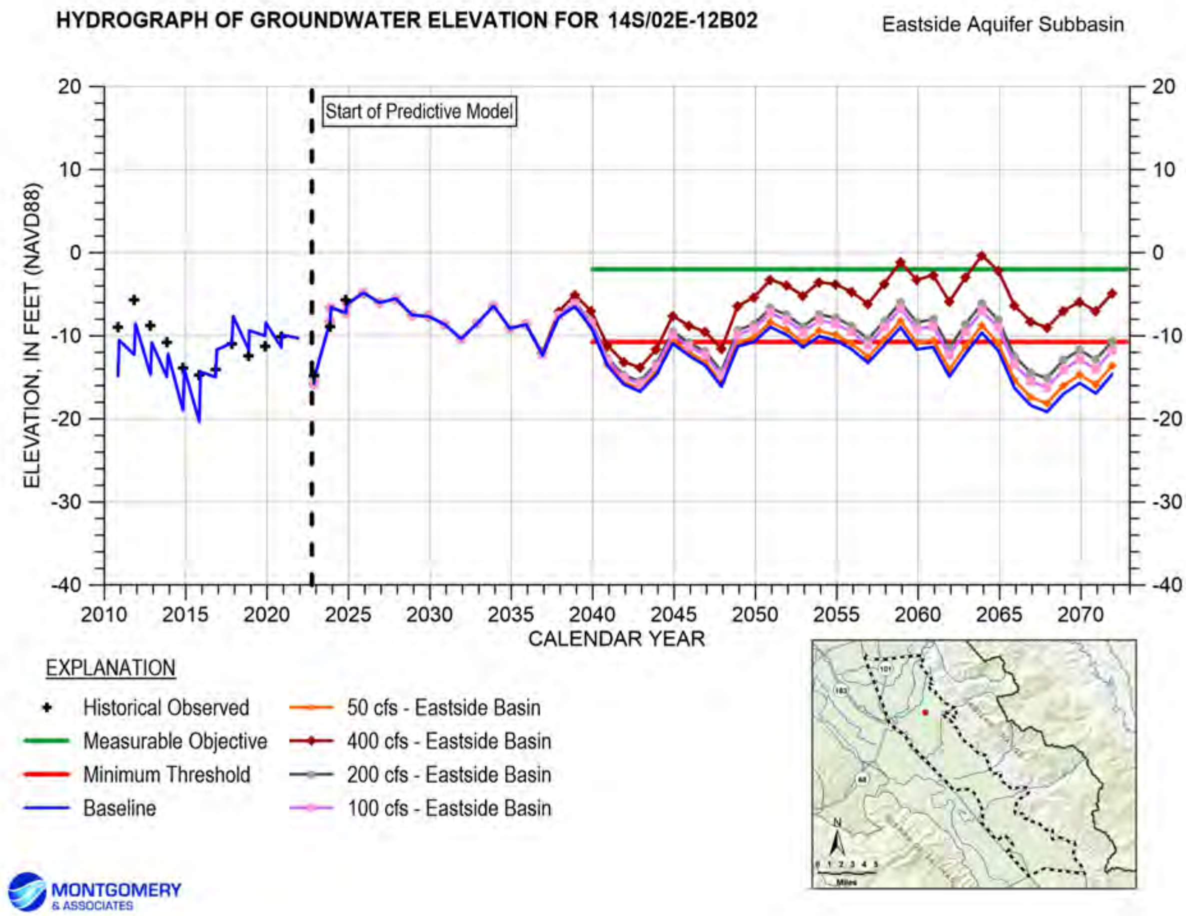



Figure 12. Simulated Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 14S02E12B02

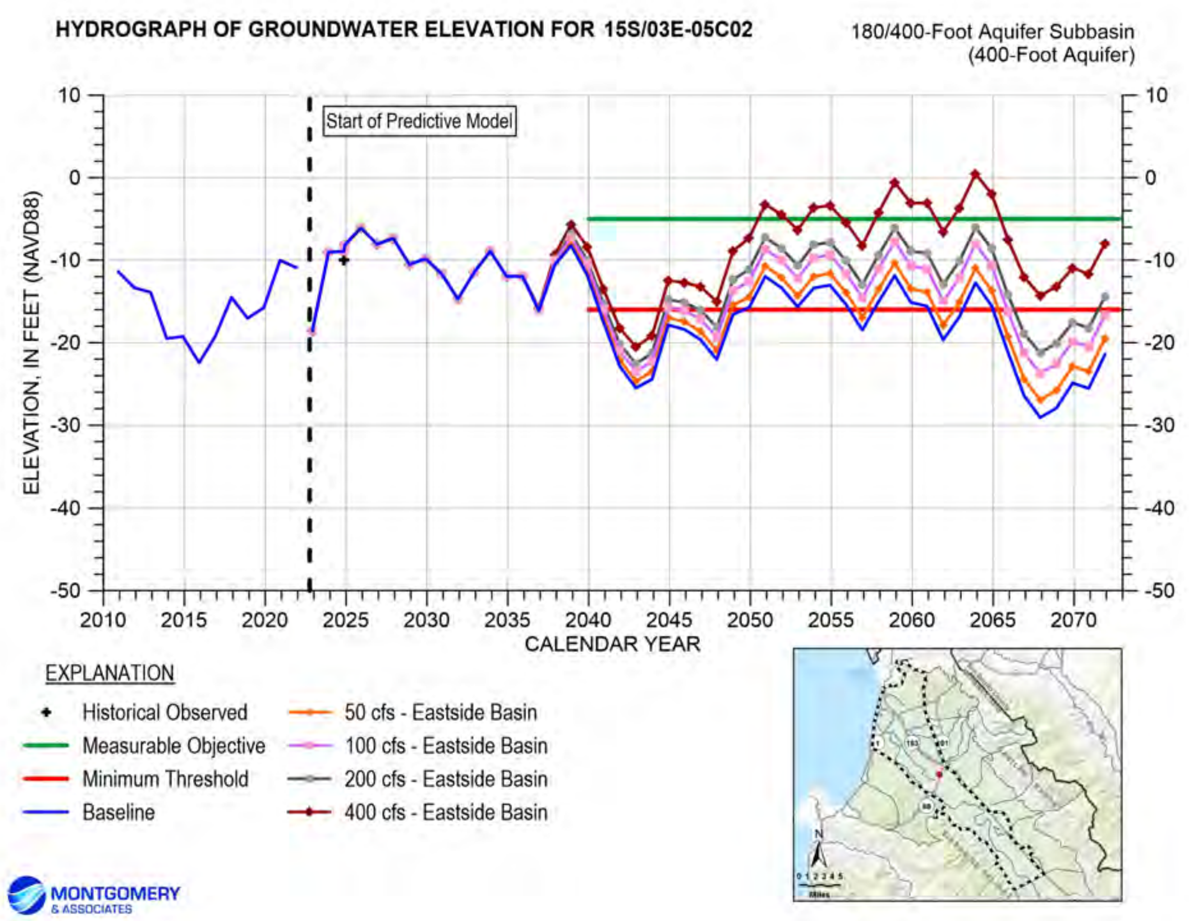



Figure 13. Simulated Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 15S03E05C02

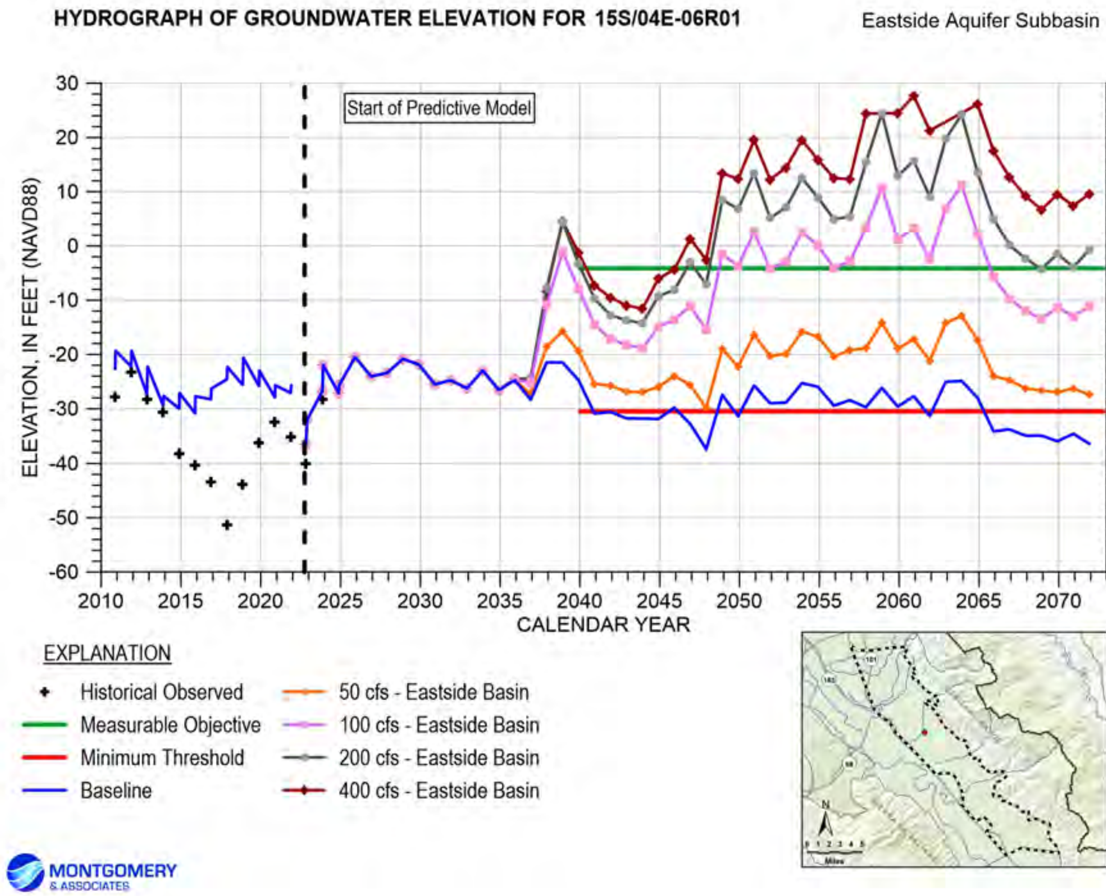



Figure 14. Simulated Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 15S04E06R01

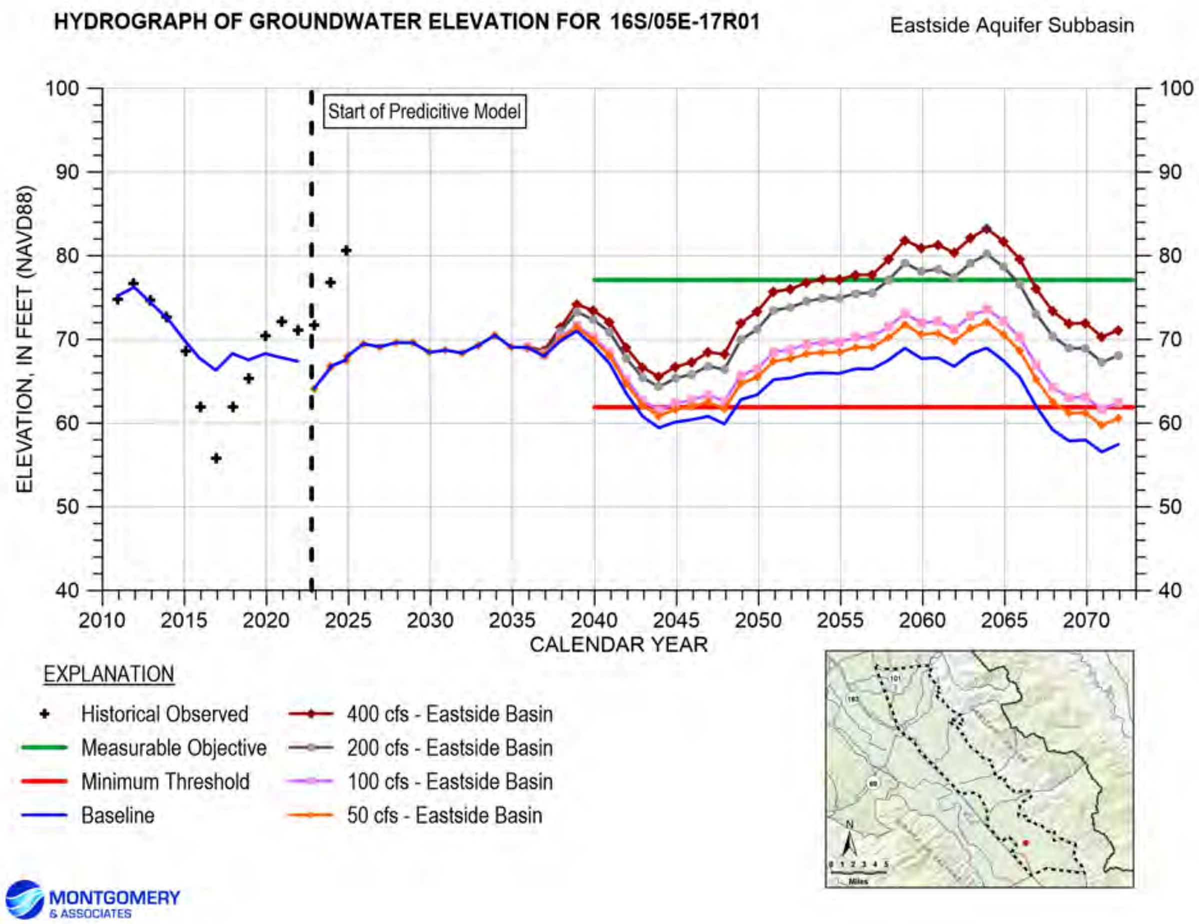



Figure 15. Simulated Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 16S05E17R01

To evaluate SGMA compliance, projected groundwater levels of each scenario are compared to the Groundwater Level SMC. Table 8 summarizes the percentage of wells for which simulated water levels were below their minimum thresholds during the sustainability evaluation period of 2040-2041, as described previously. Whereas by 2040-2041 in the Baseline Scenario, 62% of RMS wells are below their minimum thresholds, far more than the 15% that constitute an undesirable result; the Eastside recharge basin scenarios lower this percentage to between 52% and 14%, an improvement of 10% to 48%. In addition, the 180/400 Subbasin also sees modest improvements of 2% to 12%. As anticipated, with more water diverted and recharged, there are fewer wells below with water levels below minimum thresholds.

Table 9. Percentage of RMS Wells with Water Levels Simulated Below MT During 2040-2041 Evaluation Period

| Subbasin* | Wells Evaluated | Single Well Percentage | Baseline | Eastside Recharge Basins | | | |
|---|---|---|---|---|---|---|---|
| | | | | 50 cfs | 100 cfs | 200 cfs | 400 cfs |
| **Eastside** | 29 | 3% | 62% | 52% | 31% | 28% | 14% |
| **180/400** | 66 | 2% | 73% | 71% | 68% | 64% | 61% |

* Projects have no impact on percentages in other subbasins

Green shading indicates no undesirable result; red shading indicates undesirable result.

In many RMS wells, simulated groundwater levels rise above and fall below their minimum thresholds multiple times over the course of the simulation period. Figure 16 shows the percentage of RMS wells in the Eastside Subbasin that are below their minimum thresholds at the end of November for each simulated year under the Baseline and Eastside Recharge Basin Scenarios. The relative improvements associated with the 4 potential diversion sizes vary from year to year. As described in Section 7.1, since 2040 follows several years with above-average precipitation and 2041 is the first of several drier years, the average is generally representative of the entire climate sequence across the model area. Correspondingly, Figure 4 shows how there is minimal water available for diversion during drought years.

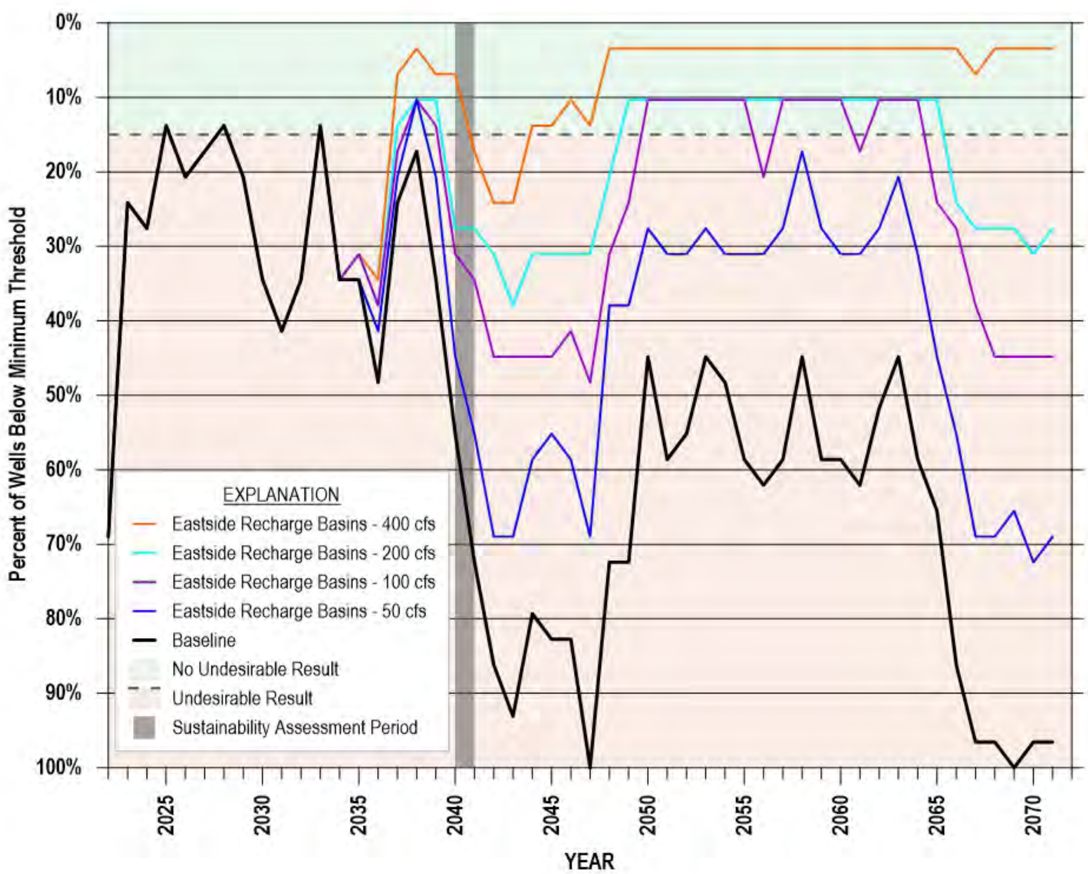



Figure 16. Percentage of RMS Wells with Simulated Water Levels Below MT for 2022-2072

Although it is not immediately apparent from the example hydrographs or RMS assessment, a spatial pattern is evident on Figure 17. In the 100, 200, and 400 cfs scenarios, there are many years in which the percentage of wells below their minimum thresholds remains unchanged, despite the presence of year-to-year variability in the Baseline and 50 cfs scenarios. This plateau in benefit reflects the limited spatial extent of recharge from the basins: groundwater level increases are greatest near the recharge facilities and diminish with distance, to varying degrees depending on local hydrogeologic conditions.

As an example of the spatial pattern, maps of groundwater levels compared to the SMC for the Baseline and 100 cfs scenario are shown on Figure 17, with red indicating below the minimum threshold, yellow indicating between the minimum threshold and measurable objective, and green indicating above the measurable objective. Similar maps for the other scenarios are included in Appendix I. These results demonstrate how the recharge basins in the central Eastside raise most RMS wells in the central Eastside above their minimum thresholds, while wells in the northern Eastside, in and around the City of Salinas, remain below their minimum thresholds. These wells do not begin to recover until substantial recharge is applied in basins east and northeast of the city in the 400 cfs scenario. For SMC reporting purposes, wells shown as Basin Fill Aquifer include those completed in other subbasins where individual hydrostratigraphic units are not distinguished for groundwater management.

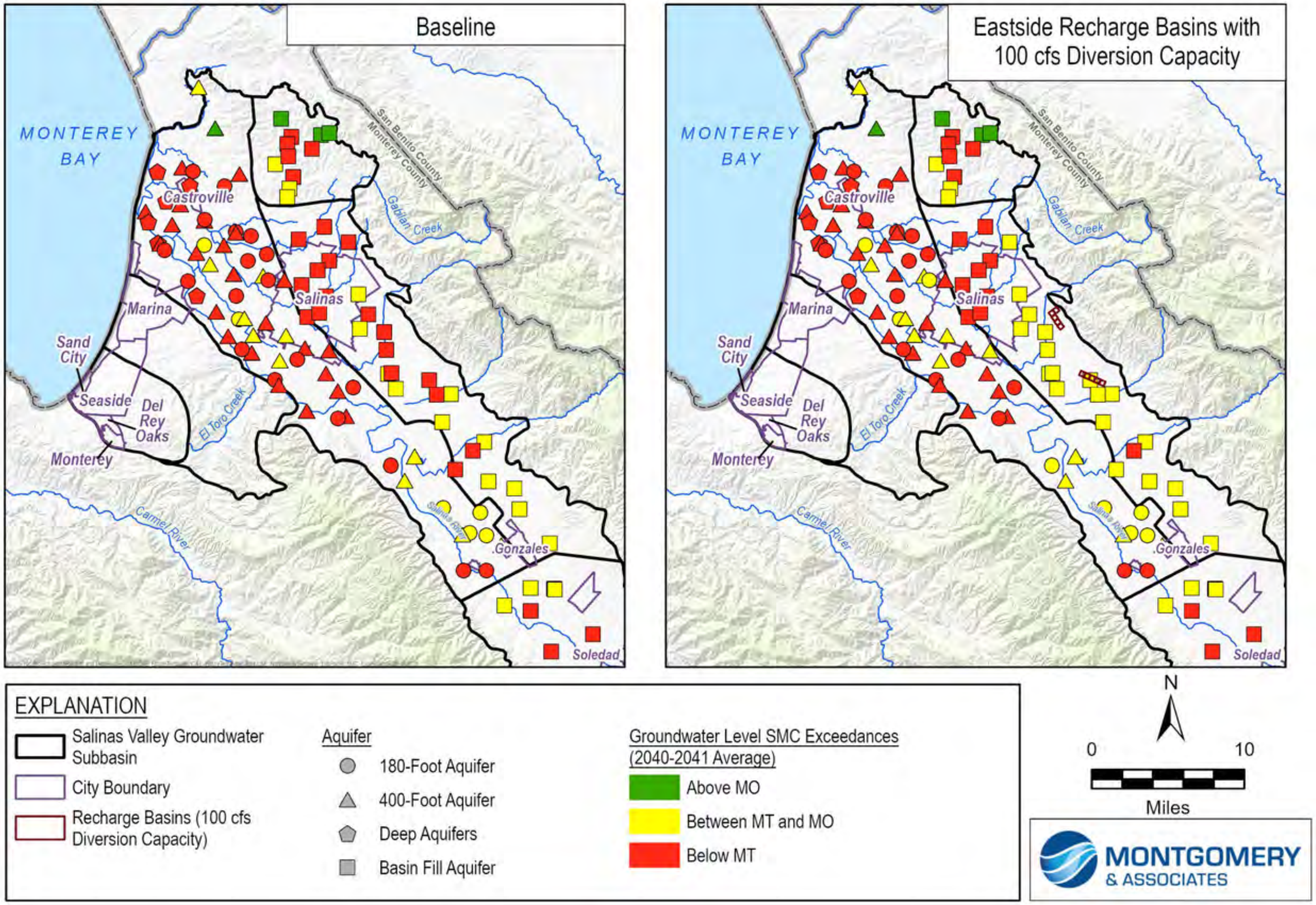



Figure 17. Groundwater Levels Compared to SMC in Eastside Recharge Basin 100 cfs Scenario Compared to Baseline Scenario During 2040-2041 Evaluation Period

#### 7.2.2.2 Groundwater Levels - Caution Regarding 400 cfs Project Scenario

In most scenarios, results show that groundwater level increases are broadly distributed across the central Eastside Subbasin rather than concentrated immediately adjacent to recharge basins, reflecting an iterative modeling approach in which basin locations were spread to improve the spatial distribution of benefits. This pattern does not persist in the 400 cfs scenario, where recharge basins were placed farther north to raise remaining northern Eastside wells above their minimum thresholds, resulting in extreme and highly localized groundwater mounding in a low-transmissivity zone, with simulated water-level increases of up to 160 feet. In some cases, modeling results show that water levels may even approach the ground surface near these recharge basins. These outcomes raise feasibility concerns regarding surficial recharge in this area and indicate that benefits in the 400 cfs scenario are not widely distributed; allocating less recharge to the northern recharge basins and more to the central Eastside may provide a more effective and robust outcome. This issue is discussed in greater detail in Appendix G.

#### 7.2.2.3 Changes in Groundwater Pumping, Flow, and Storage

Appendix I also summarizes changes in groundwater pumping, flow, and storage. Modeled storage increases in the Eastside Subbasin range from approximately 1,100 to 7,700 AF/year relative to the Baseline Scenario, with additional gains distributed among adjacent subbasins. The net model-wide storage increase represents only about 35% to 49% of applied recharge volumes; much of the remainder is offset by reduced stream seepage, as higher groundwater levels near the Salinas River corridor diminish hydraulic gradients and reduce seepage losses by an amount equivalent to approximately 51% to 68% of applied recharge across scenarios. Additional water budget responses include modest pumping reductions within recharge basin footprints and shifts in inter-subbasin flows—particularly reduced flow from the 180/400 to the Eastside Subbasin.

### 7.2.3 Eastside Recharge Basins – Purpose of Use

The Eastside Recharge Basin project scenarios propose that agricultural water user will extract the water from underground storage for irrigation and similarly, municipal water users will extract the water from underground storage for municipal and industrial purposes. These beneficial uses are consistent with Permit 11043. While the project components and costs include diversion through recharge basins, the purpose of use is extraction by agricultural and municipal users through private wells.

### 7.2.4 Eastside Recharge Basins – Cost Estimate

Cost estimates presented in this report are classified as Class 5 under the Association for the Advancement of Cost Engineering (AACE) framework. Class 5 estimates apply to projects with the least definition and lowest accuracy, while Class 1 estimates correspond to the highest level of project definition and accuracy. The estimates here reflect a project definition level of roughly 0–2% and are intended for concept-screening purposes.

The estimates rely heavily on developing unit costs for major project components (for example, dollars per cfs for a low-lift river pump station, including the intake structure, pumps, electrical systems, and related facilities) based on comparable projects with known costs. These unit costs are then applied to each project scenario. As the project advances and more detailed design information becomes available, the estimates can be refined using more specific unit costs, material quantities, and other detailed inputs.

Electrical infrastructure would be a major component to the required infrastructure needed, considering the magnitude of the required pump station horsepower. Cost will be dependent on the proximity to existing electrical infrastructure that has sufficient capacity to support the proposed project. These costs cannot be estimated at this time, as PG&E must conduct a Preliminary Engineering Study (PES) to identify surplus capacity in the existing grid and scope of improvements and extensions needed to serve the anticipated loads

Cost estimates for the 4 Eastside Recharge Basin project scenarios are summarized in Table 10. The capital cost, including the planning, design, and permitting costs, includes the cost of the diversion structure, sedimentation basins, transfer pump station, transmission main, and recharge basins, including land costs. Annual O&M costs include those for energy, pump station, sedimentation basin, pipeline, and recharge basin maintenance activities. Annual cost/AF is provided to help make project costs comparable between projects of varying sizes. Estimates are based on the amount of water diverted and put into the recharge basins, not the groundwater benefit or water available for later extraction. However, this metric of cost/AF per year should not be construed to be the cost of water or distribution of costs, as that analysis has not been completed. See Appendix J for more details.

Table 10. Eastside Recharge Basins Preliminary Cost Estimate

| Scenario | Capital Cost, Total | O&M, Annual | Average Project Yield, AFY |
|---|---|---|---|
| 400 cfs | $1,390,800,000 | $21,456,000 | 26,800 |
| 200 cfs | $614,700,000 | $10,792,000 | 17,200 |
| 100 cfs | $284,100,000 | $4,385,000 | 9,700 |
| 50 cfs | $139,900,000 | $2,198,000 | 5,100 |

### 7.2.5 Eastside Recharge Basins – Environmental Permitting Requirements

The diversion facility would require permitting for the 1) river intake diversion, including fish screens, pump station forebay, low-lift pump station, sedimentation basin, and conveyance pump station; 2) transmission mains to distributed recharge basin sites; and 3) depending on the diversion scenario and storage requirements, permitting for up to 40 40-acre recharge basins (for a total potential footprint of approximately 1,600 acres) would be required within the Eastside Subbasin.

Because this concept includes installation of a screened intake and associated infrastructure within the Salinas River corridor, authorization under Section 404 of the Clean Water Act would be required. This federal authorization would establish a federal nexus and trigger compliance with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. At the state level, the project would require authorization under the California Endangered Species Act, a Lake and Streambed Alteration Agreement, and water quality approvals under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act.

The location of the point of diversion near the Castroville Canal Intake would require detailed evaluation of instream flow thresholds, seasonal timing, and cumulative watershed effects. Relative to smaller diversion scenarios (e.g., 50 or 100 cfs), higher-capacity scenarios (e.g., 200 or 400 cfs) would likely increase the scope and intensity of fisheries and instream flow analysis, as well as the extent of potential mitigation. In addition, the potential development of up to 1,600 acres of surficial recharge basins would require evaluation of habitat conversion, land use compatibility, and potential indirect effects within the Eastside Subbasin.

Table 11 summarizes the anticipated resource agency permitting requirements for this project concept. See also Appendix K for a detailed description of applicable regulatory requirements and a general discussion of their applicability to project planning efforts.

Table 11. Eastside Recharge Basins – Anticipated Environmental Permits and Approvals

| Agency or Department | Approval or Permit | Applicability | Discussion |
|---|---|---|---|
| | | | **Federal Regulatory Requirements** |
| U.S. Army Corp of Engineers ("USACE") | Permit under Section 404 of the Clean Water Act (33 U.S. Code Section 1344). | Y | **Diversion**: The Eastside Recharge Basins concept includes construction and operation of a river intake diversion on the Salinas River The intake would require authorization under Section 404 because it would involve the discharge of dredged or fill material and/or placement of structures within waters of the United States ("WOTUS") and potentially adjacent wetlands (e.g., intake structure, bank stabilization, armoring, outfall/return features if any, construction pads, and associated appurtenances). Construction would also likely require temporary in-water work and bank disturbance (e.g., cofferdams, diversion of flow, dewatering, isolation of the work area, temporary access crossing/pad), which would trigger Section 404 authorization for temporary impacts in addition to permanent impacts.<br>Because the diversion facility includes a fish screen, pump station forebay, low lift pump station, sedimentation basin, and conveyance pump station, USACE would also evaluate upland components that may affect jurisdictional features through grading, drainage modifications, or placement of fill within potentially jurisdictional swales or wetlands adjacent to the river corridor. Section 404 review would require (i) delineation of WOUS/wetlands, (ii) evaluation of avoidance/minimization, (iii) an alternatives analysis under the 404(b)(1) Guidelines (including practicable alternatives with fewer aquatic impacts), and (iv) compensatory mitigation for unavoidable permanent impacts. The scope and intensity of the alternatives analysis and aquatic impact evaluation would likely scale with the diversion rate, with higher-capacity scenarios (e.g., 200 or 400 cfs) subject to more detailed scrutiny regarding potential instream flow and cumulative aquatic resource effects.<br>**Pipelines**: The ~4-mile transmission main (48-inch to 132-inch depending on the diversion capacity scenario) routed along private agricultural roads and public rights of way would require Section 404 authorization to the extent construction results in discharge of dredged or fill material into WOUS (e.g., tributary drainages, agricultural ditches that are jurisdictional, wetlands, or other regulated features). Even where trenchless construction methods are used at crossings, staging, access, and temporary work areas within jurisdictional features could trigger Section 404.<br>**Other (Recharge Basins):** Construction of recharge basins located outside of jurisdictional features would not independently trigger Section 404. However, grading, fill placement, or drainage modifications that affect adjacent wetlands or other WOUS could require authorization. Depending on the diversion scenario (400, 200, 100, or 50 cfs), up to forty (40) 40-acre recharge basins (approximately 1,600 acres total) could be developed within the Eastside Subbasin. The scale and number of basins constructed under higher-capacity diversion scenarios (e.g., 200 or 400 cfs) may increase the likelihood that basin footprints intersect or affect jurisdictional features. If recharge basins or associated storage facilities are hydraulically connected to jurisdictional waters, USACE may evaluate potential indirect effects to WOTUS as part of the alternatives analysis under the Section 404(b)(1) Guidelines.<br>**Schedule**: Section 404 permitting typically requires preparation of aquatic resource delineations, alternatives analysis, mitigation planning, and coordination with resource agencies. Individual permits commonly require 12–24 months following submittal of a complete application. This timeframe does not include preparation of supporting technical studies.<br>**Level of Controversy: High**, given 1) a river intake diversion on the Salinas River, 2) potential fisheries sensitivity (fish screen design, entrainment risk considerations tied to related consultations/authorizations), and 3) the potential breadth of alternatives analysis and mitigation obligations, particularly under the higher-capacity diversion scenarios (e.g., 200 or 400 cfs). |
| U.S. Fish and Wildlife Service ("USFWS")/National Marine Fisheries Service ("NMFS") | Federal Agency Consultation pursuant to Endangered Species Act Section 7 (16 U.S. Code Section 1537). | Y | **All**: Because the Eastside Recharge Basins project concept includes installation of a river intake diversion on the Salinas River that would require authorization under Section 404 of the Clean Water Act, a federal nexus would be established, and the U.S. Army Corps of Engineers ("USACE") would be required to initiate consultation under Section 7 of the Endangered Species Act.<br>Consultation would evaluate construction and operational effects of the diversion under each of the contemplated diversion scenarios (400, 200, 100, and 50 cfs), including fish screen design, entrainment protection, seasonal timing, and potential instream flow effects. Consultation would also address potential effects associated with the transmission main and development of distributed surficial recharge basins within the Eastside Subbasin. NMFS would likely have jurisdiction over listed anadromous fish species in the Salinas River, while USFWS would evaluate potential effects to listed riparian and terrestrial species within the action area.<br>The scope and intensity of consultation would likely scale with diversion capacity, with higher-capacity scenarios (e.g., 200 or 400 cfs) requiring more detailed evaluation of instream flow thresholds, habitat availability, and cumulative watershed effects. The federal lead agency (USACE) would require preparation of a Biological Assessment ("BA") evaluating whether the action may affect listed species or designated critical habitat. Given the nature of a direct pump intake and potential flow modification, it is likely that effects would be determined to be "may affect, likely to adversely affect," which would require formal consultation and issuance of a Biological Opinion. The Biological Opinion would include an Incidental Take Statement, if appropriate, specifying terms and conditions to minimize take.<br>Because the diversion facility includes a fish screen, consultation will also evaluate compliance with NMFS fish passage and screening criteria, including approach velocity, mesh size, cleaning mechanisms, and bypass provisions, as applicable.<br>**Schedule**: Preparation of the Biological Assessment typically requires 6–12 months depending on data needs (hydrology, fisheries, habitat modeling). Formal consultation under Section 7 typically requires up to 135 days following initiation; however, in practice, consultation for projects of this complexity commonly extends to approximately 12 months or longer from submittal of a complete BA.<br>**Level of Controversy/Complexity: High**. A river intake diversion on the Salinas River, particularly at higher diversion capacities (e.g.,200 or 400 cfs scenario), would likely receive substantial scrutiny regarding flow thresholds, fisheries protection measures, and cumulative watershed effects. |
| U.S. Fish and Wildlife Service ("USFWS") | Incidental Take Permit ("ITP") under the Endangered Species Act Section 10 (16 U.S. Code Section 1539). | N | **All**: An Incidental Take Permit ("ITP") under ESA Section 10 is generally required only when a project may result in the take of federally listed species and no federal nexus exists. Under the Eastside Recharge Basins concept, construction of a river intake diversion on the Salinas River would require authorization under Section 404 of the Clean Water Act, thereby establishing a federal nexus. As a result, incidental take authorization for federally listed species would be addressed through ESA Section 7 consultation with the USACE as the federal lead agency.<br>Through the Section 7 process, NMFS and/or USFWS would issue a Biological Opinion, if required, that includes an Incidental Take Statement specifying terms and conditions to minimize and monitor take. Accordingly, a separate Section 10 ITP and Habitat Conservation Plan ("HCP") would not be anticipated for this alternative.<br>Section 10 could become relevant only if the project were redesigned to eliminate the federal nexus (e.g., no Section 404 authorization required), which is not consistent with the currently described river intake diversion facility.<br>**Schedule**: Not applicable under the current project description.<br>**Level of Controversy/Complexity: Not applicable**; federal take authorization would occur through Section 7 consultation. |

| Agency or Department | Approval or Permit | Applicability | Discussion |
|---|---|---|---|
| State Historic Preservation Office and the National Historic Preservation Act ("NHPA") | Consultation with State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") under Section 106 of the NHPA (16 USC Section 470 et seq.). | Y | **All**: Because the Eastside Recharge Basins concept would require authorization under Section 404 of the Clean Water Act for construction of a river intake diversion on the Salinas River, the USACE would serve as the federal lead agency and would be required to comply with Section 106 of the National Historic Preservation Act ("NHPA").<br><br>Section 106 requires the federal agency to (i) define the Area of Potential Effects ("APE"), (ii) identify historic properties within the APE that are listed in or eligible for listing in the National Register of Historic Places, (iii) assess potential adverse effects, and (iv) resolve adverse effects through consultation with the State Historic Preservation Officer ("SHPO"), Tribal Historic Preservation Officer ("THPO"), and consulting Tribes.<br><br>For this concept, the APE would likely include:<br><br>The river intake diversion location, including areas of in-water and bank disturbance<br><br>The pump station forebay, sedimentation basin, and associated infrastructure<br><br>The approximately 4-mile transmission main corridor routed along agricultural roads and public rights of way<br><br>The footprints of the distributed recharge basins<br><br>USACE would define the APE to include the diversion site, pipeline corridor, reservoir footprint and dam/spillway/inlet-outlet works, treatment facilities, treated distribution system, and injection well field. Given the scale of ground disturbance (including reservoir inundation footprints and long linear corridors) and the long history of occupation within the Salinas River corridor and adjacent agricultural lands, cultural resource sensitivity may be elevated in portions of the project area. As a result, Section 106 compliance would likely require cultural resource surveys (and potentially subsurface testing where warranted), tribal consultation, and evaluation of both direct and indirect effects to historic properties. The scope of the APE and associated cultural review may vary depending on reservoir site selection (Merritt Lake floodplain setting versus upland Gabilan Range/Alisal Creek watershed), as well as final pipeline alignments.<br><br>If adverse effects to historic properties are identified, resolution may require development of a Memorandum of Agreement ("MOA") outlining mitigation measures (e.g., avoidance, monitoring, data recovery).<br><br>**Schedule**: Section 106 review typically requires approximately 6–12 months following submittal of a complete cultural resources inventory and APE delineation. If adverse effects are identified and an MOA is required, additional time may be necessary.<br><br>**Level of Controversy/Complexity: Moderate to High**, depending on the density of archaeological resources encountered within the Salinas River corridor and recharge basin sites. |
| **State Regulatory Requirements** | | | |
| California Department of Fish and Wildlife ("CDFW") | Incidental Take Permit under the California Endangered Species Act (California Fish and Game Code Section 2081). | Y | **All**: Authorization under the California Endangered Species Act ("CESA") would be required if construction or operation of the Eastside Recharge Basins concept may result in the take of species listed under state law. Unlike the federal ESA, CESA does not require a federal nexus and applies independently of Section 7 consultation.<br><br>The river intake diversion on the Salinas River, including installation of a fish screen, forebay, and associated infrastructure, would require evaluation of potential impacts to state-listed aquatic species, including but not limited to species with life stages occurring in the river corridor. CDFW review would focus on:<br><br>o Construction-related impacts, including temporary isolation/dewatering of work areas, turbidity, and habitat disturbance<br><br>o Operational effects, including potential alteration of surface flow conditions during diversion events (50 cfs to 400 cfs scenarios), entrainment risk, and long-term changes in habitat availability<br><br>o Indirect effects associated with pump station infrastructure, pipeline installation, and recharge basin construction affecting riparian or upland habitat<br><br>CDFW would require demonstration that impacts are minimized and fully mitigated, and that issuance of the permit would not jeopardize the continued existence of listed species. Hydrologic modeling, biological evaluations, and evaluation of diversion timing thresholds would likely be central to the CESA review, with the scope and intensity of analysis likely increasing under higher-capacity diversion scenarios (e.g., 200 or 400 cfs).<br><br>Although ESA Section 7 consultation would address federal take authorization, CESA compliance remains a separate state requirement and may involve distinct mitigation standards and conditions.<br><br>**Schedule**: Preparation of technical support materials (e.g., hydrology, fisheries, habitat assessment) may require substantial time. Following submittal of a complete application, CDFW review and permit issuance typically requires 12–24 months, depending on complexity and negotiation of avoidance, minimization, and mitigation measures.<br><br>**Level of Controversy/Complexity: High**. A new river intake diversion on the Salinas River would likely receive detailed scrutiny regarding flow thresholds, seasonal restrictions, screening criteria, and cumulative watershed effects, particularly under higher-capacity diversion scenarios. |
| California Department of Fish and Wildlife ("CDFW") | Lake Streambed Alteration Agreement (California Fish and Game Code Section 1602). | Y | **Diversion**: Construction of a river intake diversion on the Salinas River would require a Streambed Alteration Agreement ("LSAA") pursuant to Fish and Game Code Section 1602 because the project would substantially divert and obstruct the natural flow of a river and alter the bed, bank, or channel. Installation of the intake structure, fish screen, bank stabilization, and associated infrastructure would constitute permanent alteration. Temporary construction activities (e.g., cofferdams, dewatering, isolation of the work area, access pads, equipment staging within the channel margin) would also trigger LSAA requirements.<br><br>CDFW review would evaluate potential impacts to aquatic habitat, riparian vegetation, channel morphology, and fisheries resources, and would establish conditions addressing construction timing windows, turbidity control, screening criteria, bypass flows (as applicable), and habitat protection measures. The scope and intensity of review would likely scale with the diversion scenario (50, 100, 200, or 400 cfs), with higher-capacity scenarios requiring more detailed evaluation of instream flow protection and cumulative watershed effects.<br><br>**Pipelines**: The approximately 4-mile transmission main would require LSAA authorization where stream crossings or channel-adjacent construction activities result in bed or bank disturbance. Even where trenchless methods are used, temporary access, staging, or disturbance within CDFW jurisdictional areas may trigger Section 1602 notification requirements.<br><br>**Other (Recharge Basins):** Recharge basins located outside the active channel would not typically require an LSAA unless grading, berm construction, or drainage modifications substantially alter a river, stream, or lake, or impact riparian vegetation subject to CDFW jurisdiction. Depending on the diversion scenario, development of up to 40 distributed 40-acre recharge basins may increase the likelihood of interaction with jurisdictional drainages or riparian features within the Eastside Subbasin.<br><br>**Schedule**: Following submittal of a complete notification package, LSAA issuance typically requires 12 months, depending on project complexity and negotiation of agreement terms. Projects involving new river intake diversion infrastructure may require extended coordination. |

| Agency or Department | Approval or Permit | Applicability | Discussion |
|---|---|---|---|
| | | | **Level of Controversy/Complexity: High**. A new river intake diversion facility on the Salinas River would receive detailed review regarding flow protection, fisheries impacts, and consistency with existing management objectives for the river corridor, particularly under higher-capacity diversion scenarios. |
| State Water Resources Control Board ("SWRCB")/Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") | Waste Discharge Requirements pursuant to Section 401 of the Clean Water Act (40 Code of Federal Regulations 121) and the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Section 13000 et seq.). | Y (Section 401); P (WDR depending on recharge operations) | **Diversion**: Because construction of the river intake diversion on the Salinas River would require authorization under Section 404 of the Clean Water Act, the project would require Section 401 Water Quality Certification from the Central Coast Regional Water Quality Control Board ("Central Coast RWQCB"). Section 401 certification ensures that the permitted activity complies with applicable water quality standards, Basin Plan objectives, and protection of beneficial uses.<br>RWQCB review would focus on:<br>Turbidity and sediment control during in-water construction<br>Protection of aquatic habitat and designated beneficial uses<br>Potential channel modification and erosion<br>Compliance with applicable Total Maximum Daily Loads (if relevant)<br>Operational considerations associated with diversion rates (50 cfs to 400 cfs scenarios) and resulting effects on instream flows<br>Certification would include enforceable conditions addressing construction BMPs, monitoring, reporting, and potentially operational flow protections consistent with Basin Plan requirements. The scope of review may scale with diversion capacity, with higher-capacity scenarios requiring more detailed evaluation of potential instream flow and water quality implications.<br>**Pipelines**: Stream or drainage crossings involving discharge of dredged or fill material into waters of the state would require Section 401 certification in conjunction with Section 404 authorization. Additionally, construction activities disturbing 1 acre or more would require coverage under the Statewide Construction General Permit for stormwater discharges.<br>**Other (Recharge Basins):** Recharge basin construction and operation may require Waste Discharge Requirements ("WDRs") under the Porter-Cologne Water Quality Control Act if infiltration activities have the potential to affect groundwater quality. RWQCB would evaluate whether diverted surface water meets applicable groundwater quality objectives. Depending on water quality characteristics and operational design, recharge could require individual WDRs or enrollment under an applicable general order. The likelihood and scope of WDR requirements may increase under higher-capacity diversion scenarios, which contemplate a greater number and total acreage of recharge basins.<br>**Schedule**: Section 401 Certification typically requires 12 months following submittal of a complete application; longer if technical review is complex or coordinated with federal consultation. If individual WDRs are required for recharge operations, review and adoption could require 12 months or longer, depending on hydrogeologic analysis and Board scheduling.<br>**Level of Controversy/Complexity: High**. A new river intake diversion and large-scale recharge program on the Salinas River would receive detailed review regarding protection of beneficial uses, water quality standards, and consistency with Basin Plan objectives. |
| California Department of Water Resources ("DWR"), Division of Safety of Dams ("DSOD") | Approval of Dam Construction and Certificate of Approval to Operate (Water Code §§6000 et seq.) | N | **Reservoirs:** Concepts that include a reservoir impounded by an embankment or other dam structure would fall under DSOD jurisdiction. DSOD requires submittal of a Preliminary Design Report and Final Design Report supported by detailed geotechnical investigations, seismic stability analyses, and hydrologic/hydraulic modeling (including spillway design based on the probable maximum flood, as applicable). DSOD review is iterative and requires close coordination throughout design and construction, including agency oversight and inspection.<br>**Schedule:** Not applicable under the current project description.<br>**Level of Controversy:** Not applicable. This concept does not involve a reservoir. |

Notes:

This table is not intended to provide an exhaustive list of all permits, approvals, or authorizations that may be required to construct, operate, or maintain potential water supply facilities. Rather, it identifies anticipated resource agency permitting requirements related specifically to environmental resource considerations and compliance with applicable state and federal environmental regulations. The permits identified in this table are based on conceptual-level information regarding the Project alternatives. As project design, siting, and operational details are refined, additional permits or approvals may be identified, and the regulatory pathways described may change accordingly.

The permits and approvals identified in this table are organized by project components for purposes of evaluating applicability. However, regulatory agencies typically issue authorizations on a project-wide basis. Accordingly, a single Section 404 permit, Section 7 consultation, CESA authorization, LSAA, or Section 401 certification would generally encompass all applicable components of the project concept.

[1] The regulatory analysis presented in this report assumes implementation of a river intake diversion from the Salinas River. Alternative diversion approaches (e.g., subsurface infiltration galleries or Ranney wells) may follow a different regulatory pathway and, in some cases, may reduce the level of permitting efforts. However, these alternatives would still likely be subject to the same permitting regime and would still require evaluation of potential surface flow depletion, hydraulic connectivity, and related biological effects. Accordingly, while the nature and emphasis of permitting requirements may differ, subsurface diversion methods would be subject to the same state or federal environmental permitting requirements, although the level of controversy may be less due to the type of diversion.

## 7.3 Northern Eastside Injection

The second project concept evaluated was Northern Eastside Injection. Under this project concept, Permit 11043 water would be diverted at the Castroville Canal Intake location and conveyed to a surface storage reservoir. Stored water would then be treated and delivered to a network of injection wells located in the northern Eastside Subbasin. Surface storage allows for regulation of flows to the treatment plant and more consistent injection. Injection wells are appropriate in the northern Eastside Subbasin because shallow clays would inhibit infiltration from recharge basins. Two scenarios are contemplated: 1 with a diversion flow rate at 50 cfs and the other at 100 cfs. Under the 50 cfs scenario, diverted water is stored in a proposed surface reservoir at the Merritt Lake site; under the 100 cfs scenario, diverted water is stored in a proposed surface reservoir in the Gabilan Range near Alisal Creek.

### 7.3.1 Northern Eastside Injection – Infrastructure Layout

#### 7.3.1.1 River intake diversion

The diversion facility is proposed at the Castroville Canal Intake location, the point of diversion authorized pursuant to Permit 11043. Configuration of the diversion structure and design considerations are the same as previously outlined in Section 7.2.1.

Each component of the diversion facilities including the fish screen, river pump station, sedimentation basin, and high lift transfer pump station would be sized to match the respective flow diversion rate scenario of 100 cfs or 50 cfs. Flow from the sedimentation basins will be conveyed to a surface storage reservoir via the high lift transfer pump station. The pumping head varies with each scenario as the static head and friction loss is not consistent across the scenarios. The total horsepower required for this pump station is estimated at 8,100 HP for the 100 cfs scenario and 700 HP for the 50 cfs scenario. Being that the 100 cfs scenario discharges into the proposed reservoir in the Gabilan range (assumed max water surface elevation 570 feet), the static head requirements are much higher than pumping to Merritt Lake (assumed max water surface elevation 36 feet).

#### 7.3.1.2 Conveyance – Pipeline

Diverted waters are conveyed from the transfer pump station to the proposed storage facilities via large diameter transmission mains. Following storage and treatment, water would be sent to the distribution network for delivery to the injection well field. With a majority of injection wells located within the City of Salinas, there may be opportunity to use the existing water distribution system within the city limit to deliver these flows; however, for purposes of this study it is assumed that new pipes would be installed in the right of way.

Under the 50 cfs scenario, a 48-inch diameter, 15-mile long main would deliver raw water to the Merritt Lake reservoir site. Stored water would then be treated and distributed via a distribution system (treated water) with distribution pipes ranging in size from 6 to 18 inches in diameter. Approximately 25 miles of distribution pipeline would be needed to serve the injection wellfield.

Under the 100 cfs scenario, a 66-inch diameter, 7-mile long main would deliver the raw water from the transfer pump station near the diversion to the Gabilan Range Reservoir site. Stored water would then be treated and distributed via a distribution system (treated water) with distribution pipes ranging in size from 6 to 24 inches in diameter. Approximately 25 miles of distribution pipeline would be needed to serve the injection well field.

The transmission and distribution pipelines would be routed along existing private, agricultural roads and public rights of way.

For the 50 cfs scenario, the transmission main routing would include an undercrossing of UPRR and Caltrans right-of-way at State Route 183 on the western edge of Salinas. A crossing under the Reclamation Ditch would be required near the same location and approximately 2.7 miles to the north a crossing of Santa Rita Creek would be required. The distribution system would include a crossing of U.S. Highway 101 at Russell Road and several drainage crossings within the City of Salinas. Total quantities of pipeline are presented in Table 12.

The 100 cfs scenario would also include an undercrossing of UPRR and Caltrans right-of-way, but approximately 3 miles southeast of Salinas near Spence at U.S. Highway 101. The distribution piping layout is similar to the 50 cfs scenario, except no crossing of U.S. Highway 101 is needed.

Table 12. Pipeline Lengths

| Scenario | Raw Water Transmission Pipeline Diameter (inches) | Raw Water Transmission Pipeline Length (feet) | Distribution Pipeline Diameters (inches) | Distribution Pipeline Total Length (feet) |
|---|---|---|---|---|
| 100 cfs | 66” | 36,300’ | **6” – 24”** | 133,400’ |
| 50 cfs | 48” | 79,000’ | **6” – 18”** | 133,900’ |

#### 7.3.1.3 Storage – Proposed Merrit Lake and Gabilan Range Reservoirs

Storage is needed to allow for the balancing between the available diversion flows—which occur December through April—and the steady treatment and injection rate that would be relatively consistent throughout the year. The diversion flows would fluctuate daily; there would be many days without any potential diversions and other days where the diversion would be operating at maximum capacity. Water treatment plants cannot quickly ramp up and down the treatment flow rate, therefore significant storage is needed. Storage also allows for a much lower capacity of the water treatment plant and injection wells; for example, for the 100 cfs diversion, a treatment and injection flow rate of 20 cfs (13 million gallons per day [mgd]) was selected based on the storage analysis and assuming continuous treatment and injection throughout the year. The surface storage reservoirs considered at Merritt Lake and the Gabilan Range site would be created through the construction of dams and therefore, would be regulated by the California Division of Dam Safety based on the proposed dam heights and capacities of both reservoirs.

**Merritt Lake**

Merritt Lake is a natural low-lying area east of Castroville that is currently active farmland. The area periodically floods during moderate storm events. Prior studies have identified the site for a new water storage reservoir. Details regarding a conversion of the area into a storage reservoir were obtained from the 1998 Project Plan Report for the Salinas Valley Water Project (Montgomery Watson, 1998); The proposed Merritt Lake concept as described included the following elements:

- Two reservoirs
  - Agricultural Reservoir – 9,600 AF at WS EL. 36 feet
  - Urban Reservoir – 3,000 AF at WS EL. 33 feet
- The maximum design water surface at elevations of 36 feet and 33 feet (for the agricultural and urban reservoirs, respectively) were based on the project storage needs. The study notes that elevations of up to 50 feet are possible based on the topography, would provide a maximum combined capacity of 22,000 AF (15,600 AF and 6,400 AF) based on the selected dam placement.
- Main Dam (likely integrated or both reservoirs) on the west side of the reservoir. Lengths for the agricultural reservoir and urban reservoir were estimated at 1,500 feet and 1,050 feet, respectively, with maximum crest heights of approximately 46 feet, per the 1998 Project Plan Report.
- Back dam approximately 1,600 feet long and maximum crest height of approximately 46 feet. Located approximately 3,000 feet west of Highway 101 to prevent inundation further east, including Highway 101
- Perimeter levee along a section on the southwest perimeter near Espinosa Road, approximately 750 feet long
- Spillway sized to pass the probable maximum flood (PMF)
- Inlet/outlet works

- Flood control infrastructure including a pumping plant and/or pipeline to route runoff from the upstream watershed around the reservoir to the downstream drainage channel

**Gabilan Range Reservoir Site**

A new potential reservoir site was identified in the Gabilan Range near Alisal Creek. This reservoir site was identified strictly based on topography. Further investigation is needed as to the site suitability regarding geology (foundation, faults, seepage), hydrology (flood flows, watershed capture), constructability, safety, environmental constraints, etc.

The proposed reservoir concept involves a new earthen dam in an unnamed valley in the Alisal Creek watershed. Although further study is needed to determine whether the site is feasible, preliminary characteristics of the dam include:

- Approximate dam crest elevation – 570 feet
- Approximate dam maximum height – 260 feet
- Approximate dam crest length – 2,300 feet
- Approximate volume of dam fill, assuming 2.5:1 embankments – 8,000,000 cubic yards

The table below summarizes the information for the 2 reservoirs.

Table 13. Storage Reservoirs

| Scenario | Reservoir | Capacity, AF | Capital Cost Estimate |
|---|---|---|---|
| Northern Eastside Injection, 100 cfs | Gabilan Range Site | 25,000 | $355M |
| Northern Eastside Injection, 50 cfs | Merritt Lake, Combined | 13,000 | $117M |

#### 7.3.1.4 Treatment

This project concept assumes the need to treat diverted water prior to injection, as typically required for conventional ASR projects. The level of treatment required by the regulating Regional Water Quality Control Board would be determined following source water characterization and development of project-specific Waste Discharge Requirements (WDRs). For general guidance, it is assumed that the same injected water limitations from the State Water Resources Control Board’s Water Quality Order 2012-0010 *General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater* (ASR General Order) would apply meaning that injected water would have to meet primary and secondary maximum contaminant levels (MCLs) and Basin Plan water quality objectives dependent on the aquifer’s beneficial uses. The ASR General Order allows projects to meet background groundwater quality in cases where the aquifer’s water reflects concentrations in exceedance of drinking water MCLs. Therefore, given that the proposed injection wells are in areas with known domestic water supply wells, it is assumed that treatment to drinking water standards will be required. An analysis of existing river water quality shows more sampling would be required to identify the type and size of treatment plant needed; however, preliminary evaluation suggests the proposed diversion location under this project scenario exhibits a higher level of water quality than locations further downstream with more direct influence from the City of Salinas and regional storm and agricultural drainage (SVBGSA and M&A, 2025).

Any water injected into an aquifer serving domestic users would need to be treated to Title 22 drinking water standards beforehand. The size of the proposed conventional water surface treatment plant varies depending on project scenario as presented in Table 14.

Table 14. Northern Eastside Injection Scenario Water Treatment Plant Capacity

| Scenario (Diversion Capacity) | Water Treatment Plant Capacity |
|---|---|
| Northern Eastside Injection, 100 cfs | 13 mgd |
| Northern Eastside Injection, 50 cfs | 6.5 mgd |

mgd = million gallons per day

#### 7.3.1.5 Injection wells

The injection well field includes sufficient injection wells to deliver approximately 50% above the predicted annual average diversion volume for each scenario. The injection capacity matches the treatment plant capacity and was based on a water balance analysis of the storage volume needed versus injection/treatment capacity.

The number of wells, placement, and flow rate per well was selected based on modeling results that showed a greater benefit was generally achieved with a higher number of injection wells at a lower injection rate per well. A summary of the injection wells for each scenario is provided in Table 15.

Table 15 : Injection wells for Northern Eastside Injection

| Scenario (Diversion Capacity) | Total Injection Well Capacity | # of Injection Wells | Flow Rate per Injection Well, gpm | Average Annual Injection Volume (AFY) |
|---|---|---|---|---|
| Northern Eastside Injection, 100 cfs | 13 mgd (20 cfs) | 23 | 390 | 9,700 |
| Northern Eastside Injection, 50 cfs | 6.5 mgd (10 cfs) | 12 | 375 | 5,100 |

The proposed layouts are presented on Figure 18 and Figure 19 below.

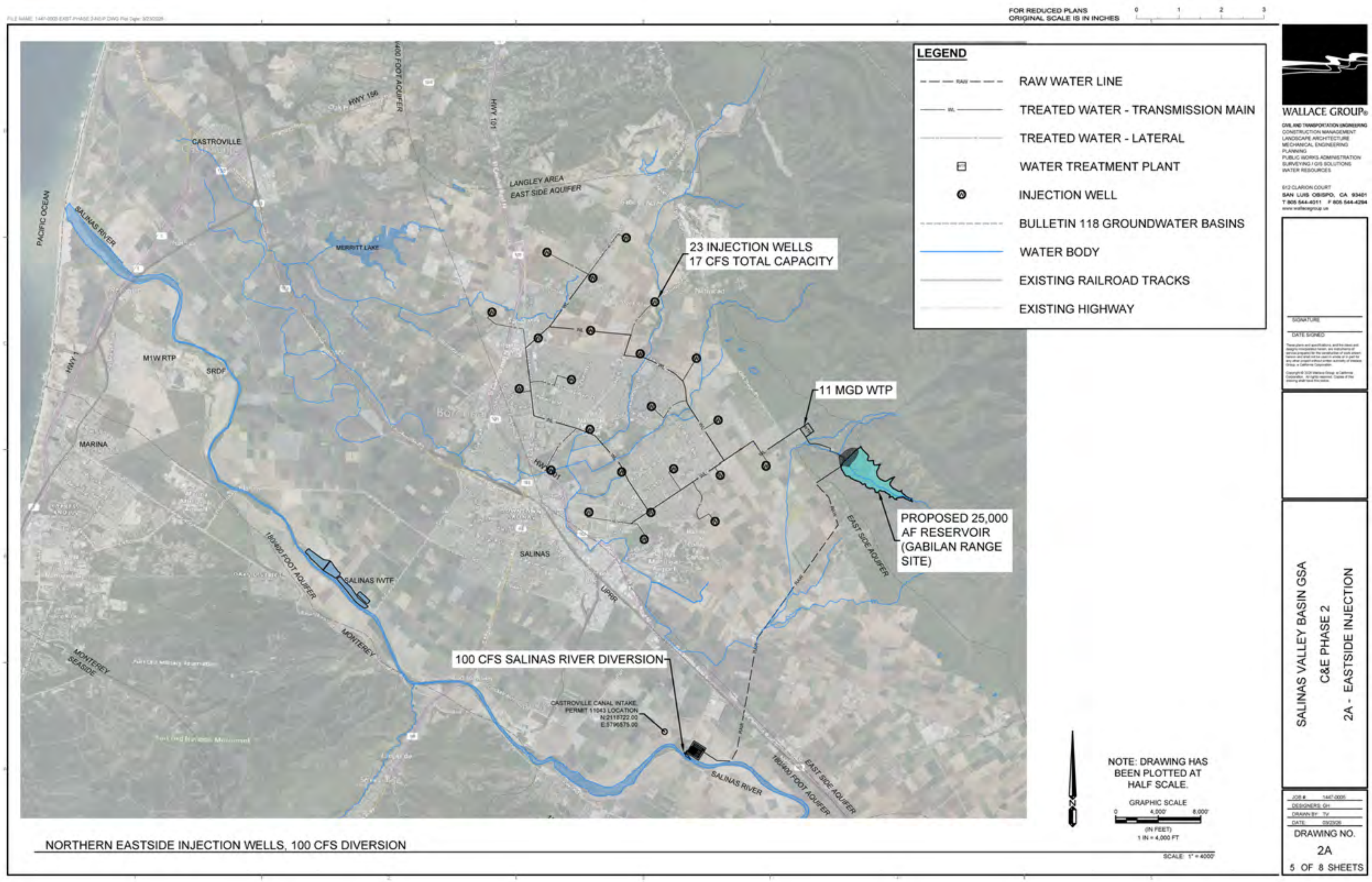



Figure 18. Infrastructure Layout for Northern Eastside Injection, 100 cfs Scenario

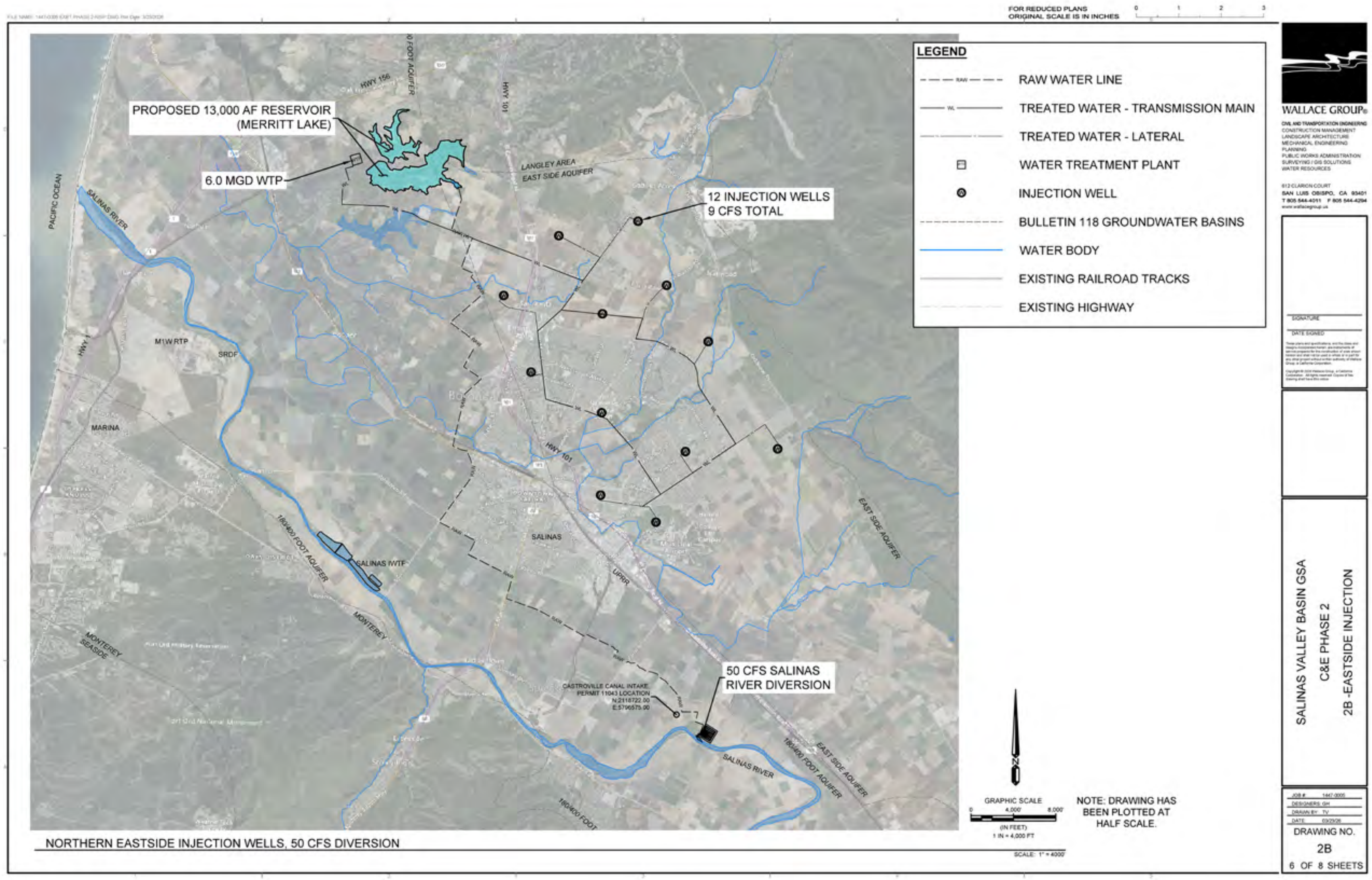



Figure 19. Infrastructure Layout for Northern Eastside Injection, 50 cfs Scenario

### 7.3.2 Northern Eastside Injection – Groundwater Benefit

This section summarizes modeled groundwater benefits for the Northern Eastside Injection scenarios, which divert water under Permit 11043, provide surface storage and treatment, and deliver water to a network of injection wells in the northern Eastside area. As in the preceding recharge basin analysis, groundwater benefits are evaluated primarily using simulated water levels compared to the Groundwater Level SMC, with additional context provided by changes in groundwater levels and storage.

#### 7.3.2.1 Groundwater Levels

Model results show that groundwater levels increase in the vicinity of the injection wells in the northern Eastside Subbasin, with larger increases occurring under the 100 cfs injection scenario than under the 50 cfs scenario. This area is characterized by a persistent and deepening groundwater depression, which is influenced by a combination of factors including relatively low aquifer permeability, limited vertical connectivity due to shallow clay layers, and substantial municipal pumping associated with the City of Salinas and nearby agricultural irrigation wells. The low permeability and clay layers reduce the suitability of surface recharge basins and constrain the downward movement of water to the deeper portions of the aquifer where the depression is most pronounced, making injection a more effective recharge approach in this area. Modeled groundwater level increases are largest near the injection wells and become more concentrated around the recharge locations than in the Eastside recharge basin scenarios, particularly because of lower transmissivity in the northern Eastside Subbasin. Even so, the lower storativity of the confined aquifers allows groundwater level increases to propagate relatively quickly into adjacent areas, including the 180/400 and Langley Subbasins. The accumulation of groundwater level increases drops off to the west of the 180/400 and Eastside border, where there is sharp increase in modeled transmissivity. In summary, injection water into the northern Eastside Subbasin causes quick water level increases nearby, but the effect fades toward the layered and more permeable aquifer system to the west.

Figure 20 shows the Northern Eastside Injection 100 cfs Scenario as an example of the groundwater level change from injection in this area. Results for the 50 cfs Scenario are similar, but with a lesser extent of groundwater level change, as shown in Appendix I.

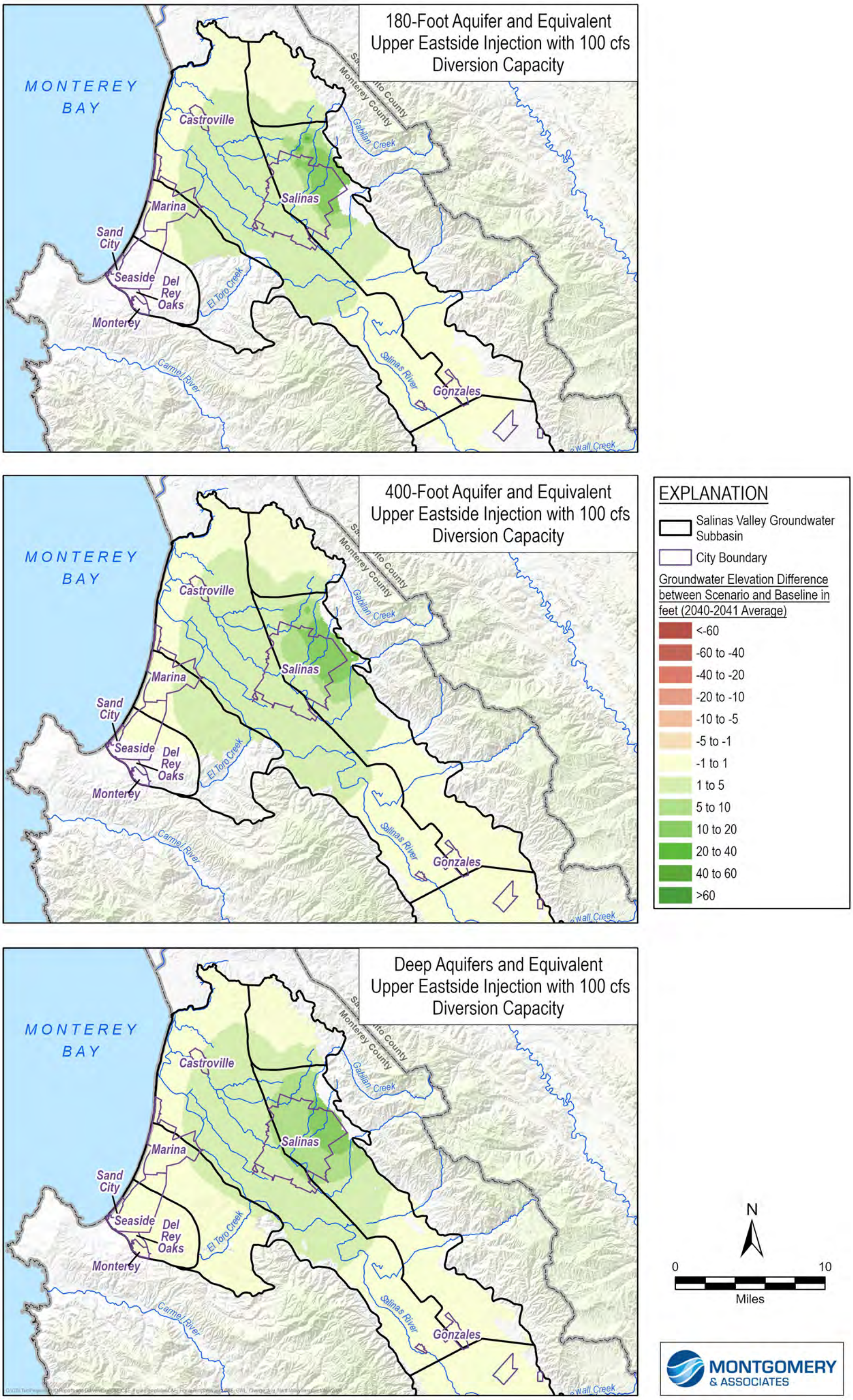



Figure 20. Groundwater Level Difference from Baseline for Northern Eastside Injection 100 cfs Scenario During 2040-2041 Evaluation Period

As in the recharge basin scenarios, many RMS wells rise above and fall below their minimum thresholds multiple times over the simulation period, reflecting both climate-driven variability and longer-term trends. Time since project initiation also plays a role: after injection begins (assumed in 2035, consistent with the preceding section), benefits can accumulate over multiple years and become more evident in well hydrographs over time. The hydrographs on Figure 24 shows the spatial variation of effect of the project on the Groundwater Level SMC, using the 100 cfs Scenario as an example. While the 100 cfs Eastside Injection Scenario causes many of the northern Eastside RMS wells to rise above below their minimum thresholds in 2040-2041, the status of the many other remain unchanged.

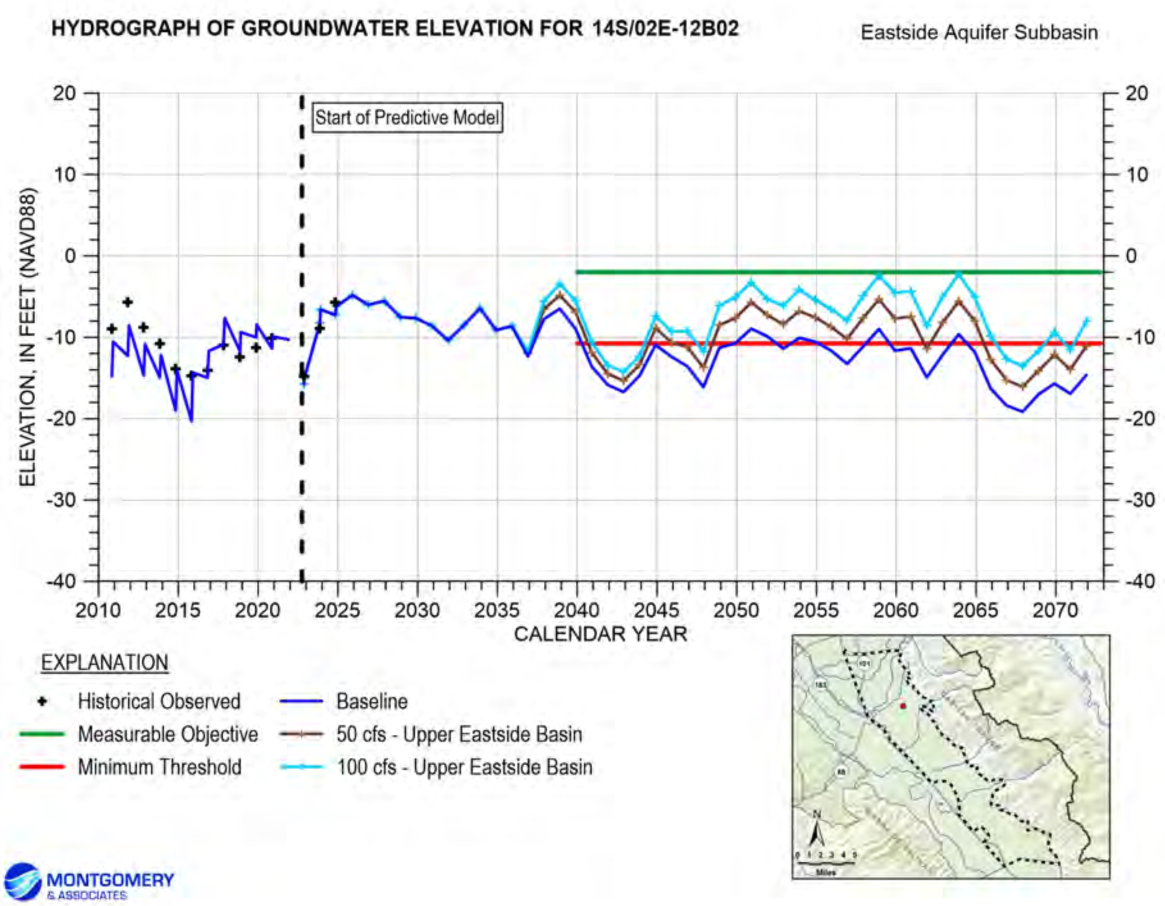



Figure 21. Simulated Hydrograph for Baseline and Eastside Injection Scenarios in Well 14S03E12B02

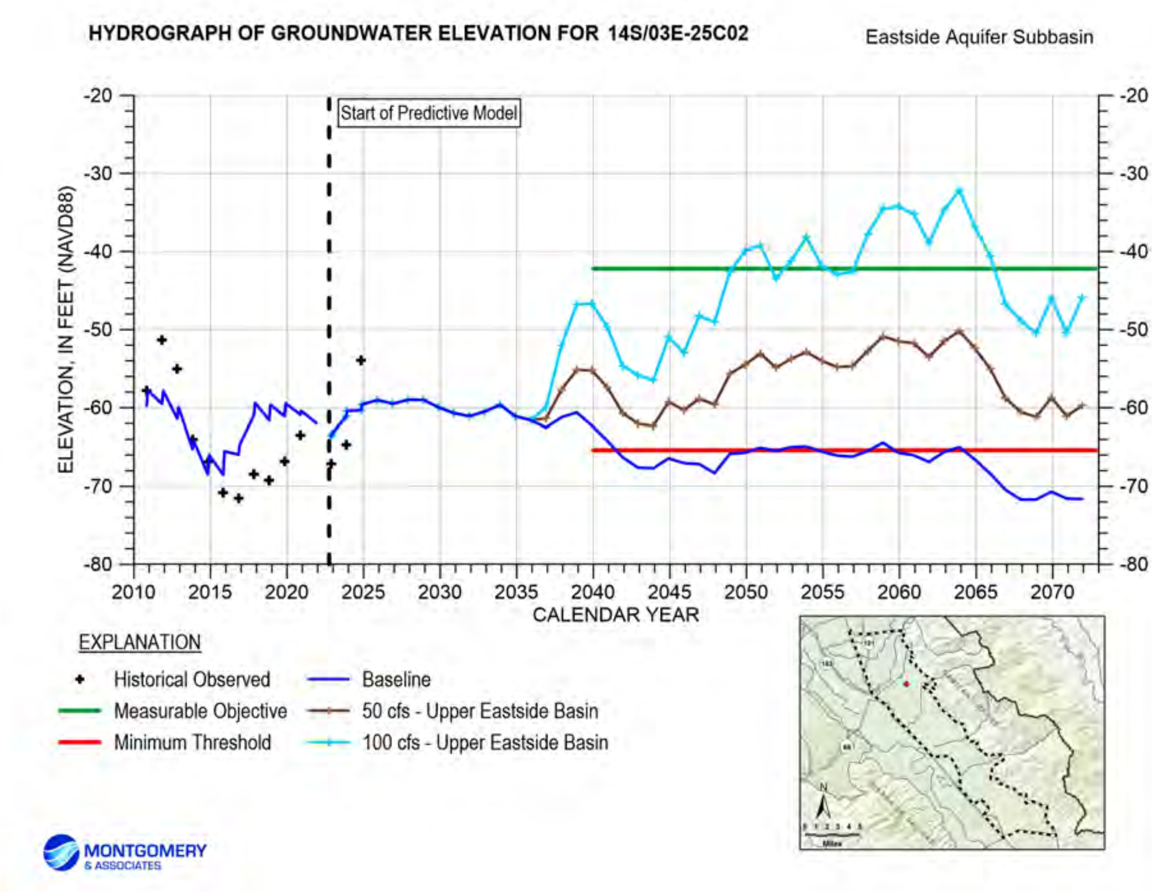



Figure 22. Simulated Hydrograph for Baseline and Eastside Injection Scenarios in Well 14S03E25C02

Both Eastside injection scenarios lower the number of wells with groundwater levels below their minimum thresholds by the sustainability evaluation period of 2040–2041, with the larger project having a greater impact in both the Eastside and 180/400 Subbasins. However, neither scenario avoid undesirable results by the evaluation period. Table 16 summarizes the percentage of wells for which simulated water levels were below their minimum thresholds. As compared to the Baseline Scenario, which had 62% of wells below minimum thresholds during the evaluation period, the Northern Eastside Injection Scenarios reduce this percentage to 55% (50 cfs) and 38% (100 cfs). As with the recharge basin scenarios, the 180/400 Subbasin also shows modest improvements: baseline conditions show 73% of wells below minimum thresholds, which decreases to 67% (50 cfs) and 62% (100 cfs) under the Northern Eastside Injection scenarios.

Table 16. Percentage of RMS Wells with Water Levels Simulated Below MT During 2040-2041 Evaluation Period

| Subbasin* | Wells Evaluated | Single well % | Baseline | Eastside Injection | |
|---|---|---|---|---|---|
| | | | | 50 cfs | 100 cfs |
| Eastside | 29 | 3% | 62% | 55% | 38% |
| 180/400 | 66 | 2% | 73% | 67% | 62% |

* Projects have no impact on percentages in other subbasins
Light red shading indicates undesirable result.

Figure 23 shows the percentage of Eastside RMS wells below the minimum threshold at the end of November for each simulated year under the Baseline and Northern Eastside Injection scenarios. Relative improvements vary from year to year, in part because diversion, storage, and injection volumes are higher in wetter years than in drier years, which amplifies climate-driven patterns evident in the Baseline Scenario.

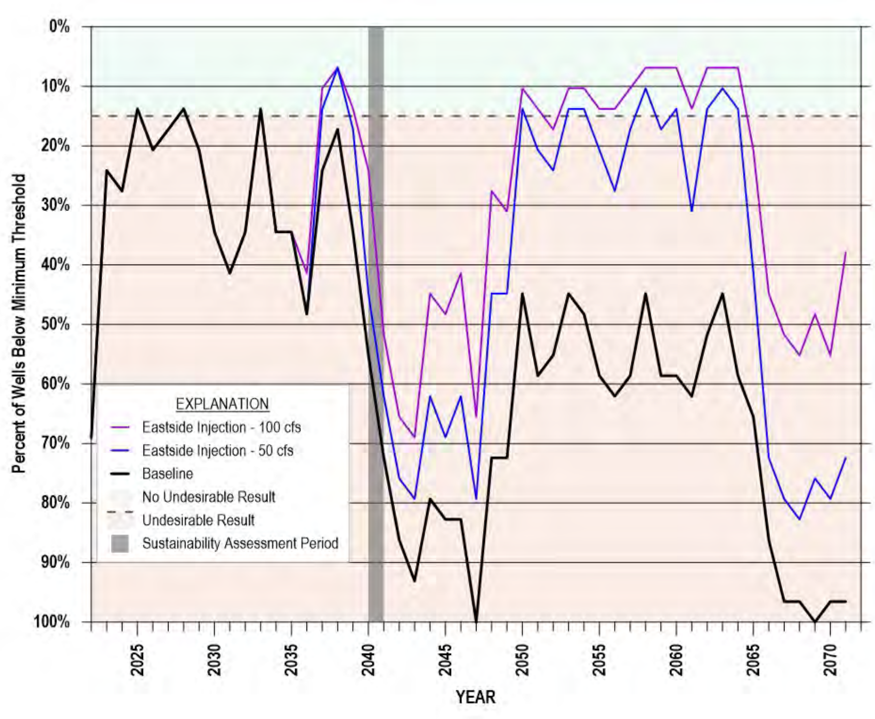



Figure 23. Percentage of RMS Wells with Simulated Water Levels Below the MT for 2022-2072

Figure 24 shows the RMS wells compared to the minimum thresholds and measurable objectives spatially. During the 2040-2041 evaluation period, the Baseline Scenario is on the left and the Northern Eastside Injection 100 cfs Scenario is on the right. It illustrates the wells that improved compared to their SMC are mainly in the vicinity of the injection wells (hollow circles) in the eastern part of Salinas.

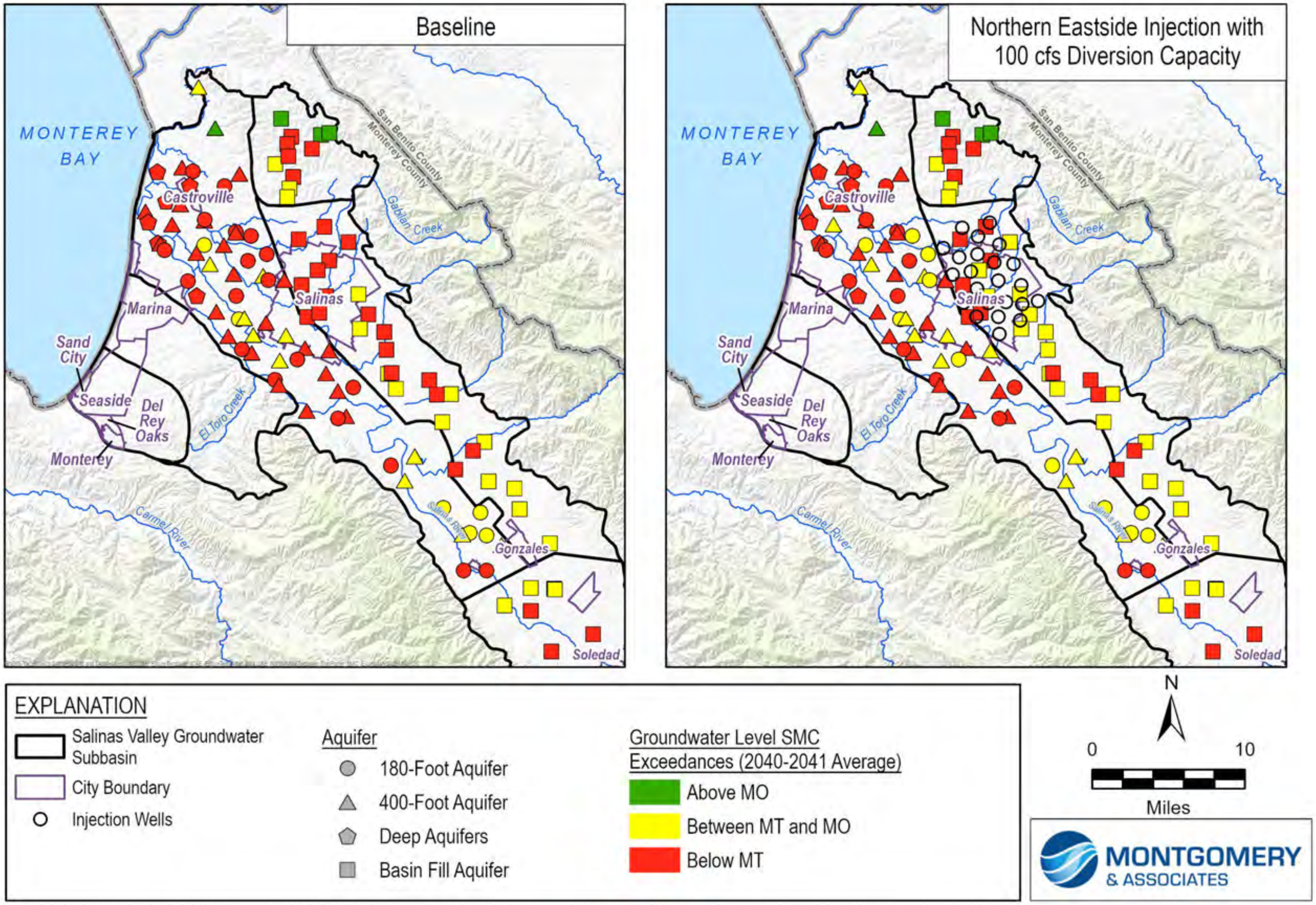



Figure 24. Groundwater Level SMC Exceedances in the Eastside Injection Scenario (100 cfs) During 2040-2041 Evaluation Period

#### 7.3.2.2 Changes in Groundwater Flows and Storage

Relative to the Baseline Scenario, modeled storage increases in the Eastside Subbasin range from approximately 1,100 to 2,000 AF/year, with additional gains distributed among adjacent subbasins—particularly the Langley Subbasin, reflecting the proximity of the injection field to subbasin boundaries. The spatial distribution of storage gains differs from the Eastside Recharge Basin scenarios: the Eastside Subbasin accounts for a smaller share of the total model-wide increase (approximately 45–46%, compared to approximately 60% under the recharge basin scenarios), with a proportionally larger share occurring in Langley and the 180/400 Subbasin. Unlike the recharge basin scenarios, little to no change in stream seepage or groundwater pumping is simulated under the injection scenarios. Inter-subbasin groundwater flows shift in a manner consistent with increased heads in the northern Eastside Subbasin, with reduced flow from the 180/400 Subbasin into the Eastside Subbasin and smaller changes in other flow components reflecting altered regional hydraulic gradients.

### 7.3.3 Northern Eastside Injection – Purpose of Use

Similar to the Eastside Recharge Basins project concept, the Northern Eastside Injection project concept proposes that agricultural water users will extract the water from underground storage for irrigation purposes and similarly, municipal water users will extract the water from underground storage for municipal and industrial purposes. The project components and costs include diversion through injection, but the purpose of use is extraction by agricultural and municipal users through private wells.

### 7.3.4 Northern Eastside Injection – Cost Estimate

For the Northern Eastside Injection scenarios, cost estimates are Class 5 AACE estimates, similar to the Eastside Recharge Basins estimates. The cost estimate from the 1998 report was escalated to 2025 costs based on index data from the Bureau of Reclamation Construction Cost Trends. Estimates include capital cost, land purchase, and O&M; estimates do not include end use extraction via private wells, nor do they include the cost of electrical infrastructure improvements required to serve the loads of the proposed facilities. Annual O&M costs include those for energy and treatment as well as pump station, sedimentation basin, pipeline, reservoir, and injection well maintenance activities. Cost estimates are summarized in Table 18. The annual cost/AF is based on the amount of water injected, not the groundwater benefit or water available for later extraction and should not be construed with the cost of water or distribution of costs, as that analysis has not been completed. See Appendix J for more details.

Table 17 Northern Eastside Injection Preliminary Cost Estimate

| Scenario | Capital Cost, Total | O&M, Annual | Average Project Yield, AFY |
|---|---|---|---|
| Northern Eastside Injection, 100 cfs | $1,016,800,000 | $12,895,000 | 9,700 |
| Northern Eastside Injection, 50 cfs | $515,500,000 | $6,598,000 | 5,100 |

### 7.3.5 Northern Eastside Injection – Environmental Permitting Requirements

The Northern Eastside Injection concept would involve similar permitting for the diversion structure as in the Eastside Recharge Basins concept, at either 50 or 100 cfs. It would also require permitting for construction of a new surface storage reservoir (either at the Merritt Lake site or within the Gabilan Range/Alisal Creek watershed), treatment of stored water, and distribution to a network of injection wells in the northern Eastside Subbasin.

Water quality approvals would include Section 401 certification and enrollment under the SWRCB's Water Quality Order No. 2012-0010-DWQ (General Waste Discharge Requirements for Groundwater Recharge Projects, or General Order) for injection activities. In addition to diversion-related permits, this concept introduces additional regulatory considerations associated with reservoir construction, treatment infrastructure, and groundwater injection wells. At the state level, authorization under the CESA and a Lake and Streambed Alteration Agreement would be required for the diversion and potentially for reservoir construction, depending on site selection. In addition, these scenarios would fall under DWR's DSOD regulations. Water quality approvals would include Section 401 Water Quality Certification for activities involving discharge of dredged or fill material to waters of the state, as well as enrollment under the General Order for injection activities. Implementation and enforcement of the General Order would occur through the Central Coast RWQCB, including issuance of a Notice of Applicability and adoption of project-specific monitoring and reporting requirements.

The scope, duration, and complexity of permitting will depend on final reservoir site selection (Merritt Lake floodplain setting versus upland Gabilan Range reservoir), diversion capacity (50 cfs versus 100 cfs), treatment requirements, injection well design, and groundwater basin conditions. The regulatory profile of this concept differs from the surficial recharge basin concept due to the addition of reservoir infrastructure and groundwater injection components, which introduce distinct dam safety, habitat conversion, and groundwater quality considerations.

Table 19 summarizes the anticipated resource agency permitting requirements for this alternative based on currently available conceptual-level information, with more details in Appendix K.

Table 18. Northern Eastside Injection Anticipated Permits and Approvals

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| **Federal Regulatory Requirements** | | | |
| U.S. Army Corp of Engineers ("USACE") | Permit under Section 404 of the Clean Water Act (33 U.S. Code Section 1344). | Y | **Diversion:** The Northern Eastside Injection concept consists of a river intake diversion on the Salinas River using the same design as described for the Eastside Recharge Basin concept and is therefore subject to the same Section 404 authorization. Please refer to Table 11 for additional information related to Section 404 permitting requirements.<br>**Reservoir (Merritt Lake – 50 cfs scenario):** Construction of dams, levees, spillways, and flood control infrastructure within a low-lying agricultural floodplain may require Section 404 authorization if wetlands or other WOTUS are filled or reconfigured. Development of the 12,600 acre-foot Merritt Lake storage reservoir may require Section 404 authorization if dam/levee construction, spillway installation, flood bypass infrastructure, or grading activities result in fill placement within jurisdictional wetlands or other WOTUS. Because the Merritt Lake site is located within a low-lying flood-prone agricultural setting, jurisdictional wetlands, drainages, or other aquatic features may be present within the proposed footprint. Jurisdictional delineation would be required to confirm the extent of WOTUS within the reservoir footprint. If impacts to WOTUS are identified, Section 404 review would require evaluation of avoidance and minimization measures and compensatory mitigation for unavoidable permanent impacts consistent with the Section 404(b)(1) Guidelines.<br>**Reservoir (Gabilan Range/Alisal Creek – 100 cfs scenario):** Construction of a new earthen dam within a tributary watershed would likely require Section 404 authorization for fill placement within jurisdictional stream channels and associated features. Because the proposed reservoir site is located within an upland tributary setting, impacts to stream channels and associated aquatic features may be more direct and extensive than in the floodplain setting, depending on final dam configuration.<br>**Pipelines:** Crossings under the Reclamation Ditch and Santa Rita Creek, as well as other jurisdictional drainages along the 7–15 mile raw water main and ~25 miles of treated distribution system, would require authorization. The number and extent of jurisdictional crossings may vary depending on final alignment and reservoir site selection.<br>**Schedule:** Section 404 permitting typically requires preparation of aquatic resource delineations, alternatives analysis, mitigation planning, and coordination with resource agencies. Individual permits could require 18–24+ months following submittal of a complete application depending on aquatic impacts and reservoirs related review. This timeframe does not include preparation of supporting technical studies.<br>**Level of Controversy: High**, given 1) a direct instream intake on the Salinas River, 2) potential fisheries sensitivity (fish screen design, entrainment risk considerations tied to related consultations/authorizations), 3) the potential breadth of alternatives analysis and mitigation obligations, and 4) new reservoirs. |
| U.S. Fish and Wildlife Service ("USFWS")/National Marine Fisheries Service ("NMFS") | Federal Agency Consultation pursuant to Endangered Species Act Section 7 (16 U.S. Code Section 1537). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same ESA permitting requirements as the Eastside Recharge Basins concept. Therefore, the Northern Eastside Injection concept would be subject to ESA Section 7 consultation. Please refer to Table 11 for additional information regarding the ESA Section 7 consultation requirements.<br>Reservoir construction, particularly in Alisal Creek watershed, may expand the action area and associated species review. Under the Merritt Lake floodplain scenario, consultation would evaluate habitat conversion and potential effects to species associated with lowland agricultural and floodplain environments. Formal consultation and issuance of a Biological Opinion with an Incidental Take Statement likely.<br>**Schedule:** Preparation of the Biological Assessment typically requires 6–12 months depending on the extent of hydrologic modeling, fisheries analysis, and species surveys required. Formal consultation under Section 7 may take approximately 12 months or longer from submittal of a complete BA.<br>**Level of Controversy/Complexity: High**. Level of controversy and complexity of associated permitting is driven by a new river intake diversion on the Salinas River, potential large reservoir footprints, and the breadth of action-area effects. |
| U.S. Fish and Wildlife Service ("USFWS") | Incidental Take Permit ("ITP") under the Endangered Species Act Section 10 (16 U.S. Code Section 1539). | N | **All:** Section 10 is generally applicable only where take authorization is needed without a federal nexus. Under this concept, Section 404 authorization establishes a federal nexus; therefore, federal take authorization would be addressed through ESA Section 7 consultation (Biological Opinion and Incidental Take Statement, as appropriate). Section 10 ITP is not anticipated unless the project is redesigned to eliminate the federal nexus, which is not consistent with the current concept (river intake + crossings). Please also refer to Table 11 for additional information.<br>**Schedule:** Not applicable under the current project description.<br>**Level of Controversy/Complexity:** Not applicable; federal take authorization would occur through Section 7 consultation. |
| State Historic Preservation Office and the National Historic Preservation Act ("NHPA") | Consultation with State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") under Section 106 of the NHPA (16 USC Section 470 et seq.). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same NHPA permitting requirements as identified for the Eastside Recharge Basins concept. Therefore, this regulation applies. Please refer to Table 11 for additional information regarding NHPA Section 106 consultation requirements.<br>**Schedule:** Section 106 review typically requires approximately 6–12 months following submittal of a complete cultural resources inventory and APE delineation. If adverse effects are identified and an MOA is required, additional time may be necessary.<br>**Level of Controversy/Complexity:** Moderate to High, depending on archaeological sensitivity within the Salinas River corridor, reservoir footprints, and the pipeline alignments. |

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| **State Regulatory Requirements** | | | |
| California Department of Fish and Wildlife ("CDFW") | Incidental Take Permit under the California Endangered Species Act (California Fish and Game Code Section 2081). | Y | **All:** Like the Eastside Recharge Basins concept, the North Eastside Injection concept could result in potential take of state listed species. The Northern Eastside Injection concept would be subject to similar authorization under CESA as the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding CESA Section 2081 permitting requirements.<br>**Reservoirs:** Reservoir construction would introduce additional CESA permitting requirements.<br>o At the Merritt Lake site (50 cfs scenario), conversion of a flood-prone agricultural area to reservoir storage (including dam, levees, spillway, inlet/outlet works, and flood-bypass infrastructure) could result in habitat conversion and impacts to terrestrial and riparian species. Although the site is predominantly agricultural, CDFW may evaluate seasonal wetlands, drainages, and field margins as potential habitat for listed species depending on site-specific conditions.<br>o At the Gabilan Range/Alisal Creek site (100 cfs scenario), construction of a new earthen dam within a tributary watershed may affect upland, riparian, and potentially aquatic species depending on channel modifications and inundation footprint. The upland watershed setting may result in more direct interaction with tributary stream channels and associated habitat.<br>Reservoir footprint size and associated habitat conversion would materially influence mitigation obligations.<br>**Pipelines:** The raw water main (7–15 miles depending on scenario) and ~25-mile treated distribution system would require evaluation of construction-related disturbance to riparian and upland habitats, particularly at drainage crossings (e.g., Reclamation Ditch, Santa Rita Creek) and staging areas.<br>CDFW will require demonstration that impacts are minimized and fully mitigated, and that issuance of the permit would not jeopardize the continued existence of the species. Hydrologic modeling, biological evaluations, and evaluation of diversion timing thresholds would likely be central to the CESA review.<br>Although ESA Section 7 consultation would address federal take authorization, CESA compliance remains a separate state requirement and may involve distinct mitigation standards and conditions.<br>**Injection Wells:** Injection wells and associated infrastructure would also require evaluation for potential habitat disturbance depending on final siting.<br>**Schedule:** Preparation of technical support materials (e.g., hydrology, fisheries, habitat assessment) may require substantial time. Following submittal of a complete application, CDFW review and permit issuance typically requires 12–24 months, depending on complexity and negotiation of avoidance, minimization, and mitigation measures.<br>**Level of Controversy/Complexity: High**. A new river intake diversion on the Salinas River would likely receive detailed scrutiny regarding flow thresholds, seasonal restrictions, screening criteria, and cumulative watershed effects. In addition, potential reservoir inundation and habitat conversion may also add complexity related to potential mitigation obligations for impacts to listed species. |
| California Department of Fish and Wildlife ("CDFW") | Lake Streambed Alteration Agreement (California Fish and Game Code Section 1602). | Y | **Diversion:** As with the Eastside Recharge Basins concept, construction of a river intake diversion on the Salinas River would require an LSAA pursuant to Fish and Game Code Section 1602. Please refer to Table 11 for additional information regarding LSAA permitting requirements.<br>**Pipelines:** The raw water transmission main (7–15 miles depending on scenario) and approximately 25 miles of treated distribution pipeline would require LSAA authorization where construction disturbs the bed or bank of a river, stream, or lake. Identified crossings include the Reclamation Ditch and Santa Rita Creek, and other jurisdictional drainage features encountered along the alignments. Even where trenchless methods are proposed, temporary access, staging, or disturbance within riparian corridors may trigger LSAA requirements.<br>**Reservoir:** Reservoir construction introduces additional Section 1602 complexity.<br>o At the Merritt Lake site (50 cfs scenario), construction of dams, levees, spillways, and flood-bypass infrastructure may alter existing drainage patterns or affect jurisdictional channels and riparian vegetation within the floodplain. Although the site is predominantly agricultural, CDFW may assert jurisdiction over drainages and riparian features that function as streams within the floodplain setting.<br>o At the Gabilan Range/Alisal Creek site (100 cfs scenario), construction of a new earthen dam within a tributary watershed would likely constitute substantial alteration of a stream channel and would require LSAA authorization for dam construction, spillway installation, and associated channel modifications.<br>Reservoir-related stream alteration may represent a more substantial LSAA component than the pipeline crossings alone.<br>**Schedule:** Following submittal of a complete notification package, LSAA issuance typically requires 12 months, depending on project complexity and negotiation of agreement terms. For projects involving new river intake diversion facilities and/or dam construction within a tributary watershed, extended coordination and additional technical review may lengthen this timeframe.<br>**Level of Controversy/Complexity:** High. While the diversion-related LSAA exposure mirrors the prior concept, additional crossings (Reclamation Ditch, Santa Rita Creek, etc.) and potential reservoir construction increase regulatory complexity. |

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| State Water Resources Control Board ("SWRCB")/Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") | Waste Discharge Requirements pursuant to Section 401 of the Clean Water Act (40 Code of Federal Regulations 121) and the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Section 13000 et seq.). | Y (Section 401); Y (General Order for injection);<br><br>P (reservoir related WDR depending on final design/operations) | **Diversion:** Because the North Eastside Injection concept includes the same river intake diversion on the Salinas River as the Eastside Recharge Basins concept, this concept would be subject to the same CWA Section 401 permitting requirements as the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding CWA Section 401 permitting requirements.<br><br>**Pipelines:** Section 401 certification would also be required for any pipeline crossings that involve discharge of dredged or fill material into waters of the state (e.g., Reclamation Ditch, Santa Rita Creek, and any additional jurisdictional drainages). Construction disturbing 1 acre or more would require coverage under the Construction General Permit for stormwater discharges, including preparation and implementation of a Stormwater Pollution Prevention Plan. The number and extent of crossings may vary depending on reservoir site selection and corresponding raw water main length.<br><br>**Reservoir:** Reservoir construction at either the Merritt Lake site or the Gabilan Range/Alisal Creek site could require Section 401 certification where reservoir construction or related works affect waters of the state. Depending on final reservoir design and operating plan, RWQCB may also evaluate reservoir water quality considerations (e.g., sedimentation, algae, temperature stratification) to the extent they affect downstream beneficial uses or groundwater protection through subsequent injection.<br><br>**Treatment/Injection:** Treatment of stored surface water prior to injection and operation of injection wells within the northern Eastside Subbasin would likely require enrollment under the State Water Resources Control Board's Water Quality Order No. 2012-0010-DWQ (General Waste Discharge Requirements for Groundwater Recharge Projects), issued pursuant to the Porter-Cologne Water Quality Control Act. RWQCB review would focus on protection of groundwater quality, consistency with applicable Basin Plan objectives, compatibility with designated beneficial uses of the receiving aquifer, and compliance with anti-degradation requirements. The scope of review would include evaluation of source water quality, treatment reliability and performance standards, injection well design and construction specifications, groundwater monitoring networks, and reporting obligations. Injection wells would be subject to review by the State Water Resources Control Board and Central Coast RWQCB.<br><br>**Schedule:** Section 401 Certification typically requires 12 months following submittal of a complete application; longer if technical review is complex or coordinated with federal consultation. If individual WDRs are required for recharge operations, review and adoption could require 12 months or longer, depending on hydrogeologic analysis and Board scheduling.<br><br>**Level of Controversy/Complexity: High**. A new river intake diversion and large-scale recharge program would be subject to detailed review regarding protection of beneficial uses, water quality standards, and consistency with Basin Plan objectives. |
| California Department of Water Resources ("DWR"), Division of Safety of Dams ("DSOD") | Approval of Dam Construction and Certificate of Approval to Operate (Water Code §§6000 et seq.) | Y | **Reservoirs:** Concepts that include a reservoir impounded by an embankment or other dam structure would fall under DSOD jurisdiction. See Table 11 for additional information regarding DSOD approval requirements.<br><br>**Schedule:** The approval process would extend the project schedule (typically on the order of 24 months or longer prior to construction authorization).<br><br>**Level of Controversy:** High. While DSOD review is primarily technical, reservoir and dam facilities can raise public safety concerns (e.g., dam failure risk), substantially increase potential biological effects, including related permitting requirements, and generate significant public scrutiny. |

Notes:

1. This table is not intended to provide an exhaustive list of all permits, approvals, or authorizations that may be required to construct, operate, or maintain potential water supply facilities. Rather, it identifies anticipated resource agency permitting requirements related specifically to environmental resource considerations and compliance with applicable state and federal environmental regulations. The permits identified in this table are based on conceptual-level information regarding the Project concepts. As project design, siting, and operational details are refined, additional permits or approvals may be identified, and the regulatory pathways described may change accordingly.
2. The permits and approvals identified in this table are organized by project components for purposes of evaluating applicability. However, regulatory agencies typically issue authorizations on a project-wide basis. Accordingly, a single Section 404 permit, Section 7 consultation, CESA authorization, LSAA, or Section 401 certification would generally encompass all applicable components of the project concept.

## 7.4 Coastal Injection

Under the Coastal Injection project concept, Permit 11043 water would be diverted just upstream of the existing SRDF location using a diversion facility with a capacity of 50 cfs. Diverted river water would be conveyed to a surface storage reservoir at Merritt Lake. Stored water would be treated, then delivered to a network of injection wells located just inland of the seawater intrusion area and existing CSIP system, and injected into the 400-Foot Aquifer.

### 7.4.1 Coastal Injection – Infrastructure Layout

#### 7.4.1.1 River intake diversion

The diversion facility for the Coastal Injection Scenario to address seawater intrusion is proposed just upstream of the existing SRDF. This location is closer to the proposed storage reservoir under this scenario, Merritt Lake, than the Permit11043 point of diversion locations. In addition, the existing SRDF is located in a reach of the river characterized by a more defined channel with water present throughout the year. River stage rating curves were not available at the SRDF location, but MCWRA staff indicate there is typically a minimum of 3 feet of water depth in the river throughout the year; review of the rating curve based on the USGS river gage at Speckels indicates a low river stage of 3 feet for flows under 5 cfs and 4 feet at 45 cfs (DWR, 2026). This water depth facilitates the use of a river intake diversion with a more predictable river stage throughout the year.

Other than the location, the diversion facilities proposed are similar to those described in Section 7.1.1.1, which include intake and fish screens, pump station forebay, low-lift pump station, sedimentation basins, and transfer pump station. The diversion capacity under this scenario is 50 cfs due to Merritt Lake storage limitations.

#### 7.4.1.2 Conveyance - Pipeline

After passing through the sedimentation basin, diverted waters would be conveyed from the transfer pump station to Merritt Lake via a 48-inch diameter transmission main. Stored water would then be treated and distributed through 6- to 18-inch pipelines serving the injection well field. Approximately 12 miles of distribution pipeline are required. Table 12 shows the pipeline lengths for this scenario.

Table 19. Coastal Injection Scenario Pipeline Lengths, 50 cfs Scenario

| Scenario | Raw Water Transmission Pipeline Diameter | Raw Water Transmission Pipeline Length | Distribution Pipeline Diameters | Distribution Pipeline Total Length |
|---|---|---|---|---|
| Coastal Injection, 50 cfs | 48” | 30,600’ | 6” – 18” | 62,300’ |

#### 7.4.1.3 Surface Storage

As discussed in Section 7.3.1.3, seasonal storage is required to balance diversion flows (December–April) with the relatively constant annual treatment and injection rate (10 cfs). For a 50 cfs diversion rate, an average yield of 5,140 AFY and a 6.5 mgd (10 cfs) treatment and injection capacity, the required storage volume is approximately 12,500 AF based on a storage analysis using the projected diversions from 2022-2072, as described in Section 5. This scenario assumes storage can be accommodated in the 12,600 AF Merritt Lake site.

#### 7.4.1.4 Treatment

As with the Northern Eastside Injection concept, diverted water must be treated to Title 22 drinking water standards prior to injection. Review of the 2025 ASR Preliminary Feasibility Study indicates the following water quality trends near the SRDF:

- Nitrates
  - Upstream at Chualar: below the 10 mg/L MCL
  - Davis Road: seasonal exceedances
  - SRDF: consistent exceedances
- TDS
  - Chualar: 200–400 mg/L (below 1,000 mg/L MCL)
  - Davis Road: 300–3,000 mg/L (seasonal exceedances)
  - SRDF: ~1,900 mg/L (consistent exceedances)
- Metals
  - SRDF shows the highest number of constituents above MCLs.

Further sampling—particularly during winter diversion periods—is needed to evaluate how higher flows and runoff affect constituent concentrations.

For this evaluation, conventional surface water treatment is assumed to be adequate. However, if future sampling confirms persistent high TDS or nitrate concentrations during diversion periods, advanced treatment such as reverse osmosis (RO) may be required. An RO system would necessitate additional facilities including pretreatment, membrane systems, solids handling, and concentrate disposal (e.g., ocean outfall).

The planned treatment plant capacity is 6.5 mgd, requiring approximately 20 acres adjacent to the Merritt Lake reservoir.

#### 7.4.1.5 Injection wells

Similar to the Northern Eastside Injection scenarios, the injection well field includes sufficient injection wells to deliver approximately 50% above the predicted annual average diversion volume for each scenario, which was chosen based on the storage analysis. A summary of the injection wells for the Coastal Injection scenario is provided in Table 21.

Table 20. Injection Wells for Coastal Injection Scenario

| Scenario (Diversion Capacity) | Total Injection Well Capacity | # of Injection Wells | Flow Rate per Injection Well, gpm |
|---|---|---|---|
| Coastal Injection, 50 cfs | 6.5 mgd (10 cfs) | 10 | 450 |

The proposed layout is shown on Figure 25 below.

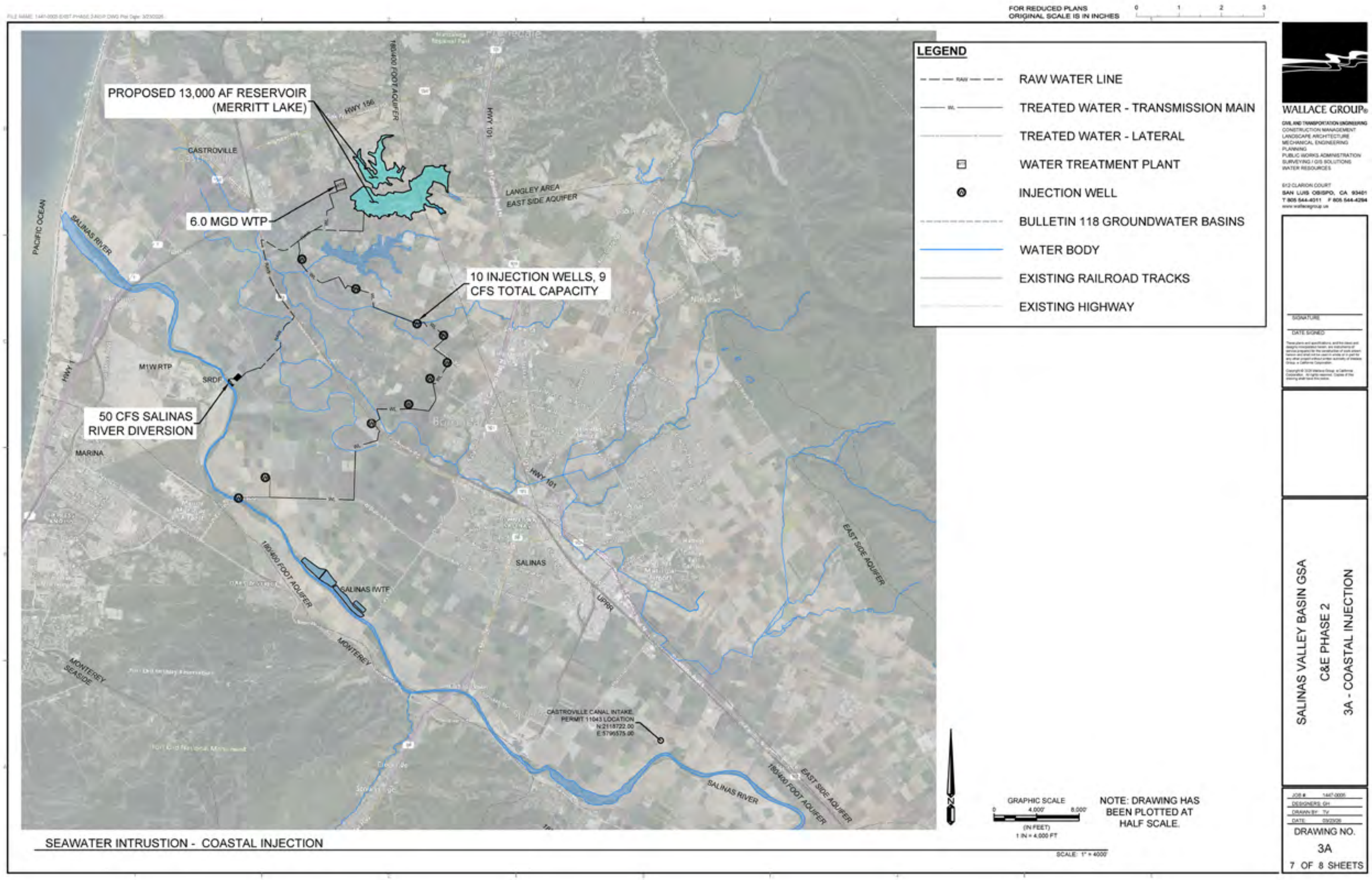



Figure 25. Coastal Injection Scenario Layout

### 7.4.2 Coastal Injection – Groundwater Benefit

The Coastal Injection project concept, as well as NSIP, are evaluated primarily using the SWIM to be able to assess the impact on both groundwater levels and seawater intrusion. The Coastal Injection project concept, which injects treated water into the 400-Foot Aquifer to address seawater intrusion, results in only minor movement of the 500 mg/L chloride isocontour by 2040, as shown on Figure 24 for the 400-Foot Aquifer. The 180-Foot and Deep Aquifers, which do not receive injection under this scenario, show very little change in the location of the 500 mg/L chloride isocontour. Figure 27, however, illustrates that the simulated progression of seawater intrusion in the 400-Foot Aquifer begins to diverge from baseline conditions over time. In later years, the project moderates the advancement of several significant parts of the seawater intrusion front to the northwest and west of the City of Salinas. The limited magnitude of this benefit is likely attributable to the relatively small diversion capacity (50 cfs), which was limited by the storage capacity at Merritt Lake.

The primary purpose of this scenario was to address seawater intrusion rather than to explicitly achieve groundwater level SMCs. Nevertheless, the approach by which seawater intrusion is mitigated—increasing groundwater levels inland of the intrusion front—also moves conditions part of the way toward meeting groundwater level SMCs. Figure 28 illustrates the relative increase in simulated groundwater levels in the 180-Foot, 400-Foot, and Deep Aquifers during 2040–2041 under the Coastal Injection scenario compared to baseline conditions. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. In the 400-Foot Aquifer, groundwater levels in the vicinity of the injection wells are approximately 3 to 6 feet higher than under baseline conditions. The figure also shows a smaller but more widespread increase in groundwater levels throughout the northern portions of the 180-Foot and 400-Foot Aquifers, as well as across the northern Eastside area

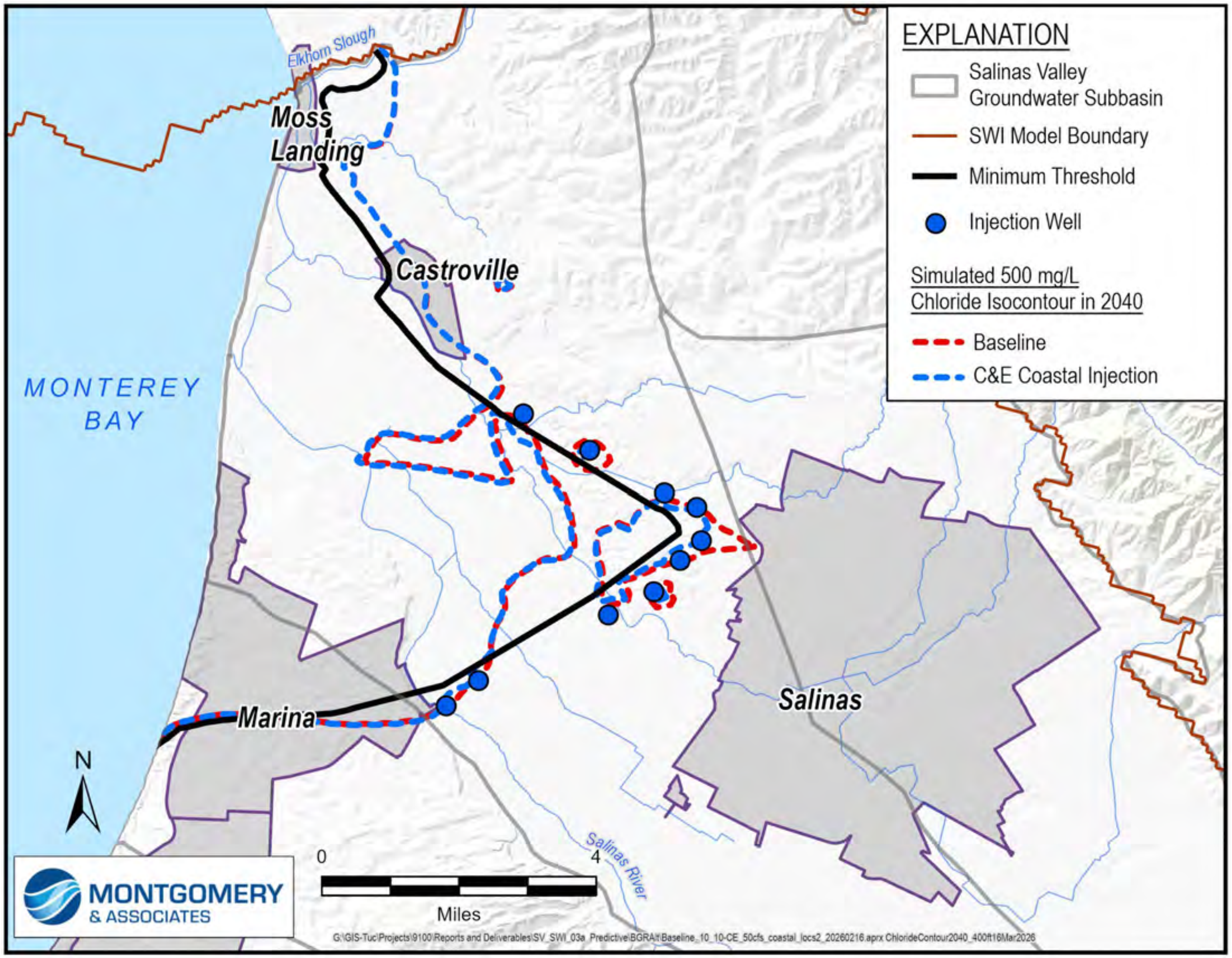



Figure 26. Simulated 500 mg/L Chloride Contour in the 400 Foot Aquifer in 2040 for the Baseline and Coastal Injection Scenarios

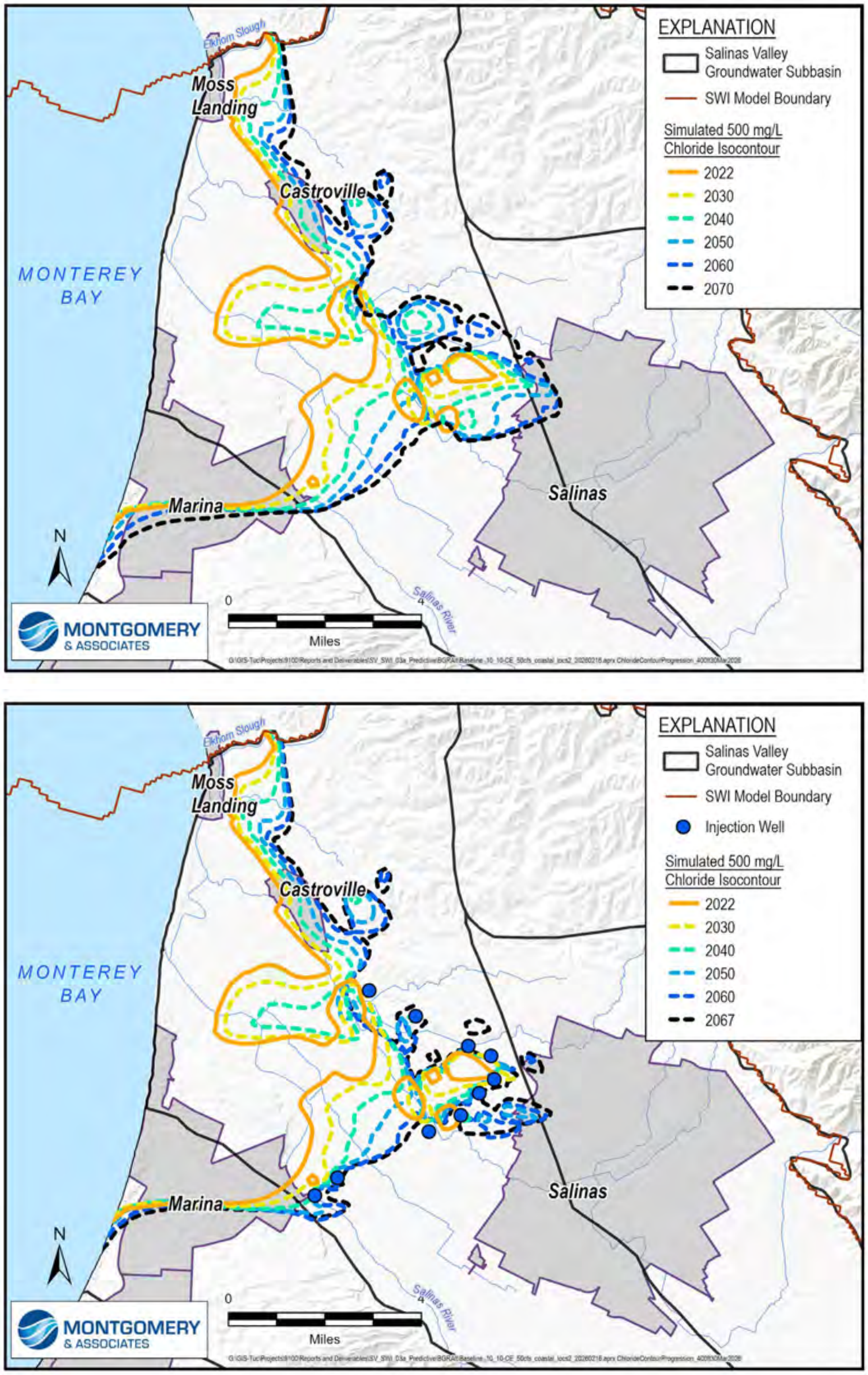



Figure 27. Progression of Chloride Isocontour in the 180-Foot Aquifer under the Baseline (top) and Coastal Injection Scenario (bottom)

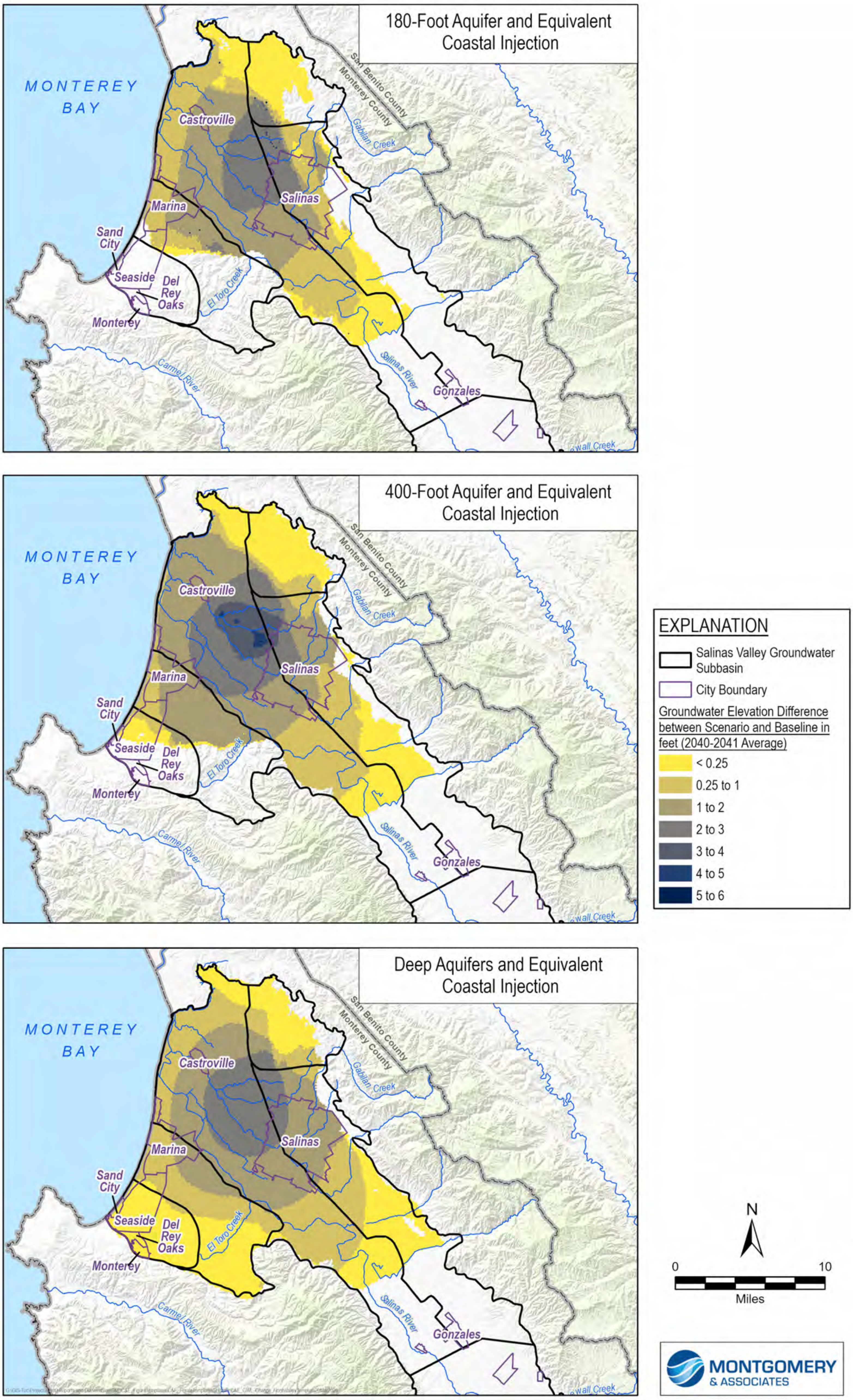



Figure 28. Difference Between Coastal Injection Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers and Equivalents

### 7.4.3 Coastal Injection – Purpose of Use

Permit 11043 currently authorizes irrigation and municipal purposes, purposes of use, which would be extractive beneficial uses if changes were made to Permit 11043 to allow diversions to underground storage (e.g., if surface water were stored underground, it would later be pumped out for the eventual irrigation and municipal uses). Another potential if changes were made to Permit 11043 to allow diversions to underground storage could be to change the purpose of use to a non-extractive beneficial use such as to prevent seawater intrusion, an undesirable result which is present in the subbasin as identified in the GSP. However, no precedents for a non-extractive beneficial use with this type of water right modification were identified during this study. Therefore further investigation is warranted if this concept advances. Additional analysis will also be needed to determine if the Coastal Injection Scenario can include both extractive and non-extractive purposes, while still effectively mitigating seawater intrusion with continued extractions.

### 7.4.4 Coastal Injection – Cost Estimate

For the Coastal Injection scenario, the cost estimate is a Class 5 AACE estimate, similar to the other scenarios. The cost estimate below in Table 22 includes the capital cost, land purchase, and O&M; the estimate does not include the cost of electrical infrastructure improvements required to serve the loads of the proposed facilities. Annual O&M costs include those for energy and treatment as well as diversion facility, pump station, sedimentation basin, pipeline, reservoir, and injection well maintenance activities. The annual cost/AF is based on the amount of water injected should not be construed with the cost of water or distribution of costs, as that analysis has not been completed. See Appendix J for more details.

Table 21. Injection to Address Seawater Intrusion Preliminary Cost Estimate

| Scenario | Total Capital Cost | Annual O&M | Average Project Yield, AFY |
|---|---|---|---|
| 50 cfs | $399,800,000 | $4,895,000 | 5,100 |

### 7.4.5 Coastal Injection – Environmental Permitting Requirements

The Coastal Injection project concept would involve diversion of up to 50 cfs of surface water from the Salinas River just upstream of the existing SRDF location, conveyance to a surface storage reservoir at Merritt Lake (12,600 AF capacity), treatment at a 6.5-mgd water treatment plant adjacent to the reservoir, and distribution of treated water to a network of injection wells located within the seawater intrusion area. The point of diversion for this concept is located further downstream than the Eastside Recharge Basins and Northern Eastside Injection project concepts and is situated within a more defined and perennial reach of the Salinas River.

Because the diversion facility would include a river intake diversion with fish screens, pump station forebay, sedimentation basin, and associated infrastructure, federal authorization under Section 404 of the Clean Water Act would be required. As a result, related federal compliance obligations—including consultation under Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act—would be triggered.

At the state level, the project would require authorization under the California Endangered Species Act, a Lake and Streambed Alteration Agreement for the diversion and any stream/drainage crossings and a DSOD permit. Water quality approvals would include Section 401 certification and project-specific Waste Discharge Requirements for the groundwater injection program.

The regulatory profile for this project concept reflects the combination of a new river intake diversion, conversion of the Merritt Lake flood-prone agricultural area to reservoir storage, and groundwater injection within the coastal seawater intrusion zone. Although the downstream diversion location may allow water to remain in the river system through a longer upstream reach prior to withdrawal, detailed evaluation of instream flow thresholds, fisheries habitat conditions, and cumulative watershed effects would still be required.

Table 23 summarizes the anticipated resource agency permitting requirements for this concept based on currently available conceptual-level information. See also Appendix K for a detailed description of applicable regulatory requirements and a broader discussion of regulatory applicability to project planning efforts.

Table 22. Coastal Injection Anticipated Environmental Permits and Approvals

| Agency or Department | Approval or Permit | Applicability(Y/N/P) | Discussion |
|---|---|---|---|
| **Federal Regulatory Requirements** | | | |
| U.S. Army Corp of Engineers ("USACE") | Permit under Section 404 of the Clean Water Act (33 U.S. Code Section 1344). | Y | **Diversion:** The Coastal Injection concept includes a river intake diversion on the Salinas River (50 cfs capacity) near and upstream of the existing SRDF location. This concept would be subject to the same Section 404 authorization described under the Eastside Recharge Basin concept. Please refer to Table 11 for additional information related to Section 404 permitting requirements.<br><br>Because the diversion is located within a more defined and perennial reach of the Salinas River in proximity to the existing SRDF, USACE review would include evaluation of potential effects to aquatic resources within this reach, including avoidance and minimization of impacts to WOTUS and adjacent wetlands. Additionally, given the instream location of the diversion, an Individual Permit would likely be required.<br><br>**Pipelines:** The 48-inch diameter transmission main conveying water to Merritt Lake and the approximately 12 miles of treated distribution pipeline serving the coastal injection well field would require Section 404 authorization where construction results in discharge of dredged or fill material into WOUS (e.g., drainage crossings, wetlands, riparian corridors). Even where trenchless construction methods are used, temporary access or staging within jurisdictional features could trigger Section 404 review.<br><br>The number and extent of jurisdictional crossings would depend on final alignment; delineation of WOUS and evaluation of avoidance and minimization measures would be required as part of the Section 404 permitting process.<br><br>**Reservoir (Merritt Lake):** This option would involve the same Section 404 permitting requirements as the Northern Eastside Injection concept. Please refer to Table 19 for additional information.<br><br>**Treatment / Injection:** The water treatment plant and injection wells would not independently trigger Section 404 unless associated grading or access construction affects jurisdictional waters.<br><br>**Schedule:** Section 404 permitting typically requires preparation of aquatic resource delineations, alternatives analysis, mitigation planning, and coordination with resource agencies. Individual permits could require 18–24+ months following submittal of a complete application depending on aquatic impacts and reservoirs related review. This timeframe does not include preparation of supporting technical studies.<br><br>**Level of Controversy:** High, given 1) a river intake diversion on the Salinas River, 2) potential fisheries sensitivity, 3) the potential breadth of alternatives analysis and mitigation obligations, and 4) construction of a new reservoir. Although the diversion capacity under this project concept (50 cfs) is lower than certain upstream concepts and the point of diversion is located further downstream in proximity to the existing SRDF, the combination of river intake diversion and reservoir development would likely result in substantial agency scrutiny. |
| U.S. Fish and Wildlife Service ("USFWS")/National Marine Fisheries Service ("NMFS") | Federal Agency Consultation pursuant to Endangered Species Act Section 7 (16 U.S. Code Section 1537). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same ESA permitting requirements as the Eastside Recharge Basins concept. Therefore, the Coastal Injection concept would be subject to ESA Section 7 consultation. Please refer to Table 11 for additional information regarding the ESA Section 7 consultation requirements.<br><br>Consultation would evaluate construction and operational effects of the 50 cfs diversion facility (including fish screen design, entrainment protection, seasonal timing, and potential instream flow effects), as well as effects associated with the 48-inch transmission main, approximately 12 miles of treated distribution pipeline, conversion of the Merritt Lake site to a 12,600 acre-foot reservoir, treatment facilities, and the coastal injection well field.<br><br>Because the point of diversion is located within a more defined and perennial reach of the Salinas River in proximity to the existing SRDF, consultation would require careful evaluation of instream flow thresholds, habitat conditions, and seasonal presence of listed species within this reach. NMFS would likely have jurisdiction over listed anadromous fish species, while USFWS would evaluate listed terrestrial and riparian species within the action area. Given the river intake diversion and associated habitat disturbance, formal consultation and issuance of a Biological Opinion with an Incidental Take Statement would be anticipated.<br><br>**Schedule:** Preparation of the Biological Assessment typically requires 6–12 months. Formal consultation under Section 7 may take approximately 12 months or longer from submittal of a complete BA.<br><br>**Level of Controversy/Complexity:** High. The level of controversy and complexity of associated permitting is driven by a new river intake diversion on the Salinas River and potential large reservoir footprint. Although the diversion capacity is limited to 50 cfs and is located downstream relative to other project concepts, this concept would likely result in detailed scrutiny by NMFS and USFWS. |
| U.S. Fish and Wildlife Service ("USFWS") | Incidental Take Permit ("ITP") under the Endangered Species Act Section 10 (16 U.S. Code Section 1539). | N | **All:** Section 10 is generally applicable only where take authorization is needed without a federal nexus. Under this alternative, Section 404 authorization for the directed pump diversion establishes a federal nexus; therefore, federal take authorization would be addressed through ESA Section 7 consultation (Biological Opinion and Incidental Take Statement, as appropriate). Section 10 ITP is not anticipated unless the project is redesigned to eliminate the federal nexus, which is not consistent with the current concept (direct instream intake). Please also refer to Table 11 for additional information.<br><br>**Schedule:** Not applicable under the current project description.<br><br>**Level of Controversy/Complexity:** Not applicable; federal take authorization would occur through Section 7 consultation. |

| Agency or Department | Approval or Permit | Applicability(Y/N/P) | Discussion |
|---|---|---|---|
| State Historic Preservation Office and the National Historic Preservation Act ("NHPA") | Consultation with State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") under Section 106 of the NHPA (16 USC Section 470 et seq.). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same NHPA permitting requirements as identified for the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding NHPA Section 106 consultation requirements.<br>The APE would likely encompass the river intake diversion site, the 48-inch transmission main corridor, the Merritt Lake reservoir footprint (including dams/levees, spillway, and flood control infrastructure), the 6.5-mgd treatment plant site, approximately 12 miles of treated distribution pipeline, and the coastal injection well field. Given the scale of ground disturbance within the Salinas River corridor and conversion of a flood-prone agricultural area to reservoir storage, identification and evaluation of archaeological resources would be anticipated. The location of the diversion in proximity to the existing SRDF does not eliminate the need for Section 106 review, as ground disturbance within previously undeveloped areas would still require cultural resource evaluation. If historic properties are identified and adverse effects cannot be avoided, resolution through development of a MOA may be required.<br>**Schedule:** Section 106 review typically requires approximately 6–12 months following submittal of a complete cultural resources inventory and APE delineation. If adverse effects are identified and an MOA is required, additional time may be necessary.<br>**Level of Controversy/Complexity:** Moderate to High, depending on archaeological sensitivity within the Salinas River corridor, reservoir footprints, and the pipeline alignments. |
| **State Regulatory Requirements** | | | |
| California Department of Fish and Wildlife ("CDFW") | Incidental Take Permit under the California Endangered Species Act (California Fish and Game Code Section 2081). | Y | **All:** Like the Eastside Recharge Basins concept, this concept could result in potential take of state listed species. This concept would be subject to similar authorization under CESA as the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding CESA Section 2081 permitting requirements.<br>Because the diversion is located within a more defined and perennial reach of the Salinas River, CDFW review would include evaluation of habitat conditions and seasonal presence of listed species within this reach. The instream nature of the diversion would likely represent a primary driver of CESA review.<br>**Reservoir (Merritt Lake):** Like the North Eastside Injection concept reservoir construction would introduce additional CESA concerns. While the Merrit Lake reservoir site is predominately agriculture, a new reservoir could result in habitat conversion and potential impacts to listed species that would potentially warrant mitigation. Please refer to Table 19 for additional information regarding CESA Section 2081 permitting requirements related to reservoir construction.<br>**Pipelines:** The 48-inch transmission main to Merritt Lake and approximately 12 miles of treated distribution pipeline may affect riparian or upland habitat. The final pipeline alignments will need to be evaluated for potential impacts to special-status species.<br>**Treatment / Injection:** Treatment plant construction and injection well installation may require evaluation of habitat disturbance depending on site-specific factors.<br>**Schedule:** Preparation of technical support materials (e.g., hydrology, fisheries, habitat assessment) may require substantial time. Following submittal of a complete application, CDFW review and permit issuance typically requires 12–24 months, depending on complexity and negotiation of avoidance, minimization, and mitigation measures.<br>**Level of Controversy/Complexity:** High. A new river intake diversion on the Salinas River would likely receive detailed scrutiny regarding flow thresholds, seasonal restrictions, screening criteria, and cumulative watershed effects. In addition, potential reservoir inundation and habitat conversion may also add complexity related to potential mitigation obligations for impacts to listed species. |
| California Department of Fish and Wildlife ("CDFW") | Lake Streambed Alteration Agreement (California Fish and Game Code Section 1602). | Y | **Diversion:** As with the Eastside Recharge Basins concept, construction of a river intake diversion on the Salinas River would require a LSAA pursuant to Fish and Game Code Section 1602. Please refer to Table 11 for additional information regarding LSAA permitting requirements.<br>**Pipelines:** LSAA required for crossings of jurisdictional streams or drainage features along the transmission main and distribution system alignments. Final pipeline alignments would be needed to determine if pipelines would trigger Section 1602 notification requirements. Even where trenchless methods are proposed, temporary access, staging, or disturbance within riparian corridors may require LSAA authorization.<br>**Reservoir (Merritt Lake):** As with the Northern Eastside Injection concept, reservoir construction introduces additional Section 1602 complexity. CDFW may assert jurisdiction over drainages or riparian features functioning as streams within the floodplain setting. Please refer to Table 19 for additional information regarding Section 1602 permitting requirements for reservoir construction.<br>**Treatment / Injection:** Not typically a trigger unless construction affects jurisdictional streams or riparian areas.<br>**Schedule:** Following submittal of a complete notification package, LSAA issuance typically requires 12 months, depending on project complexity and negotiation of agreement terms. For projects involving new diversion facilities extended coordination and additional technical review may lengthen this timeframe.<br>**Level of Controversy/Complexity**: High. While the diversion-related LSAA exposure mirrors the prior concepts, potential reservoir construction increases the regulatory complexity. |

| Agency or Department | Approval or Permit | Applicability(Y/N/P) | Discussion |
|---|---|---|---|
| State Water Resources Control Board ("SWRCB")/Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") | Waste Discharge Requirements pursuant to Section 401 of the Clean Water Act (40 Code of Federal Regulations 121) and the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Section 13000 et seq.). | Y (Section 401); Y (General Order for injection);<br><br>P (reservoir related WDR depending on final design/operations) | **Diversion:** Because the North Eastside Injection concept includes the same river intake diversion on the Salinas River as the Eastside Recharge Basins concept, this concept would be subject to the same CWA Section 401 permitting requirements as the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding CWA Section 401 permitting requirements.<br><br>**Pipelines:** Section 401 certification would also be required for any pipeline crossings that involve discharge of dredged or fill material into waters of the state. Construction disturbing 1 acre or more would require coverage under the Construction General Permit for stormwater discharges, including preparation and implementation of a Stormwater Pollution Prevention Plan.<br><br>**Reservoir:** Reservoir construction may require 401 certification where fill affects waters of the state. RWQCB may evaluate reservoir water quality management and downstream effects. Please also refer to Table 19 for additional information.<br><br>**Treatment/Injection:** Treatment of stored surface water prior to injection and operation of injection wells would likely require enrollment under the State Water Resources Control Board's Water Quality Order No. 2012-0010-DWQ (General Waste Discharge Requirements for Groundwater Recharge Projects), issued pursuant to the Porter-Cologne Water Quality Control Act. See discussion under North Eastside Injection concept for more information.<br><br>**Schedule:** Section 401 Certification typically requires 12 months following submittal of a complete application; longer if technical review is complex or coordinated with federal consultation. If individual WDRs are required for injection operations, review and adoption could require 12 months or longer.<br><br>**Level of Controversy/Complexity:** High. A new river intake diversion and groundwater injection program would receive detailed review regarding protection of beneficial uses, water quality standards, and consistency with Basin Plan objectives. |
| California Department of Water Resources ("DWR"), Division of Safety of Dams ("DSOD") | Approval of Dam Construction and Certificate of Approval to Operate (Water Code §§6000 et seq.) | Y | **Reservoirs:** Concepts that include a reservoir impounded by an embankment or other dam structure would fall under DSOD jurisdiction. See Table 11 for additional information regarding DSOD approval requirements.<br><br>**Schedule:** The approval process would extend the project schedule (typically on the order of 24 months or longer prior to construction authorization).<br><br>**Level of Controversy:** High. While DSOD review is primarily technical, reservoir and dam facilities can raise public safety concerns (e.g., dam failure risk), substantially increase potential biological effects, including related permitting requirements, and generate significant public scrutiny. |

Notes:

1. This table is not intended to provide an exhaustive list of all permits, approvals, or authorizations that may be required to construct, operate, or maintain potential water supply facilities. Rather, it identifies anticipated resource agency permitting requirements related specifically to environmental resource considerations and compliance with applicable state and federal environmental regulations. The permits identified in this table are based on conceptual-level information regarding the Project alternatives. As project design, siting, and operational details are refined, additional permits or approvals may be identified, and the regulatory pathways described may change accordingly.
2. The permits and approvals identified in this table are organized by project components for purposes of evaluating applicability. However, regulatory agencies typically issue authorizations on a project-wide basis. Accordingly, a single Section 404 permit, Section 7 consultation, CESA authorization, LSAA, or Section 401 certification would generally encompass all applicable components of the project concept.

## 7.5 NSIP – (Maximum Size NSIP Scenario)

To address groundwater levels in the Deep Aquifers and seawater intruded area, the NSIP is included as a project concept for an alternative supply for irrigation water. One of the projects identified in the Eastside, Langley, and 180/400 Subbasin GSPs was an expansion of the Castroville Seawater Intrusion Project (CSIP) to serve additional agricultural lands with new water supplies to offset groundwater use. Due to limitations within the existing CSIP infrastructure, the CSIP expansion project, now referred to as NSIP, could be either an expansion of CSIP infrastructure or a new, potentially separate distribution system from CSIP with its own dedicated infrastructure and supply sources. The NSIP project concept would serve existing agricultural users outside of the existing CSIP system and west of the City of Salinas to offset dependence on groundwater supplies for irrigation.

The NSIP project is being evaluated through the NSIP Evaluation, which includes 3 NSIP project scenarios. This C&E Study includes one of these scenarios, the maximum NSIP delivery scenario (Maximum Size NSIP), because it includes Salinas River water diverted under Permit 11043 as one of the source waters and meets one of the 4 groundwater goals. Full details on the NSIP project evaluation can be found in the NSIP Evaluation (Carollo, 2026).

The Maximum Size NSIP concept would serve existing irrigation demand for the entire NSIP area as a standalone system by combining Permit 11043 diversions with water from other sources including Monterey One Water (M1W) Secondary Effluent/Recycled Water (includes flows exceeding CSIP demands only), City of Salinas Industrial Wastewater (IWW), Reclamation Ditch and Blanco Drain diversions, Salinas River Diversion Facility (SRDF) diversions (includes flows not captured by the existing SRDF due to existing system limitations), and Tembladero Slough diversions.

By meeting agricultural irrigation demand within the NSIP area, this project concept is intended to eliminate agricultural irrigation pumping from 248 wells, raise groundwater levels, and address seawater intrusion. The average annual total demand for the entire NSIP area is approximately 28,020 AF.

### 7.5.1 NSIP - Infrastructure Layout

This alternative would require treatment and storage facilities sized to meet the seasonal demands of the NSIP area. All available water sources would be captured, stored, and treated, with the exception of recycled water sourced from the M1W RTP/SVRP. Under this operational concept, water would be captured from multiple sources within the NSIP area and conveyed to Merritt Lake for raw water storage, followed by treatment at a centralized treatment facility. Permit 11043 water would be diverted near and upstream of the existing SRDF location using a diversion facility with a capacity of 100 cfs. Treated water would then be delivered to individual wells through a new distribution system. During periods of full storage or excess inflows, a portion of demand (e.g., up to 5–10 mgd) could be met through direct capture and treatment to preserve stored volumes (referred to as “direct capture” in subsequent sections). Excess recycled water available from SVRP would be conveyed to the new distribution system via a separate pipeline, consistent with the CSIP Expansion Alternative. Figure 29, from the NSIP Projection Evaluation, illustrates the Maximum Size NSIP project area and water sources (Carollo, 2026).

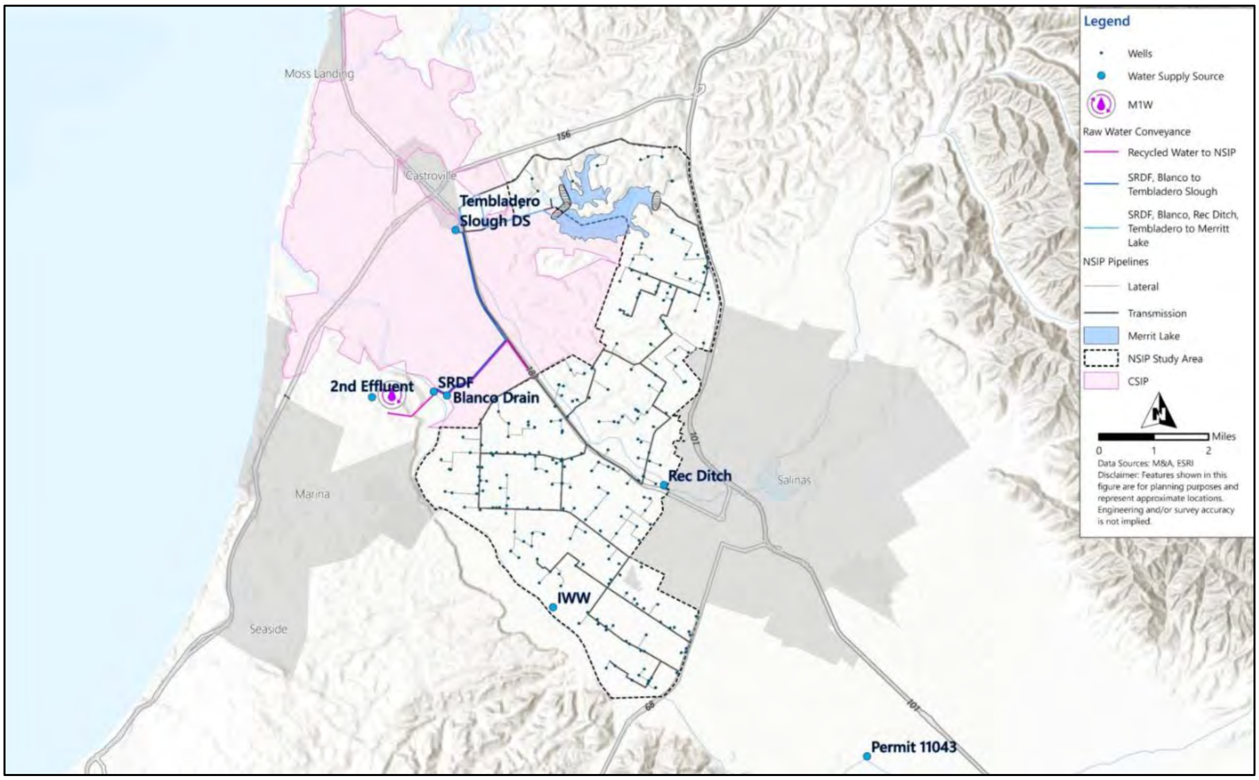



Image source: Carollo, 2026. NSIP Evaluation

Figure 29. NSIP Maximum Size Scenario Area and Key Infrastructure

#### 7.5.1.1 Diversion

Similar to the Coastal Injection Scenario, the Maximum Size NSIP Scenario would include a new diversion facility to capture Permit 11043 water just upstream of the existing SRDF. The diversion facilities proposed are the same as those described in Section 7.1.1.1, which include intake and fish screens, pump station forebay, low-lift pump station, sedimentation basins, and transfer pump station. The diversion capacity under this scenario is 100 cfs.

Two additional diversion pump stations would be modified or installed for the Blanco Drain and Reclamation Ditch/ Tembladero Slough diversions. One pump station would convey Blanco Drain, Industrial Wastewater, and SRDF water to the Reclamation Ditch/Tembladero Slough

Confluence. The second pump station would convey Blanco Drain, Industrial Wastewater, SRDF, Tembladero Slough, and Reclamation Ditch to Merritt Lake.

#### 7.5.1.2 Conveyance

Raw water transmission from the non-Permit 11043 water sources includes 14-miles of raw water pipelines with diameters ranging from 16 to 24-inches. The routing for this raw water transmission consists of 3 pipe segments and 2 pump stations to convey raw water supplies to each point:

- One pipe segment connects SRDF to Blanco Drain and follows existing agricultural roads.
- The second pipe segment carries flow from SRDF, Blanco Drain, and IWW to Tembladero Slough Downstream. It follows existing agricultural roads and Castroville Road. The alignment includes two waterway crossings, a crossing of Nashua Road, and a railroad crossing.
- The third pipe segment conveys flow from SRDF, Blanco Drain, IWW, Secondary Effluent, Reclamation Ditch, and Tembladero Slough to Merritt Lake. It begins at Tembladero Slough and follows existing agricultural roads, Del Monte Avenue and Blackie Road to Merritt Lake. The alignment includes crossings of Merritt Street and one waterway crossing.

Diverted Permit 11043 waters are conveyed from the transfer pump station to the proposed storage facilities at Merritt Lake via a 5.8-mile, 66-inch diameter transmission main. The Permit 11043 transmission main would be routed along existing private and agricultural roads and public rights of way and will include an undercrossing of UPRR and Caltrans right of way at State Route 183 approximately 0.5 mile south of Castroville near Espinosa Road. The proposed transmission main route would require two crossings under drainage channels tributary to Tembladero Slough between the SRDF location and Espinosa Road.

In addition to the raw water conveyance, a new pump station and pipeline would convey recycled water from the SVRP to be delivered directly to the NSIP distribution network. A 3.5 million-gallon NSIP recycled water storage tank would be included in this distribution system.

Following storage and treatment, water is sent to a proposed distribution network for delivery to agricultural users in the NSIP area. This distribution system includes approximately 38-miles of treated water transmission pipelines and 39-miles of laterals. The pipe diameters for treated water transmission range from 12 to 42-inches and laterals were assumed to be 12-inches. The routing for treated water transmission consists of 20 pipe segments and a booster pump station located at the proposed water treatment plant with a capacity of the peak monthly average demand (approximately 33,600 gpm). It follows existing transmission lines and agricultural road access corridors.

Total quantities of pipeline are presented in Table 22.

Table 23. NSIP Pipeline Lengths

| Scenario | Raw Water (non-Permit 11043) Pipeline Diameters | Raw Water Raw Water (non-Permit 11043) Pipeline Length | Permit 11043 Transmission Diameter | Permit 11043 Pipeline Length | Treated Distribution Pipeline Diameter | Treated Distribution Pipeline Total Length |
|---|---|---|---|---|---|---|
| NSIP | 16" – 24" | 14.4 miles (76,038 LF) | 66" | 5.8 miles (30,600 LF) | 12"-42" | 77 miles |

#### 7.5.1.3 Storage

The Maximum Size NSIP alternative requires a storage volume to capture high flows during low demand periods. Raw water from the project concept would be captured from sources within the Study Area and stored at Merritt Lake, with the exception of excess recycled water from the M1W RTP which would be delivered directly to the NSIP distribution system. This project concept assumes 15,000 AF of combined storage between the 2 adjacent reservoirs at Merritt Lake (assumes a different maximum water surface elevation than that proposed in the 1998 study and the other project concepts evaluated in the C&E Study). The Maximum Size NSIP project concepts also assumes that delivery allocations to end users would need to be adjusted over time to facilitate reservoir management and accommodate the seasonality of supplies and varying year to year availability. It is acknowledged that in some years more or less water would be available for capture, treatment, and delivery.

The Merritt Lake concept and the required facilities necessary to impound water with the surrounding topography are similar to those assumed in under the Northern Eastside Injection and Coastal Injection scenarios. Merritt Lake offers a significant volume of storage that has previously been evaluated by MCWRA as a potential option, has the benefit of being within the NSIP area and is nearby the proposed surface water sources thereby minimizing raw water conveyance infrastructure.

#### 7.5.1.4 Treatment

A centralized treatment facility of 50 mgd is proposed adjacent to the Merritt Lake storage site. To meet the water quality parameters, the treatment system for the Maximum Size NSIP Scenario assumes surface water treatment relying on conventional flocculation and sedimentation as the primary treatment processes. Additionally, given the turbid nature of the existing water sources, any type of pre-treatment sedimentation is assumed to take place in Merritt Lake through either a forebay or a designated sedimentation area that can be cleaned to avoid accumulation and loss of storage capacity. For direct capture flows (i.e., flows not sent to Merritt Lake) a concrete equalization basin is included to provide sedimentation and to provide equalization for the facility influent feed pumps. Following flocculation and sedimentation, sodium hypochlorite is injected into the finished water for disinfection prior to distribution to the NSIP system. The proposed treatment footprint is approximately 15 acres and contains a total of three 8.3 MG finished water storage tanks on site. Following treatment, water is stored in finished water tanks and pumped to the distribution through finished water pumps.

#### 7.5.1.5 Delivery

Under the Maximum Size NSIP Scenario, treated water is delivered directly to agricultural users historically reliant on groundwater pumping in or near the seawater intruded area and from the Deep Aquifers through construction of a new water distribution system. It targets the area of heavy agricultural use in the region 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. Figure 30 shows the infrastructure layout of the Maximum NSIP Scenario.

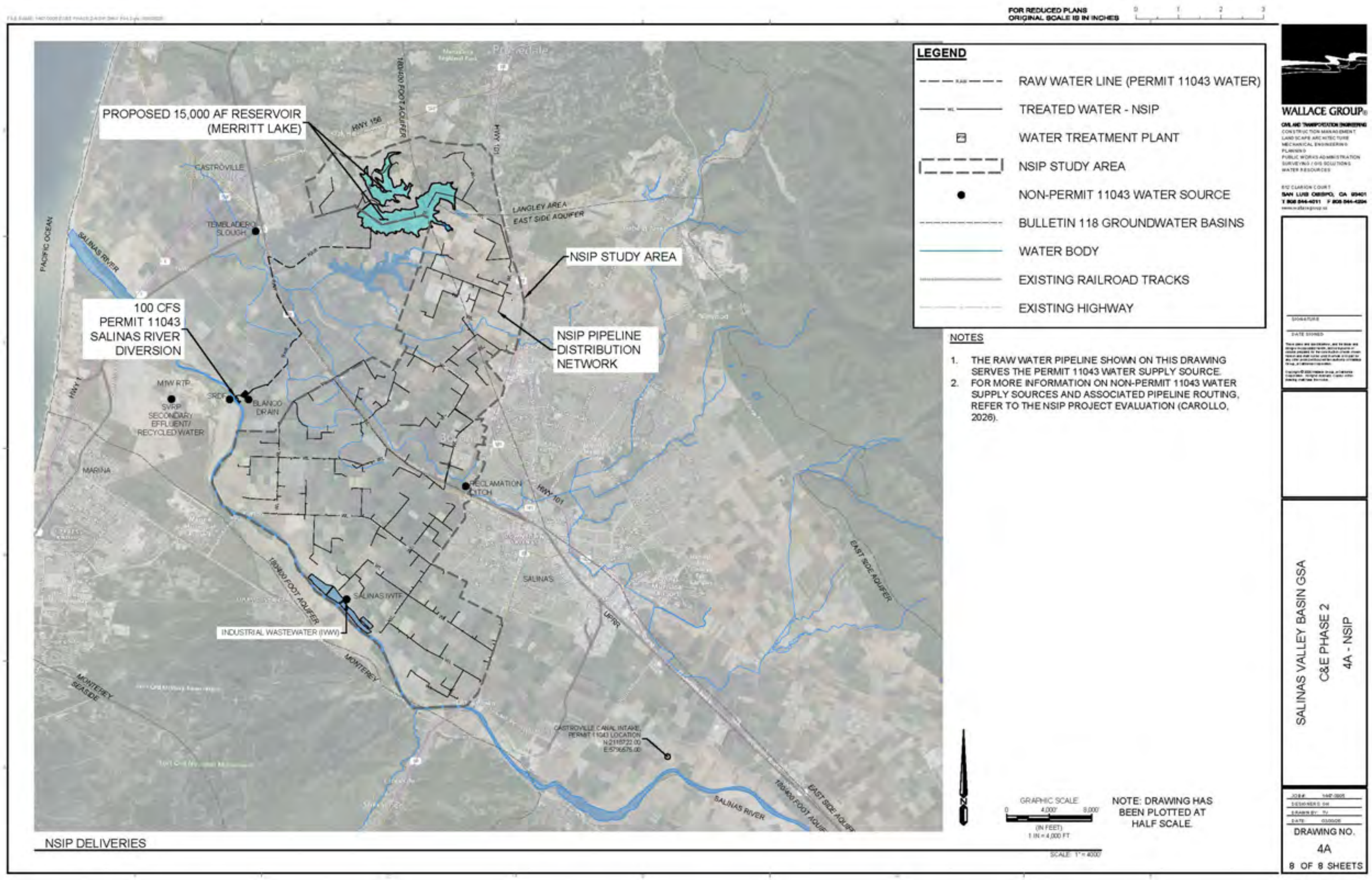



Figure 30. Infrastructure Layout for NSIP Scenario

### 7.5.2 NSIP - Groundwater benefit

The NSIP project concept is evaluated using the SWIM to assess its impact on both groundwater levels and seawater intrusion across the 180-Foot, 400-Foot, and Deep Aquifers. NSIP operates by eliminating groundwater pumping within the seawater intrusion area and providing an alternative water supply beginning in 2035. The elimination of approximately 32,000 AFY of groundwater extraction results in the largest groundwater level increases of any scenario evaluated, as shown on Figure 31. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. Pumping outside of this area occurs as it does in the Baseline Scenario, including CSIP supplemental and private standby well pumping. Relative increases exceed 20 feet in the 180-Foot and 400-Foot Aquifers, centered on the NSIP area and extending broadly across the northern 180/400 Subbasin. The response in the Deep Aquifers is more modest at 1 to 5 feet – a notable result given that improving groundwater levels in those aquifers is a stated project goal.

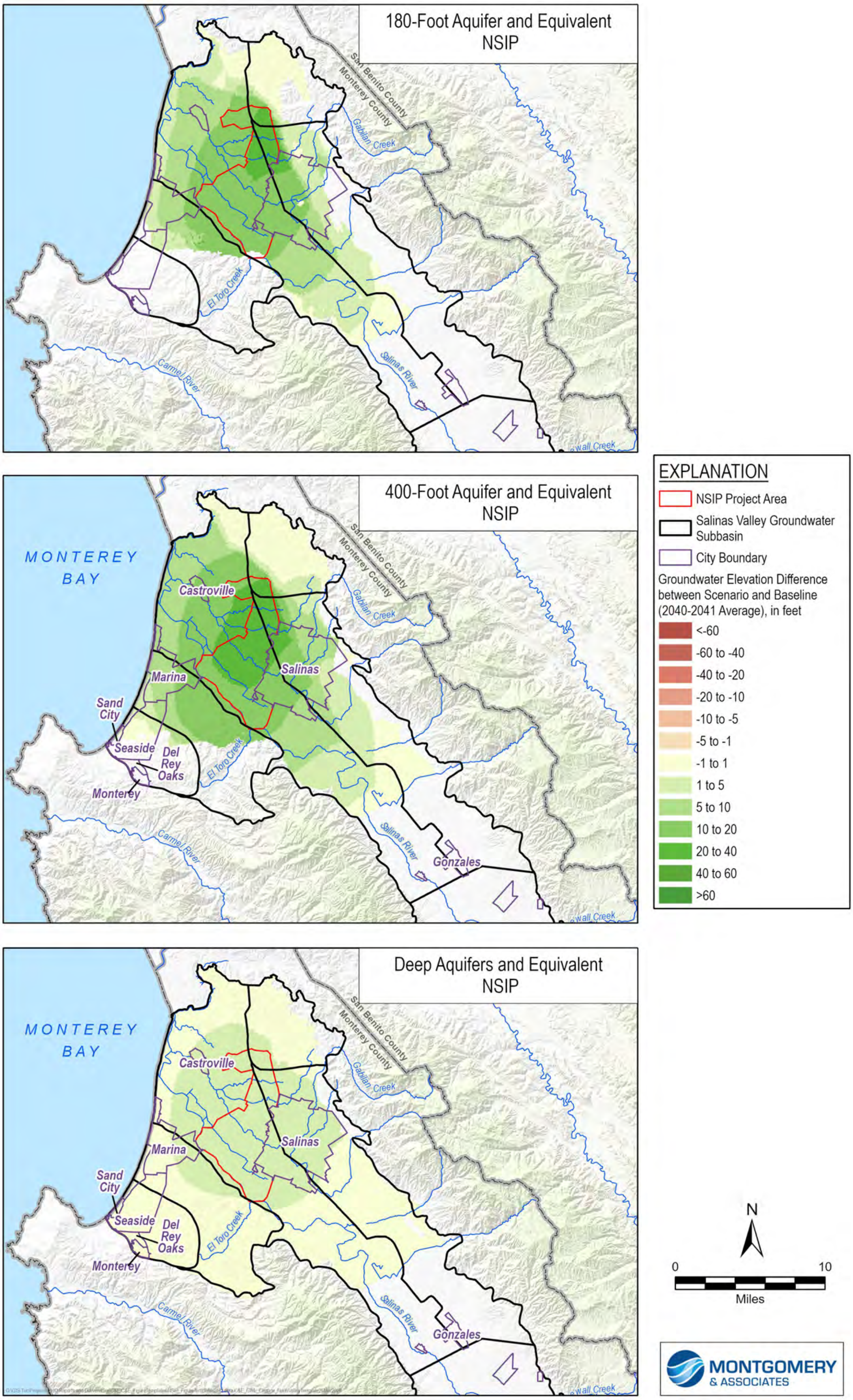
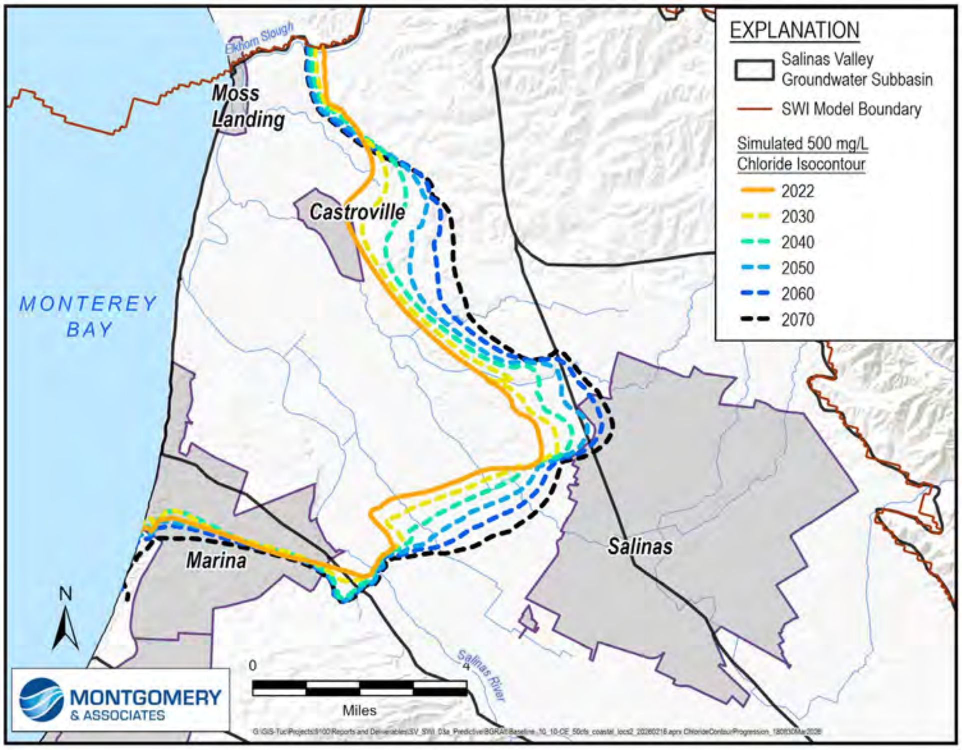



Figure 31. Difference Between Coastal Injection Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers

Despite producing substantial groundwater level increases, the NSIP scenario yields mixed results for seawater intrusion and is not sufficient for meeting the seawater intrusion minimum threshold. Along most of the 180-Foot Aquifer intrusion front, seawater progression is modestly slowed relative to baseline, consistent with reduced landward gradients across the NSIP area. However, the prominent seawater intrusion bulge just west of the City of Salinas advances more rapidly under NSIP than under baseline conditions, as shown on Figure 32. This localized outcome occurs in an area where seawater has already substantially intruded; modeling shows that groundwater level increases in this zone intensify gradients that drive chloride further inland rather than flushing it seaward. Changes in the 400-Foot Aquifer are more moderate, with only a slight additional advance near the City of Salinas compared to baseline (Figure 33). No change in seawater intrusion is simulated in the Deep Aquifers. In both aquifers, the 500 mg/L isocontour is far from the minimum threshold at 2040. The contrast between NSIP's large groundwater level response and its mixed seawater intrusion outcomes reflects fundamental differences in how pumping removal and active injection near the intrusion front affect chloride movement; this is discussed further in Appendix I.



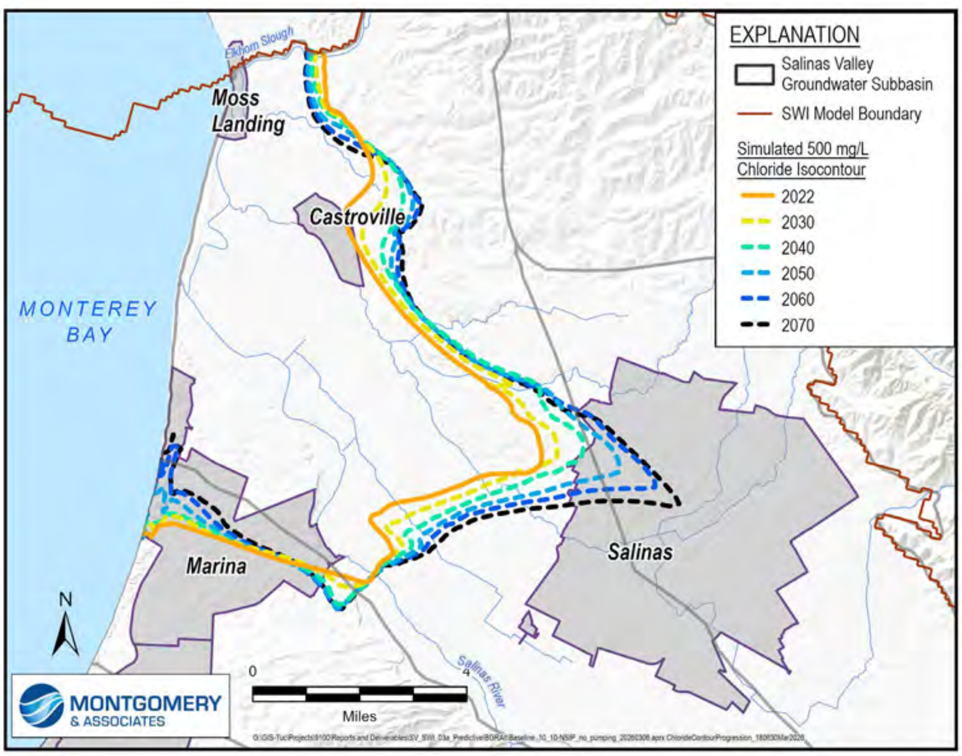




Figure 32. Progression of Chloride Isocontour in the 180-Foot Aquifer under the Baseline (top) and NSIP Scenarios (bottom)

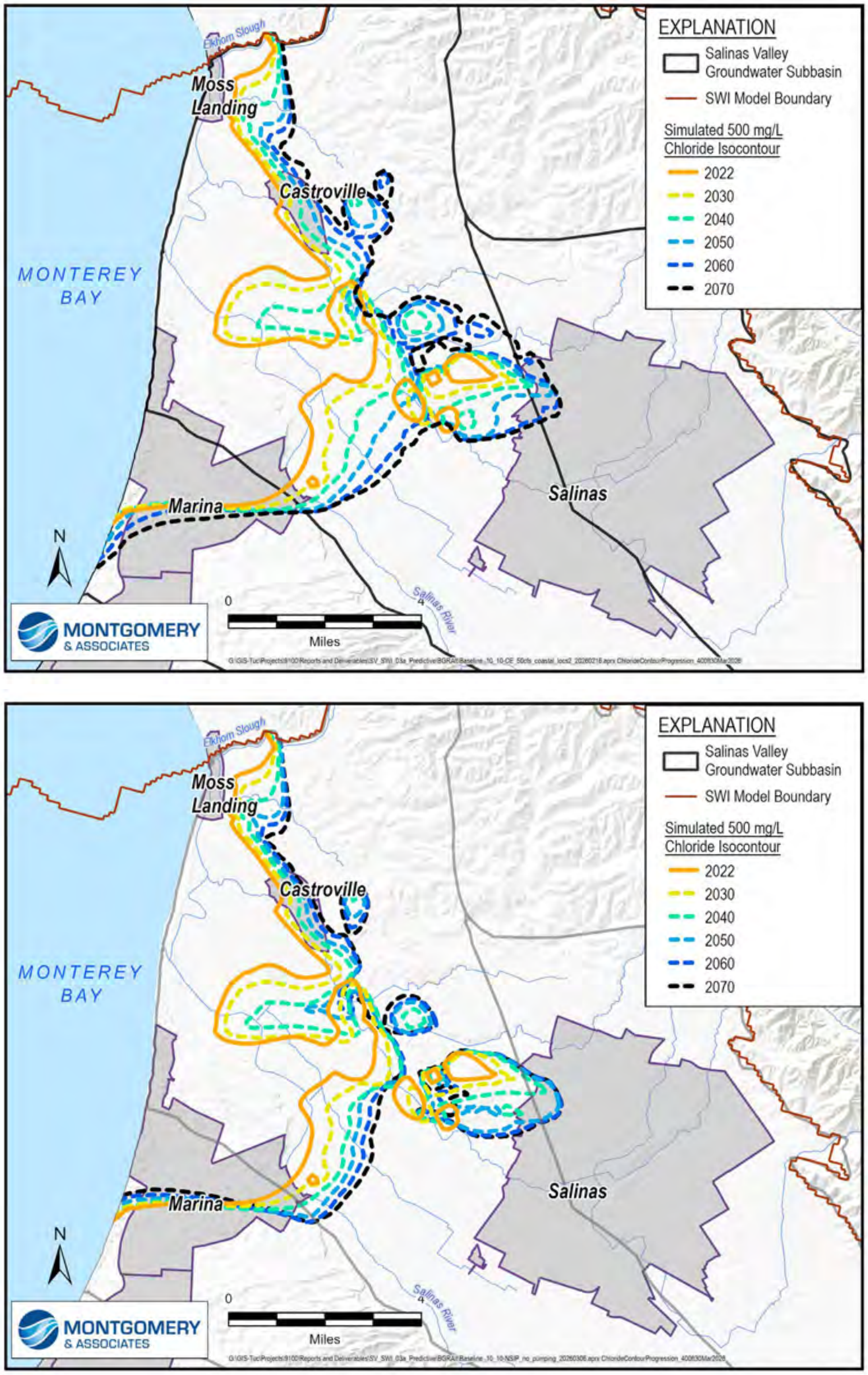



Figure 33. Progression of Chloride Isocontour in the 400-Foot Aquifer under the Baseline (top) and NSIP Scenarios (bottom)

As shown on Figure 34 and Figure 35, by 2040 the position of the 500 mg/L chloride isocontour is minimally different from the Baseline Scenario in both aquifers, reflecting only five years of project operation prior to the SGMA sustainability deadline. The scenarios diverge more noticeably over time.

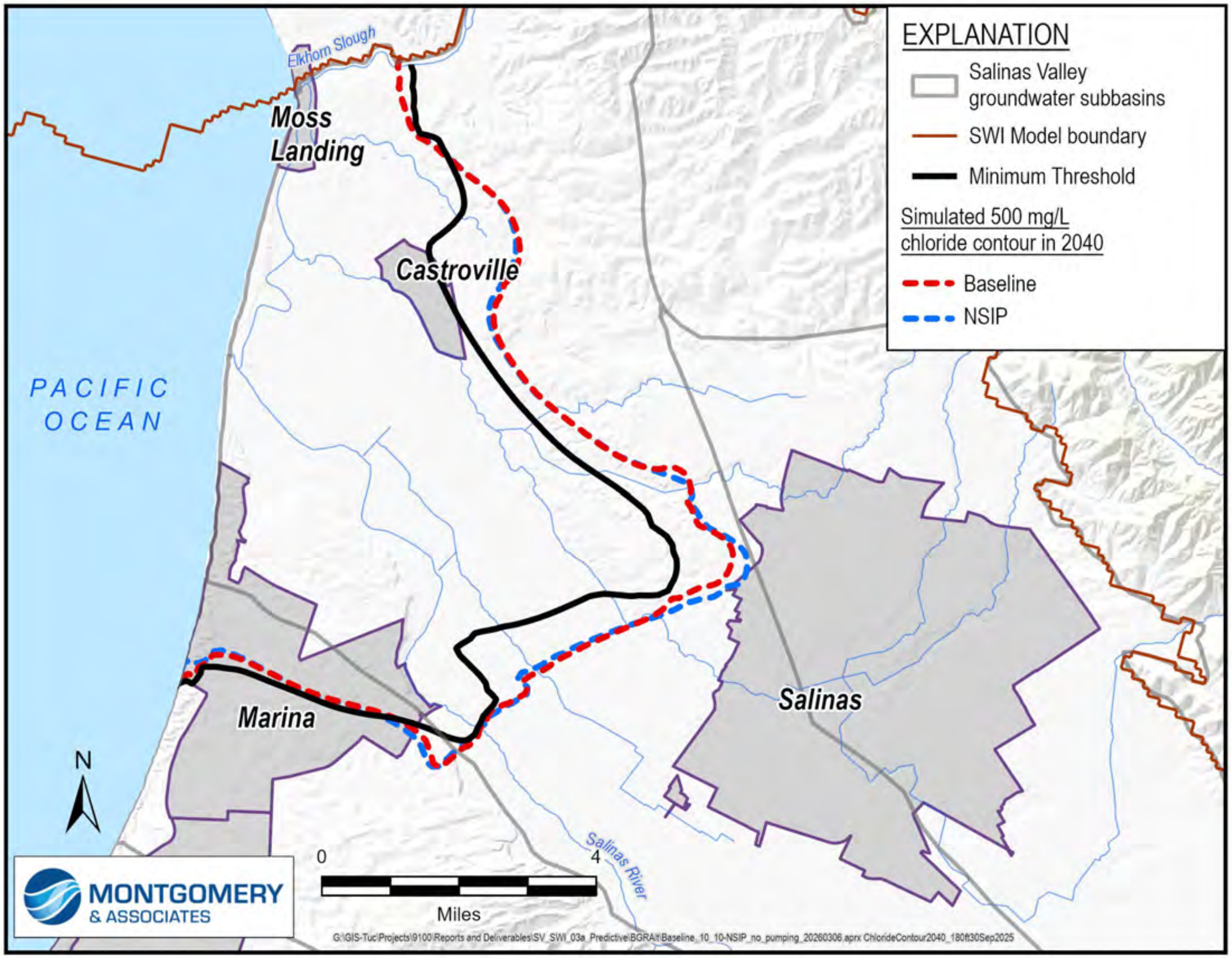



Figure 34. Simulated 500 mg/L Chloride Contour in the 180-Foot Aquifer in 2040 for the Baseline and NSIP Scenarios

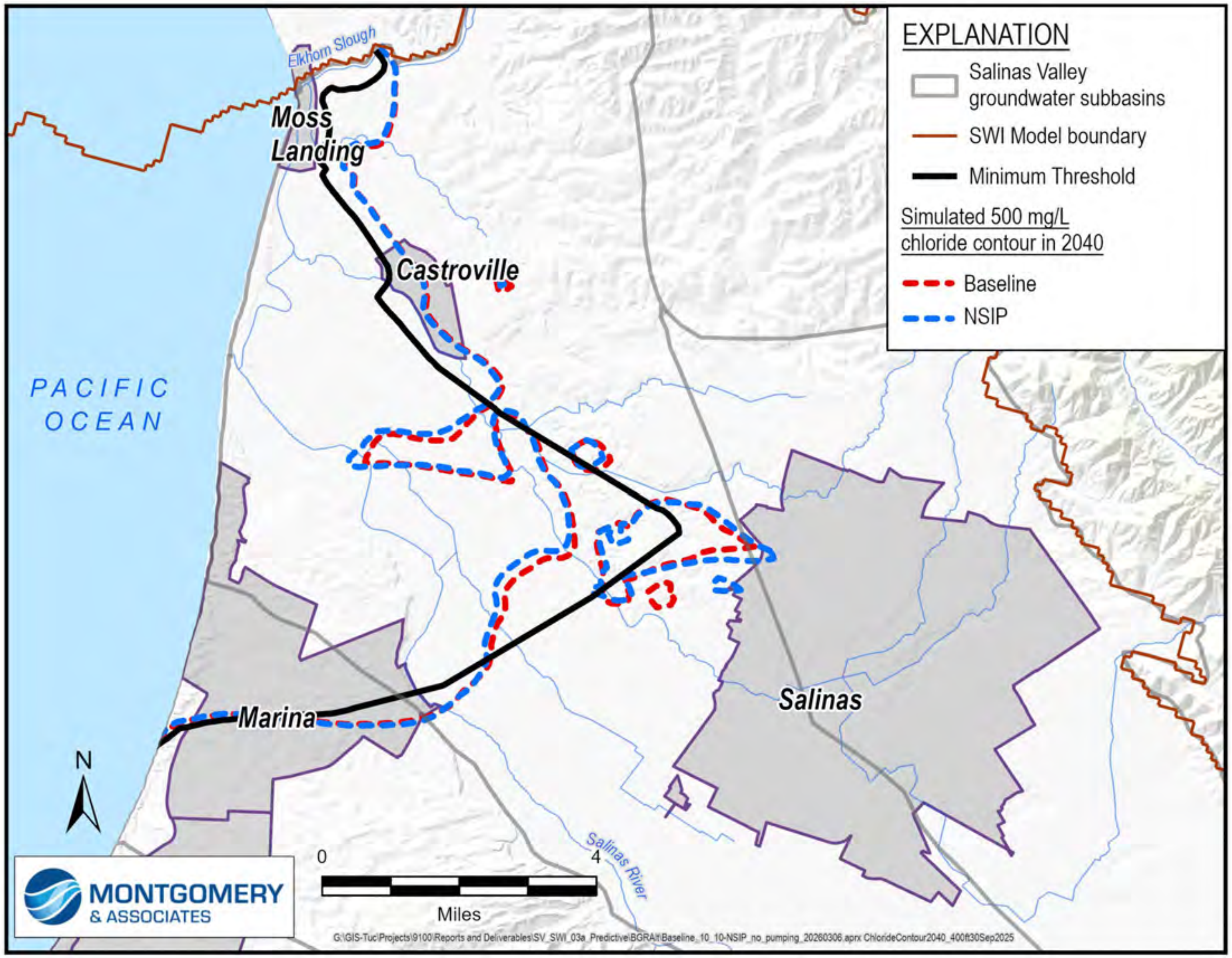



Figure 35. Simulated 500 mg/L Chloride Contour in the 400-Foot Aquifer in 2040 for the Baseline and NSIP Scenarios

### 7.5.3 NSIP – Purpose of Use

The NSIP project concept proposes that agricultural water users will use water diverted under Permit 11043 in conjunction with additional water sources, as described, for irrigation purposes. The project concept provides in-lieu supply, without reliance on injection wells and private well pumping.

### 7.5.4 NSIP - Cost Estimate

For the Maximum Size NSIP scenario, the cost estimate is a Class 5 AACE estimate, similar to the other scenarios. The cost estimate below in Table 20 includes the capital cost and annual O&M cost; the estimate does not include the cost of land purchase or electrical infrastructure improvements required to serve the loads of the proposed facilities.

Table 24. NSIP to Address Groundwater Levels in the Deep Aquifers Intrusion Preliminary Cost Estimate

| Scenario | Capital Cost, Total | O&M Annual Cost, Year 1 (2030) | Avg. Project Yield, AF/Year |
|---|---|---|---|
| NSIP | $1,428,427,000 | $ 21,561,000 | 25,780 |

### 7.5.5 NSIP – Environmental Permitting Requirements

The NSIP concept would involve diversion of up to 100 cfs of surface water from the Salinas River near and upstream of the existing SRDF using a pumped river intake diversion. Consistent with previously evaluated project concepts, a pumped river intake diversion consists of a surface diversion method utilizing a screened pump intake and pump station located along the bank of the river, without construction of a diversion dam or control structure across the river channel to create an impoundment.

The diversion facility would include intake and fish screens, pump station forebay, low-lift pump station, sedimentation basins, and a transfer pump station. Diverted water would be conveyed via a 5.8-mile, 96-inch diameter transmission main to surface storage at Merritt Lake. Following storage and treatment at a proposed water treatment plant, treated water would be delivered through a proposed NSIP distribution system serving groundwater users within the seawater intrusion area east of the existing CSIP system. The transmission main would require 2 crossings under drainage channels tributary to Tembladero Slough.

The NSIP point of diversion would be consistent with the Coastal Injection project concept and in the vicinity of the existing SRDF. As a result, diverted water would remain within the river system for a greater upstream distance prior to withdrawal. This downstream diversion location may provide comparative benefits relative to upstream diversion concepts by maintaining instream flows through a longer river reach, thereby supporting aquatic habitat and other instream beneficial uses upstream of the point of diversion. While the 100 cfs diversion capacity would require detailed evaluation of instream flow thresholds, seasonal timing, and cumulative watershed effects, the downstream location of the diversion may reduce potential upstream effects relative to other project concepts, subject to confirmation through project-specific technical analysis.

Because the NSIP concept includes installation of a screened intake and associated infrastructure within the Salinas River corridor, authorization under Section 404 of the Clean Water Act would be required. This federal authorization would establish a federal nexus and trigger compliance with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. At the state level, the project would require authorization under the California Endangered Species Act, a Streambed Alteration Agreement, and water quality approvals under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act.

When this project concept may provide benefits by allowing water to remain in the river system for longer due to the downstream nature of diversion, it would still result in potential localized impacts to aquatic and riparian resources that would likely receive detailed scrutiny from regulatory agencies, including USFWS, NMFS, CDFW, and DSOD.

Table 26 summarizes the anticipated resource agency permitting requirements for this concept, and Appendix K more details.

Table 25. NSIP Anticipated Environmental Permits and Approvals

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| **Federal Regulatory Requirements** | | | |
| U.S. Army Corp of Engineers ("USACE") | Permit under Section 404 of the Clean Water Act (33 U.S. Code Section 1344). | Y | **Diversion:** As with other concepts, the NSIP concept consists of a river intake diversion on the Salinas River. Therefore, this concept would be subject to the same Section 404 authorization, as described under the Eastside Recharge Basin concept. Please refer to Table 11 for additional information related to Section 404 permitting requirements.<br><br>The downstream location of the point of diversion relative to upstream concepts may reduce the extent of upstream river reach directly affected by diversion operations. However, the 200 cfs diversion capacity would require detailed evaluation under the Section 404(b)(1) Guidelines, including avoidance and minimization analysis and assessment of direct, indirect, and cumulative impacts to aquatic resources.<br><br>**Pipelines:** The 5.8-mile, 96-inch diameter transmission main would require Section 404 authorization where construction results in discharge of dredged or fill material into jurisdictional waters. Two identified crossings under drainage channels tributary to Tembladero Slough would likely trigger permitting requirements. Additional wetlands or drainage features encountered along the alignment may also require authorization. Even where trenchless construction methods are proposed, temporary access, staging, and dewatering activities within jurisdictional features may require authorization.<br><br>**Reservoir (Merritt Lake):** This option would involve the same Section 404 permitting requirements as the Northern Eastside Injection concept. Please refer to Table 19 for additional information.<br><br>**Other (Treatment / Distribution):** The water treatment plant and NSIP distribution network would not independently trigger Section 404 authorization unless associated grading, access improvements, or pipeline installation affects jurisdictional waters or wetlands.<br><br>**Schedule**: Section 404 permitting typically requires preparation of aquatic resource delineations, alternatives analysis, mitigation planning, and coordination with resource agencies. Individual permits could require 18–24+ months following submittal of a complete application. This timeframe does not include preparation of supporting technical studies.<br><br>**Level of Controversy:** High, given 1) 200 cfs diversion, 2) potential fisheries sensitivity (fish screen design, entrainment risk considerations tied to related consultations/authorizations), 3) the potential breadth of alternatives analysis and mitigation obligations, and 4) a new reservoir. |
| U.S. Fish and Wildlife Service ("USFWS")/National Marine Fisheries Service ("NMFS") | Federal Agency Consultation pursuant to Endangered Species Act Section 7 (16 U.S. Code Section 1537). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same ESA permitting requirements as the Eastside Recharge Basins concept. Therefore, this concept would be subject to ESA Section 7 consultation. Please refer to Table 11 for additional information regarding the ESA Section 7 consultation requirements.<br><br>Section 7 consultation would evaluate construction and operational effects of the 200 cfs river intake diversion, including fish screen design, entrainment protection, seasonal timing, and potential instream flow effects. Consultation would also address effects associated with the 5.8-mile, 96-inch transmission main (including crossings of drainage channels tributary to Tembladero Slough), development of the Merritt Lake reservoir, construction of the treatment facility, and implementation of the NSIP distribution system.<br><br>The downstream location of the point of diversion, relative to upstream diversion concepts, may provide comparative benefits by allowing water to remain in the river system for longer prior to withdrawal. However, the increased diversion capacity (200 cfs) would require detailed evaluation of instream flow thresholds, habitat availability, and cumulative watershed effects. NMFS would have jurisdiction over listed anadromous fish species, while USFWS would evaluate listed riparian and terrestrial species. Given the magnitude of diversion and associated infrastructure, formal consultation and issuance of a Biological Opinion with an Incidental Take Statement would be anticipated.<br><br>**Schedule:** Preparation of the Biological Assessment typically requires 6–12 months. Formal consultation under Section 7 may take approximately 12 months or longer from submittal of a complete BA.<br><br>**Level of Controversy/Complexity:** High. The level of controversy and complexity of associated permitting is driven by a new diversion on the Salinas River, potential large reservoir footprint, and drainage crossings. |
| U.S. Fish and Wildlife Service ("USFWS") | Incidental Take Permit ("ITP") under the Endangered Species Act Section 10 (16 U.S. Code Section 1539). | N | **All:** Section 10 is generally applicable only where take authorization is needed without a federal nexus. Under this alternative, Section 404 authorization for the instream intake establishes a federal nexus; therefore, federal take authorization would be addressed through ESA Section 7 consultation (Biological Opinion and Incidental Take Statement, as appropriate). Section 10 ITP is not anticipated unless the project is redesigned to eliminate the federal nexus, which is not consistent with the current concept (direct instream intake). Please also refer to Table 11 for additional information.<br><br>**Schedule:** Not applicable under the current project description.<br><br>**Level of Controversy/Complexity:** Not applicable; federal take authorization would occur through Section 7 consultation. |
| State Historic Preservation Office and the National Historic Preservation Act ("NHPA") | Consultation with State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") under Section 106 of the NHPA (16 USC Section 470 et seq.). | Y | **All:** Federal nexus established through Section 404 authorization. This concept would be subject to the same NHPA permitting requirements as identified for the Eastside Recharge Basins concept. Therefore, this regulation applies. Please refer to Table 11 for additional information regarding NHPA Section 106 consultation requirements.<br><br>Similar to the APE for other concepts, the APE for this concept would likely encompass the river intake diversion site near the existing SRDF, the 5.8-mile transmission main (including drainage crossings tributary to Tembladero Slough), the Merritt Lake reservoir footprint and associated infrastructure, the treatment facility site, and the NSIP distribution network. Please also refer to Tables 19 and 23 for additional information.<br><br>**Schedule:** Section 106 review typically requires approximately 6–12 months following submittal of a complete cultural resources inventory and APE delineation. If adverse effects are identified and an MOA is required, additional time may be necessary.<br><br>**Level of Controversy/Complexity:** Moderate to High, depending on archaeological sensitivity within the Salinas River corridor, reservoir footprints, and the pipeline alignments. |

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| **State Regulatory Requirements** | | | |
| California Department of Fish and Wildlife ("CDFW") | Incidental Take Permit under the California Endangered Species Act (California Fish and Game Code Section 2081). | Y | **All:** Like the Eastside Recharge Basins concept, this concept could result in potential take of state listed species, and would be subject to similar authorization under CESA. Please refer to Table 11 for additional information regarding CESA Section 2081 permitting requirements.<br><br>Although the point of diversion is located further downstream relative to upstream concepts—which may provide comparative benefits by maintaining instream flows through a longer upstream reach—the magnitude of diversion (200 cfs) would require careful evaluation for state-listed aquatic species.<br><br>**Pipelines:** The 5.8-mile, 96-inch transmission main and associated NSIP distribution network may result in temporary and permanent disturbance to riparian and upland habitats, particularly at crossings of drainage channels tributary to Tembladero Slough and any additional jurisdictional features encountered along final alignments. Species surveys and avoidance/minimization measures would likely be required.<br><br>**Reservoir:** Like the North Eastside Injection concept reservoir construction would introduce additional CESA concerns. Conversion of the Merritt Lake site to a surface storage reservoir (12,600 AF) would occur within a predominantly agricultural, flood-prone area. Although the site is predominately cultivated, CDFW does not assume that agricultural lands lack habitat value. Seasonally ponded areas, drainage swales, irrigation features, field margins, and other disturbed areas may provide habitat function for certain state-listed species depending on site-specific conditions. Accordingly, habitat mapping and species surveys would be required to determine the presence or potential use of the site by listed terrestrial or aquatic species. The extent of mitigation and permitting complexity would depend on documented habitat functions and species presence. Please also refer to Table 19 for additional information.<br><br>**Other (Treatment / Distribution):** Construction of the treatment facility and distribution infrastructure would require evaluation of habitat disturbance and potential impacts to special-status species.<br><br>**Schedule:** Preparation of technical support materials (e.g., hydrology, fisheries, habitat assessment) may require substantial time. Following submittal of a complete application, CDFW review and permit issuance typically requires 12–24 months, depending on complexity and negotiation of avoidance, minimization, and mitigation measures.<br><br>**Level of Controversy/Complexity:** High. The 200 cfs instream diversion, combined with reservoir development and linear infrastructure, would likely require detailed scrutiny from CDFW, notwithstanding the downstream location of the point of diversion. |
| California Department of Fish and Wildlife ("CDFW") | Lake Streambed Alteration Agreement (California Fish and Game Code Section 1602). | Y | **All:** As with the Eastside Recharge Basins concept, construction of a river intake diversion on the Salinas River would require a LSAA pursuant to Fish and Game Code Section 1602. Please refer to Table 11 for additional information regarding LSAA permitting requirements.<br><br>**Diversion:** The river intake diversion on the Salinas River would require an LSAA because construction and operation would alter the riverbank/channel margin and involve substantial diversion/obstruction of natural flow. Installation of the screened intake, bank stabilization, forebay, and associated pump infrastructure would constitute alteration of the bed, bank, or channel. Temporary construction activities (e.g., isolation/dewatering, cofferdams, access pads within the channel margin) would also be addressed through the LSAA. Operational diversion would be evaluated to ensure consistency with CDFW's jurisdiction over substantial diversion or obstruction of natural flow.<br><br>**Pipelines:** The 5.8-mile, 96-inch transmission main would require LSAA authorization where it crosses jurisdictional streams or drainage features and where construction disturbs the bed or bank. The 2 identified crossings under drainage channels tributary to Tembladero Slough would be expected to trigger LSAA requirements (even if constructed via trenchless methods, depending on temporary access/staging, vegetation disturbance, and any bed/bank modification). Additional drainage features encountered as part of final design may also trigger LSAA applicability.<br><br>**Reservoir:** As with the Northern Eastside Injection concept, reservoir construction introduces additional Section 1602 complexity. Although the Merritt Lake footprint is predominantly agricultural, CDFW may still evaluate drainage swales and flood conveyance features as streams subject to Section 1602, depending on site-specific conditions and connectivity. Please refer to Table 19 for additional information regarding Section 1602 permitting requirements for reservoir construction.<br><br>**Other (Treatment / Distribution):** Treatment facilities and distribution infrastructure would not independently trigger an LSAA unless grading, access improvements, or pipeline installation affects streams, drainages, or riparian vegetation subject to CDFW jurisdiction.<br><br>**Schedule:** Following submittal of a complete notification package, LSAA issuance typically requires 12 months, depending on project complexity and negotiation of agreement terms. For projects involving new instream diversion facilities, extended coordination and additional technical review may lengthen this timeframe.<br><br>**Level of Controversy/Complexity:** High. The diversion-related LSAA exposure is substantial due to the river intake diversion on the Salinas River (200 cfs), and the project also includes additional complexity related to drainage crossings tributary to Tembladero Slough and potential reservoir-related drainage modifications within the Merritt Lake footprint. |

| Agency or Department | Approval or Permit | Applicability (Y/N/P) | Discussion |
|---|---|---|---|
| State Water Resources Control Board ("SWRCB")/Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") | Waste Discharge Requirements pursuant to Section 401 of the Clean Water Act (40 Code of Federal Regulations 121) and the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Section 13000 et seq.). | Y (Section 401); Y (General Order for injection);<br><br>P (reservoir related WDR depending on final design/operations) | **Diversion:** Because the North Eastside Injection concept includes the same river intake diversion on the Salinas River as the Eastside Recharge Basins concept, this concept would be subject to the same CWA Section 401 permitting requirements as the Eastside Recharge Basins concept. Please refer to Table 11 for additional information regarding CWA Section 401 permitting requirements.<br><br>**Pipelines:** Section 401 certification would also apply to crossings of drainage channels tributary to Tembladero Slough, and any additional waters of the state affected by pipeline construction. Construction activities disturbing 1 acre or more would require coverage under the Construction General Permit for stormwater discharges.<br><br>**Reservoir:** Reservoir construction may require 401 certification where fill affects waters of the state. RWQCB may evaluate reservoir water quality management and downstream effects. Please also refer to Table 19 for additional information.<br><br>**Treatment/Injection:** Treatment of stored surface water prior to injection and operation of injection wells would likely require enrollment under the State Water Resources Control Board's Water Quality Order No. 2012-0010-DWQ (General Waste Discharge Requirements for Groundwater Recharge Projects), issued pursuant to the Porter-Cologne Water Quality Control Act. See discussion under North Eastside Injection concept for more information.<br><br>**Schedule:** Section 401 Certification typically requires 12 months following submittal of a complete application; longer if technical review is complex or coordinated with federal consultation. If project-specific WDRs are required, additional time may be necessary depending on the scope of RWQCB review and Board scheduling.<br><br>**Level of Controversy/Complexity:** High. A new direct instream diversion and large-scale recharge program on the Salinas River would receive detailed review regarding protection of beneficial uses, water quality standards, and consistency with Basin Plan objectives. |
| California Department of Water Resources ("DWR"), Division of Safety of Dams ("DSOD") | Approval of Dam Construction and Certificate of Approval to Operate (Water Code §§6000 et seq.) | Y | **Reservoirs:** Concepts that include a reservoir impounded by an embankment or other dam structure would fall under DSOD jurisdiction. See Table 11 for additional information regarding DSOD approval requirements.<br><br>**Schedule:** The approval process would extend the project schedule (typically on the order of 24 months or longer prior to construction authorization).<br><br>**Level of Controversy:** High. While DSOD review is primarily technical, reservoir and dam facilities can raise public safety concerns (e.g., dam failure risk), substantially increase potential biological effects, including related permitting requirements, and generate significant public scrutiny. |

Notes:

1. This table is not intended to provide an exhaustive list of all permits, approvals, or authorizations that may be required to construct, operate, or maintain potential water supply facilities. Rather, it identifies anticipated resource agency permitting requirements related specifically to environmental resource considerations and compliance with applicable state and federal environmental regulations. The permits identified in this table are based on conceptual-level information regarding the Project alternatives. As project design, siting, and operational details are refined, additional permits or approvals may be identified, and the regulatory pathways described may change accordingly.
2. The permits and approvals identified in this table are organized by project components for purposes of evaluating applicability. However, regulatory agencies typically issue authorizations on a project-wide basis. Accordingly, a single Section 404 permit, Section 7 consultation, CESA authorization, LSAA, or Section 401 certification would generally encompass all applicable components of the project concept.

# 8 SUMMARY OF PROJECT CONCEPTS AND KEY FINDINGS

This section brings together the 4 project concepts for comparison and summarizes the key findings and next steps.

## 8.1 Comparison of Scenarios

This Study targets 4 groundwater sustainability goals and developed a project concept to address each, some with multiple scenarios building in variation in size or storage locations. The 4 project concepts evaluated represent fundamentally different approaches to using Salinas River diversions to support groundwater sustainability, each shaped by the physical constraints of the groundwater basin, anticipated diversion volumes, and the regulatory and operational requirements associated with treatment, storage, and delivery. While all scenarios provide some level of benefit, they differ substantially in the extent to which they improve groundwater conditions, the complexity of infrastructure needed, the feasibility of long-term implementation, and the cost per unit of water delivered or recharged. A comparative understanding of these differences is essential for determining which alternatives warrant more detailed feasibility analysis in subsequent phases of work.

Table 26 provides a comparison of the project concepts according to key aspects of the study; Table 27 relays the groundwater impacts; and Table 28 compares cost estimates. Overall, the comparative analysis shows a clear trade-off between breadth of groundwater benefit, infrastructure complexity, and cost. Recharge basins deliver the most substantial area-wide improvement at the lowest cost but cannot effectively reach the northern Eastside or coastal 180/400 Subbasin areas. Injection provides direct benefits in locations where recharge basins cannot, but at significantly higher cost for the same amount of diverted water. Storage limits the size of the project and insufficient water is available to address seawater intrusion. Finally, NSIP provides an alternative water source for coastal growers that rely on the Deep Aquifers in the seawater-intruded area, but limited effect on seawater intrusion. These distinctions will be essential in shaping decisions about which scenarios should advance into more detailed engineering, environmental, and economic evaluation.

In addition, modeling these scenarios under a range of climate conditions, including projected climate change, would help assess uncertainty, risk, and the potential variability of groundwater impacts. Diversion rates vary year-to-year depending on the Salinas River flow. Average annual rates are the result of higher diversions in some years and little to no diversions in other years. Changes in the climate are anticipated to alter the frequency and magnitude of precipitation events and raise temperatures on average. Such changes may alter the ability to capture river flow at anticipated rates, thus making the project benefit more uncertain.

Overall, each project scenario would require a comprehensive and coordinated permitting effort, with differences driven more by scale, location, and facility components than by diversion type alone. The level of permitting effort and associated risk varies across the project scenarios. All scenarios require diversion-related permits, and with the exception of recharge basins, most would also require permits for reservoir construction, treatment facilities, and groundwater injection wells. While subsurface diversion systems may avoid certain direct instream impacts—such as physical barriers, fish passage constraints, or channel modifications—subsurface diversions do not eliminate the need to address potential effects to surface flows or associated biological resources. These potential effects would need to be addressed through the permitting process. Although the regulatory pathway for subsurface systems may differ in emphasis and, in some cases, be less controversial, resource agencies will still evaluate potential impacts to fisheries and other species. Consequently, the overall scope of environmental review is not inherently reduced based solely on diversion type. In general, larger diversions are subject to greater regulatory scrutiny, and the applicability and level of effort for individual permits will depend heavily on site-specific conditions. In addition to California Environmental Quality Act (CEQA) compliance, project concepts that include a reservoir would also require permitting through the DSOD.

Table 26. Comparison of Project Concepts

| Project Concept | Diversion Size | Diversion Capacity Modeled | Primary Groundwater Goal | Storage Required | Treatment Required | Primary Benefits | Key Limitations / Constraints | Relative Cost |
|---|---|---|---|---|---|---|---|---|
| **Eastside Recharge Basins** | 400 cfs | 25,800 AFY | Raise groundwater levels in central Eastside and/or 180/400 Subbasin | Recharge basins serve as immediate storage prior to underground storage | Sedimentation only | Largest area-wide groundwater level benefit; substantial reduction in MT exceedances | Limited effectiveness in northern Eastside; requires large land footprint | **Lowest** |
| | 200 cfs | 17,200 AFY | | | | | | |
| | 100 cfs | 9,700 AFY | | | | | | |
| | 50 cfs | 5,100 AFY | | | | | | |
| **Northern Eastside Injection** | 100 cfs | 9,700 AFY | Raise groundwater levels in northern Eastside, and potentially Langley, Subbasin | Surface storage in Merritt Lake or Gabilan range reservoir | Full conventional treatment | Targeted groundwater level improvements near groundwater depression; benefits extend to adjacent subbasins | Higher cost; relies on treatment and extensive distribution; does not eliminate Groundwater Level undesirable results | **High** |
| | 50 cfs | 5,100 AFY | | | | | | |
| **Coastal Injection** | 50 cfs | 5,100 AFY | Reduce seawater intrusion in 400-Foot Aquifer | Merritt Lake | Full treatment | Moderates seawater intrusion rate over time; benefit is more localized near coast | Storage constraint limits volume and effectiveness with respect to seawater intrusion isocontour | **Moderate–High** |
| **NSIP Direct Delivery** | 100 cfs, plus other source waters | 9,700 AFY diverted under Permit 11043, plus other sources for a total average supply of 25,000 AFY | Raise groundwater levels in Deep Aquifers and seawater-intruded areas | Merritt Lake (insufficient for full use) | Full treatment (NSIP specific) | Reduces groundwater extraction; raises groundwater levels; supports agricultural users directly | Storage constraint; requires major distribution system; feasibility dependent on NSIP and treatment design; has little effect on seawater intrusion | **High** |

Table 27. Comparison of Effects on Groundwater Conditions

| Scenario | Diversion Capacity (cfs) | Average Volume Diverted (AFY) | Pumping Difference from Baseline Scenario (AFY) | Groundwater Level Effect | Effect on Seawater Intrusion |
|---|---|---|---|---|---|
| Eastside Recharge Basins | 400 | 26,800 | -3,900 | Largest and most spatially extensive groundwater level increases. Greater effect with higher rates of diversion. Location of effects center around location of recharge basins or outskirts of basin where shallow clays are absent. By 2040-2041 evaluation period, 10% - 48% reduction in MT exceedances from Baseline in the Eastside Subbasin. | Not a primary driver of intrusion response. Not assessed with SWIM, but minimal effect anticipated based on limited effect on groundwater levels near seawater intrusion front. |
| | 200 | 17,200 | -2,200 | | |
| | 100 | 9,700 | -1,200 | | |
| | 50 | 5,100 | -600 | | |
| Northern Eastside Injection | 100 | 9,700 | None | Moderate, localized groundwater level increases in the northern Eastside Subbasin. Reduces MT exceedances relative to baseline by 10-24%, but there are still undesirable results by the evaluation period. Groundwater level increases are more concentrated near injection wells, with high uncertainty given heterogeneity of groundwater basin in this area. | Not a primary driver of intrusion response. Not assessed with SWIM, but minimal effect anticipated based on limited effect on groundwater levels near seawater intrusion front. |
| | 50 | 5,100 | None | | |
| Coastal Injection | 50 | 5,100 | None | Small, localized groundwater level increases (several feet) near injection wells. Overall groundwater level benefits are limited by relatively small diversion volumes and do not strongly affect groundwater levels relative to the overall inland gradient. | Injection wells positioned to address seawater intrusion in the 400-Foot Aquifer. Modeled movement of the 500 mg/L chloride isocontour is minor by 2040 but diverges from baseline later, with localized moderation of intrusion in the 400 Foot Aquifer. Volume injected is insufficient to meet seawater intrusion MT. |
| NSIP | 100 cfs, plus other source waters | 9,100 AFY diverted under Permit 11043, plus other sources for a total average supply of 25,000 AFY | -31,600 | Eliminates agricultural pumping in all aquifers in the NSIP area. Raises groundwater levels substantially – over 20 feet in the 180-Foot and 400-Foot Aquifers and up to 5 feet in the Deep Aquifers. | Little effect on seawater intrusion by 2040 compared to the baseline scenario. Does not stop seawater intrusion, nor meet the MT. |

Table 28. Summary of Cost Estimates for All Scenarios

| Scenario | Diversion Size | Capital Cost, Total | Average Project Yield, AFY |
|---|---|---|---|
| Eastside Recharge Basins | 400 cfs | $1,390,800,000 | 24,700 |
| | 200 cfs | $614,700,000 | 16,000 |
| | 100 cfs | $284,100,000 | 9,100 |
| | 50 cfs | $139,900,000 | 4,800 |
| Northern Eastside Injection | 100 cfs | $1,016,800,000 | 9,100 |
| | 50 cfs | $515,500,000 | 4,800 |
| Coastal Injection | 50 cfs | $399,800,000 | 4,800 |
| NSIP | 100 cfs | $1,428,427,000 | 25,780 |

Components from these project concepts were intentionally selected to allow a range of potential pairings. This approach also supports evaluating how costs or feasibility may change under different combinations. For example:

- **Keeping diversion point at the permitted Castroville Canale Intake for the Coastal Injection and NSIP concepts** could avoid modifying the existing permit location by diverting water at the Castroville Canal Intake. However, this option would still require permit modification for storage and would require a longer pipeline to Merritt Lake, increasing overall project cost.
- **Diversion points farther up-Valley** could be considered, but they would add cost of developing the canal and pipeline a significant distance while providing little to no additional flow benefit. Subsurface diversion methods may have higher yields up-valley, but the total potential flow would be similar.
- **Injection in the central Eastside Subbasin** is another option; however, it would require additional storage, treatment, and delivery costs.
- **Delivery for municipal use to City of Salinas.** Infrastructure requirements would be similar to that of either the Northern Eastside Injection or Coastal Injection, except that instead of injection wells, treated water would be conveyed to the existing potable water distribution systems. This has potential to create significant cost savings for both capital and O&M costs compared to the concepts with new injection wells and piping located in and around the City of Salinas. The average annual yield for the 100 cfs diversion makes up approximately 50% of the Salinas urban groundwater extractions.

If one of these project concepts advances to further development, additional variations or alternative pairings could be evaluated in more detail.

## 8.2 Key Findings

The C&E Study found that while Permit 11043 provides a potentially valuable mechanism for diverting Salinas River flows to address groundwater sustainability needs, several constraints limit its immediate use. The Permit remains active, but 2 longstanding petitions—a Petition for Extension of Time and a Petition for Change—must be resolved before any project can proceed. In its current form, the Permit requires that diverted water be applied to beneficial use within 30 days, preventing the seasonal or multi-month storage that would be necessary to bridge the gap between winter diversion opportunities and summer irrigation or managed recharge needs. For any project scenario to move forward, amendments to the Permit would likely be required, including the addition of storage (either in a surface reservoir and/or underground) beyond 30 days. Other modifications potentially worth considering are moving the point(s) of diversion location and potentially changing the purpose of use. However, any petition process carries the risk of protests, added permit conditions, and significant timeline implications, and any modifications of the minimum flow or diversion requirements would significantly increase the complexity, risk, and timeline to complete.

Analyses of historical and projected Salinas River flows show that diversions consistent with the term and conditions of Permit 11043 are expected to occur primarily from January through April, during which eligible diversion days represent less than 15% of each year. Even when diverting at the maximum allowable rate of 400 cfs, long-term average diversion volumes are expected to be well below the Permit's 135,000 AFY face value. Projected average yields range from approximately 5,100 AFY for a 50 cfs diversion to roughly 26,800 AFY for a 400 cfs diversion. These volumes offer meaningful support for targeted groundwater sustainability goals but are insufficient to independently halt seawater intrusion in the coastal 400Foot Aquifer, highlighting the importance of pairing diversions with storage, treatment, and carefully selected end use strategies.

Groundwater modeling completed for the 4 project concepts demonstrates that Eastside Recharge Basins offer the broadest groundwater benefits of the evaluated scenarios. Under these scenarios, diverted flows recharged into shallow basins on the eastern side of the Valley measurably improve groundwater levels throughout the central Eastside Subbasin and, to a lesser extent, the 180/400 Subbasin. Minimum threshold exceedances during the sustainability evaluation period for Eastside RMS wells range from 52% at the 50 cfs scale to 14% at the 400 cfs scale, compared to 62% in the Baseline Scenario. However, improvements in the northern Eastside are limited unless large recharge volumes are applied farther north. The 400 cfs recharge scenario also raises feasibility concerns where modeled groundwater mounding in low permeability areas results in extreme water level rises, suggesting that a more balanced distribution of recharge may be more practical.

The Northern Eastside Injection concept provides groundwater benefits concentrated in the persistent groundwater depression near Salinas. Injected water produces appreciable increases in groundwater levels, and improvements propagate into the 180/400 and Langley Subbasins. While these scenarios reduce the number of Eastside RMS wells below minimum thresholds—to 55 percent under the 50 cfs scenario and 38 percent under 100 cfs—there are still undesirable results on average by the 2040-2041 evaluation period. Compared to recharge basins, injection results in a greater share of the basin-wide storage benefit being distributed outside the Eastside Subbasin, underscoring the targeted nature of injection benefits.

The Coastal Injection concept aims to address seawater intrusion in the 400-Foot Aquifer. It results in modest but meaningful reductions in the advancement of seawater intrusion, which alone do not meet the seawater intrusion minimum threshold; however, the project could be combined with other efforts. Although the 50 cfs diversion capacity limits the short-term magnitude of benefit, model projections indicate a gradual divergence from baseline seawater intrusion progression over multiple decades.

Similarly, the NSIP concept—intended to replace groundwater pumping in the Deep Aquifers and seawater intruded area through direct surface-water deliveries—offers the potential to support recovery of groundwater levels and reduce pressure on overdrafted aquifers. However, groundwater level increase from reduction in pumping is not fast enough to overcome continued seawater intrusion inland, resulting in minimal effect on the seawater intrusion isocontour and inability to meet the seawater intrusion minimum threshold. NSIP's feasibility is tightly bound to storage availability at Merritt Lake, whose limited capacity constrains the ability to fully use a 100 cfs diversion without additional or alternative storage. Therefore, this project addresses irrigation supply needs well, but does not improve groundwater conditions sufficiently to meet SGMA goals. Cost estimates developed at the planning level show notable variation among project concepts, reflecting differences in treatment requirements, conveyance distances, storage infrastructure, and the number of recharge basins or injection wells required. Recharge basin scenarios generally represent the lowest unit costs, while injection-based projects carry higher capital and operational costs due to treatment plant requirements and extensive distribution networks. NSIP costs are still under development pending additional analysis of treatment and distribution elements.

## 8.3 Conclusions

Collectively, these findings from this preliminary feasibility study illustrate that while multiple diversion-based pathways can support SGMA compliance, each comes with distinct benefits, limitations, and implementation challenges that must be weighed as part of future feasibility assessment and project selection.

A river diversion under the 11043 Permit could capture additional water to help meet groundwater sustainability goals; however, all diversion options involve substantial costs. Because water available under the 11043 Permit typically occurs during periods of low demand, storage capacity is a key constraint that limits overall project scale. In areas with an aquitard or shallow clay layers, treatment and injection would be required to recharge groundwater below these confining units in order to address declining groundwater levels and seawater intrusion. While providing water as an in-lieu supply can help meet user demands, it is generally less effective at improving groundwater conditions. Among the options evaluated, recharge basins in the central Eastside Subbasin offer the most cost-effective groundwater benefit. However, all project concepts rely on excess river flows that may become increasingly variable with climate change.

Overall, the evaluation of diversion timing and volumes, required infrastructure and associated costs, and groundwater impacts across the 4 project concepts suggest that a river diversion project could be a viable source of new water. However, it would need to be implemented in combination with other projects and management actions to achieve SGMA sustainability goals.

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# 10 ACRONYMS & ABBREVIATIONS

AACE ............Association for the Advancement of Cost Engineering
AF ..................acre-feet
AFY/yr ...........acre-feet per year
C&E Study.....Castroville & Eastside Canals and Alternatives Preliminary Feasibility Study
CDFW............California Department of Fish and Wildlife
CEQA ............California Environmental Quality Act
cfs...................cubic feet per second
CSIP...............Castroville Seawater Intrusion Project
DD&A............Denise Duffy & Associates, Inc.
DSOD ............California Division of Safety of Dams
ESA................Endangered Species Act
fps...................foot per second
gpm.................gallons per minute
GSPs...............Groundwater Sustainability Plans
M&A ..............Montgomery & Associates
M1W ..............Monterey One Water
MBK ..............MBK Engineers
MCL...............maximum contaminant levels
MCWRA........Monterey County Water Resources Agency
MO .................measurable objective
MT..................minimum threshold
NEPA.............National Environmental Policy Act
NMFS.............National Marine Fisheries Service
NSIP...............New Seawater Intrusion Project
O&M..............Operations and maintenance
PES.................Preliminary Engineering Study
PMF................probable maximum flood
RMS ...............Representative Monitoring Site
RO ..................reverse osmosis
SAGBI ...........Soil Agricultural Groundwater Banking Index
SGMA............Sustainable Groundwater Management Act
SMC ...............Sustainable Management Criteria
SRDF .............Salinas River Diversion Facility
SROHCP........Salinas River Operations Habitat Conservation Plan
SVBGSA .......Salinas Valley Basin Groundwater Sustainability Agency
SVIHM ..........Salinas Valley Integrated Hydrologic Model
SVOM............Salinas Valley Operational Model

SVRP .............Salinas Valley Reclamation Project
SVWP ............Salinas Valley Water Project
SWIM.............Seawater Intrusion Model
SWRCB .........State Water Resources Control Board
UPRR.............Union Pacific Railroad
USFWS..........U.S. Fish and Wildlife Service
USGS.............U.S. Geological Survey
WDR..............Waste Discharge Requirements
WG.................Wallace Group
WY.................Water Year

# Appendix A

# History of Water Rights

JULY 2025

# History of Water Rights – A013225 (Permit 11043), A032263C, A032263D, and A032263E

Held by Monterey County Water Resources Agency

Prepared for the Salinas Valley Basin Groundwater Sustainability Agency

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# Attachments

## Introduction

This report supports the first phase of a multi-phase study by the Salinas Valley Basin Groundwater Sustainability Agency (GSA) to support Sustainable Groundwater Management Act implementation pursuant to State of California Department of Water Resources (DWR) grant funding. The GSA is evaluating the Castroville and Eastside Canals and Alternatives to identify potential projects to halt the advancement of seawater intrusion and raise groundwater levels.

### Purpose

The purpose of this report is to summarize water right Applications 13225 (Permit 11043), 32263C, 32263D, and 32263E and relevant history based on a review of the State Water Resources Control Board's (SWRCB) files obtained from the Division of Water Rights (Division) in May of 2025. Understanding the water rights and associated history will inform whether any of the rights may be aligned and usable for implementing the potential projects the GSA is evaluating.

## A013225 (Permit 11043)

### Initial Application to Permit Issuance (1949-1957)

The Division of Water Resources of the Department of Public Works, predecessor to DWR, published Bulletin No. 52 in 1946, which was focused on groundwater in the Salinas Valley and preventing seawater intrusion. Based on the recommendations provided in Bulletin No. 52, the Monterey County Flood Control and Water Conservation District, the predecessor to the Monterey County Water Resources Agency (MCWRA)[1], submitted an application with the SWRCB on June 13, 1949, for the year-round direct diversion of 400 cubic feet per second (cfs) from the Salinas River for municipal and irrigation purposes. On June 24, 1949, the SWRCB returned this application on the basis that (1) separate applications were needed for municipal and irrigation uses and (2) the approximate location of the proposed point of diversion must be identified. In response, MCWRA submitted two updated applications, each for the year-round direct diversion of 400 cfs from the Salinas River, which were received and accepted by the SWRCB on July 11, 1949, the date of priority for these applications, and given application numbers 13225 (municipal) and 13226 (irrigation). MCWRA was given a year to complete the applications and further define the projects pursuant to these applications; however, MCWRA filed multiple Petitions for Extension of Time.

Around the same time that Applications 13225 and 13226 were submitted, MCWRA submitted applications for storage on the Salinas River[2] and Nacimiento River. For all three of these projects, MCWRA worked closely with the U.S. Army Corps of Engineers (USACE) for planning and design. The storage project on the Nacimiento River (Nacimiento Reservoir), was the first project to be designed and constructed. MCWRA submitted multiple Petitions for Extension of Time to complete Applications 13225 and 13226 on the basis that simultaneous

[1] Throughout this document, "MCWRA" is used to refer to both Monterey County Water Resources Agency and its predecessor, Monterey County Flood Control and Water Conservation District.
[2] The proposed project for storage on the Salinas River was never built and any application pursuant to this project was cancelled or revoked.

efforts with Nacimiento Reservoir planning was not feasible and water supply studies may need to be conducted after the completion of Nacimiento Reservoir to design a project pursuant to Applications 13225 and 13226 that would be considerate of the water supply needs in the basin.

Within the amended applications received by the SWRCB on December 21, 1954, MCWRA defined a project which would divert surface water into the proposed East Side Canal for municipal and irrigation use during the irrigation season and municipal use and replenishment of the underground supply (now referred to as groundwater recharge) outside of the irrigation season. It was stated that water replenished into the groundwater basin would be extracted at a later time for municipal, irrigation, and domestic purposes[3]. The SWRCB informed MCWRA that more information would be needed in the applications if the project was partially for underground storage (groundwater recharge). Due to the complexity of including underground storage at the time, MCWRA decided to remove underground storage from the applications, which was reflected on the amended applications submitted on December 21, 1954. Since underground storage was not being pursued, domestic was not included as a purpose of use in the amended applications. Pursuant to these amended applications, Permit 11043 (A013225) and Permit 11044 (A013226) were issued on November 20, 1957.

When Permits 11043 and 11044 (A013225 and A013226, respectively) were issued, the proposed East Side Canal Project involved the construction of a sump near the Salinas River into which surface water would flow by gravity when available. From the sump, the water would be pumped into a 40 mile long high line canal with a capacity of 250 cfs and flow down the east side of the Salinas Valley for direct use for irrigation purposes on approximately 86,500 acres. The proposed project also involved the construction and operation of a well field adjacent to Salinas River to supply water to the East Side Canal when water could not be diverted from the river. It was stated in a letter from the SWRCB to MCWRA that the pumping of groundwater from the well field would not be pursuant to Permits 11043 and 11044 (A013225 and A013226, respectively) but instead the right to such pumping would be claimed as an appropriation of percolating underground water, outside of the jurisdiction of the SWRCB.

The dates of the Orders approving the Petitions for Extension of Time to complete Applications 13225 and 13226 along with the significant dates related to application amendments and permit issuance are listed below.

| Date | Action |
|---|---|
| July 22, 1949 | Order extending time to complete Application 13225 & 13226 to 7/11/1950 |
| August 30, 1950 | Order extending time to complete Application 13225 & 13226 to 7/11/1951 |
| July 12, 1951 | Order extending time to complete Application 13225 & 13226 to 1/1/1952 |
| January 16, 1952 | Order extending time to complete Application 13225 & 13226 to 1/1/1953 |
| January 21, 1953 | Order extending time to complete Application 13225 & 13226 to 1/1/1954 |
| December 30, 1953 | Order extending time to complete Application 13225 & 13226 to 1/1/1955 |
| December 21, 1954 | Amended applications received |
| July 8, 1955 | Order extending time to complete Application 13225 & 13226 to 7/1/1956 |

[3] The intent was that individuals with private groundwater wells could pump the water for domestic use on their properties.

| | |
|---|---|
| May 28, 1956 | Amended applications received |
| November 23, 1956 | Affidavit of publication received |
| November 20, 1957 | Permit 11043 and Permit 11044 issued |

## Permit Issuance to SWRCB Order 76-12 (1958-1976)

Following the issuance of Permits 11043 and 11044 (A013225 and A013226, respectively), MCWRA submitted a Petition for Change to add a point of diversion to the permits, which was approved with a SWRCB Order dated October 11, 1962. The added point of diversion, referred to as the Castroville Canal Intake, was a component of a proposed project to provide water to the Castroville area. The proposed Castroville Irrigation Project, at the time, involved the construction of a removable five-foot high weir diversion structure in the Salinas River, about four miles upstream of the town of Spreckels[4]. The design capacity of the proposed system would be 62 cfs.

While these efforts related to Applications 13225 and 13226 were ongoing, MCWRA submitted an application for storage on the San Antonio River in 1955 (San Antonio Reservoir). Within the terms of Permits 11043 and 11044 (A013225 and A013226, respectively), it was stated that MCWRA was to begin construction on or before July 1, 1960, complete construction work on or before July 1, 1962, and complete application of water on or before July 1, 1967. However, MCWRA subsequently submitted three Petitions for Extension of Time on the basis that simultaneous efforts with San Antonio Reservoir planning made the current schedule not feasible and water supply studies would need to be conducted after the completion of San Antonio Reservoir to determine the amount of previously stored water from Nacimiento Reservoir and San Antonio Reservoir that would be available for rediversion downstream pursuant to Permits 11043 and 11044 (A013225 and A013226, respectively). The SWRCB clarified that the rediversion of water stored at Nacimiento Dam or at San Antonio Dam is not covered by Permits 11043 and 11044 (A013225 and A013226, respectively) unless these waters are considered abandoned[5] in the channels below the dams. The SWRCB also stated that this rediversion is also not covered under the water rights for Nacimiento Reservoir or San Antonio Reservoir as neither of these water rights name the proposed facilities as points of rediversion. The SWRCB recommended that MCWRA submit petitions to add points of rediversion under the water rights

[4] The project design included a 2,500 foot long earth diversion channel leading into an open rectangular concrete sump and pump structure which would have a protective headwall, slide gate and trash rack at its entrance. From this main pumping station, about 16.2 miles of underground cast-in-place concrete pipeline varying in size from 30 inches to 66 inches would extend along an alignment adjacent to existing field and county roads and drainage ditches to the service area.

[5] Due to rediversion at the Salinas River Diversion Facility (SRDF) and minimum fish flow requirements pursuant to the water rights for Nacimiento Reservoir and San Antonio Reservoir, we would not anticipate any previously stored water (withdrawals) being abandoned during the typical summer withdrawal period (i.e. withdrawals would not be available for diversion under Permit 11043). However, at times, mainly outside of the typical summer withdrawal period, withdrawal only for flood control purposes can occur and this flow would be abandoned and thus available for diversion downstream, including under Permit 11043. Flood control is not a beneficial use of water pursuant to a water right. Withdrawal for flood control typically occurs when there is already a high volume of water available in the river and most likely would not provide significant additional supply benefit under Permit 11043.

for Nacimiento Reservoir or San Antonio Reservoir if it is the intent to redivert this stored water into the proposed facilities.

After three Orders to extend the time to complete construction and application of water pursuant to Permits 11043 and 11044 (A013225 and A013226, respectively), MCWRA submitted a fourth Petition for Extension of Time on January 24, 1974. A hearing took place on July 8, 1975, to decide whether the Petition for Extension of Time should be approved or if the permits should be revoked. At the time of the hearing, it was recognized that the permits authorized two points of diversion, which represented two different projects: (1) Castroville Irrigation Project through the proposed Castroville Canal Intake, and (2) East Side Canal Project. At the time of the hearing, only the Castroville Irrigation Project was being actively pursued, but MCWRA had not abandoned the East Side Canal Project and hoped to develop it in the future. In the Order subsequent to the hearing, it was recognized that MCWRA had exercised due diligence in its efforts to obtain financing for the Castroville Irrigation Project and indicated that the East Side Canal Project remained a sufficiently viable project to justify an extension of time.

However, DWR found the Castroville area of Monterey County to be a great site for wastewater reclamation and urged that MCWRA more fully examine the possibility of substituting reclaimed wastewater for the proposed water supply for the Castroville Irrigation Project. It was stated in the Order that it was in the public interest to require MCWRA to consider the use of reclaimed wastewater as a supply for the Castroville Irrigation Project.

Therefore, the SWRCB concluded in its September 16, 1976, Order 76-12 that the time to commence construction under Permits 11043 and 11044 (A013225 and A013226, respectively) was extended to December 1, 1979, but that construction would not commence until further order of the SWRCB upon a hearing. Order 76-12 also required MCWRA to adequately consider the use of all practicable alternative water supplies including the use of reclaimed wastewater and make all reasonable effort to coordinate its water supply decisions with local water pollution control agencies. It was also stated that if authorization to commence construction is given, a future SWRCB order will include appropriate standard and special permit terms including terms concerning the time allowed for completion of construction and for application of water to beneficial use.

The dates of the Orders approving the Petition for Change, Petitions for Extension of Time, and significant events related to the hearing held prior to SWRCB Order 76-12 are listed below.

| Date | Action |
|---|---|
| October 11, 1962 | Order allowing change in point of diversion (added Castroville Canal Intake) |
| October 24, 1963 | Order extending time to begin construction by 12/1/1963, complete construction by 12/1/1965, and complete application of water by 12/1/1970 |
| April 2, 1964 | Order extending time to begin construction by 12/1/1966, complete construction by 12/1/1967, and complete application of water by 12/1/1970 |
| March 22, 1968 | Order extending time to begin construction by 12/1/1970, complete construction by 12/1/1972, and complete application of water by 12/1/1973 |
| January 24, 1974 | Petition for Extension of Time Received |
| June 13, 1974 | Notice of Petition for Extension of Time |

| | |
|---|---|
| June 11, 1975 | Notice of Hearing to be held 7/8/1975 |
| July 8, 1975 | Hearing held |
| September 16, 1976 | SWRCB Order 76-12 extending time to begin construction to 12/1/1979 |

## SWRCB Order 76-12 to SWRCB Order 82-13 (1977-1983)

During the years following SWRCB Order 76-12, MCWRA worked diligently to investigate reasonable alternative supplies of water. MCWRA cooperated in the investigation of the use of reclaimed wastewater as a source of supply for the Castroville Irrigation Project through membership on a task force conducting the Monterey Wastewater Reclamation Study. MCWRA also began to consider a dam along the Arroyo Seco through a partial assignment (125,000 acre-feet [AF]) of state filed Application 25863[6]. MCWRA adopted a plan for the Arroyo Seco Dam Project which would include the Castroville Irrigation Project and East Side Canal Project as integral parts. While MCWRA made efforts towards these projects, MCWRA could not meet the schedule defined in Order 76-12 and the SWRCB issued a Notice of Proposed Revocation on July 14, 1981. In response, MCWRA submitted a fifth Petition for Extension of Time on August 17, 1981, and requested a hearing on the proposed revocation. A hearing took place on August 11, 1982, and the SWRCB issued Order 82-13 which stated that MCWRA had been diligent in pursuit of the conditions of Order WR 76-12, and it was in the public interest to grant an extension of time. After SWRCB Order 82-13, an amended permit was issued on March 8, 1983. SWRCB Order 82-13 and the subsequent amended permit stated that:

(1) MCWRA must form an assessment district by January 1, 1984, and file final P.L. 984 loan applications by June 30, 1984 (pursuant to the Arroyo Seco Dam Project).
(2) Time is extended to begin construction by January 1, 1987, complete construction by December 1, 1988, and complete application of water by December 1, 2008.
(3) A maximum amount of 168,538 AF can be diverted each year.
(4) Permit 11043 (A013225) and Permit 11044 (A013226) are to be combined by revoking Permit 11044 (A013226) and adding irrigation to Permit 11043 (A013225).
(5) MCWRA must prepare and submit a water conservation plan to the SWRCB within a year.

The requirement to form an assessment district and file loan applications was related to the proposed Arroyo Seco Dam Project, which would include the Castroville Irrigation Project and East Side Canal Project. The schedule was also based on the proposed Arroyo Seco Dam Project.

A maximum amount of 168,538 AF was established as a result of an adopted SWRCB policy which requires that all permits, as they come before the SWRCB, be amended to include a total annual diversion and use limitation. It was stated in a letter from the SWRCB to MCWRA that

[6] State Filed Applications are applications filed by a state agency for the development of water resources based on preliminary predictions of potential future project locations. A major benefit of acquiring a State Filed Application is acquiring the priority date of that filing. Parties may petition the SWRCB for assignment of all or part of a State Filed Application. To petition for assignment of an application, the proposed use of water must be consistent with the State Filed Application (rate of diversion, season of use, place of use, etc.). In addition, a proposed use under a State Filed Application must not be in conflict with a general or coordinated plan or water quality objectives established pursuant to law.

the annual limitation took into account water used for both municipal and irrigation purposes and was based on studies which indicated that the annual use for the combined permitted uses is seven times the amount of water consumed during the month of maximum use. The following equation was provided in the letter:

```
400 cfs x 1.98 af/da/cfs x 30.4 days/mo x 7 =  168,538 afa

where:
cfs = cubic feet per second
af/da/cfs = acre-feet per day per cubic feet per second
afa = acre-feet per annum
```

Permit 11043 (A013225) and Permit 11044 (A013226) were to be combined by revoking Permit 11044 (A013226) and adding irrigation to Permit 11043 (A013225). This was due to a change in SWRCB policy, which now allows for one water right to include both municipal and irrigation uses.

Shortly after the hearing and prior to the issuance of Order 82-13, MCWRA submitted a Petition for Change on October 5, 1982, to update the locations of the points of diversion authorized pursuant to Permits 11043 and 11044 (A013225 and A013226, respectively) to the locations identified below. It was requested that the East Side Canal Intake move to the location between Spreckels and Spence (where at the time, the Castroville Canal Intake was authorized) and it was requested that the Castroville Canal Intake move to a location further downstream near Blanco Road. This request was based on the proposed Arroyo Seco Dam project.

| **October 5, 1982, Petition for Change – Point of Diversion (POD) Changes Requested** | | |
|---|---|---|
| **Point of Diversion** | **Authorized Location** | **Requested Location** |
| Eastside Canal Intake | NW1/4 of SW1/4 of Projected S36, Tl7S, R6E, MDBM | NE1/4 of SE1/4 of Projected S24, Tl5S, R3E, MDBM |
| Castroville Canal Intake | NW1/4 of NE1/4 of Projected Section 23, T15S, R3E | NE1/4 of NE1/4 of Projected S33, Tl4S, R2E, MDBM |

The dates of the significant events related to SWRCB Order 82-13 and the Petition for Change are listed below.

| **Date** | **Action** |
|---|---|
| July 14, 1981 | Notice of Proposed Revocation |
| July 21, 1981 | Letter from MCWRA requesting hearing |
| August 17, 1981 | Petition for Extension of Time Received |
| April 7, 1982 | Notice of Hearing to be held May 12, 1982 |
| April 29, 1982 | Notice of Postponed Hearing |
| August 11, 1982 | Hearing Held |
| September 27, 1982 | SWRCB Staff Recommendation |
| October 5, 1982 | Petition for Change to update locations of listed points of diversion based on Arroyo Seco Dam Project received (no action) |
| November 18, 1982 | SWRCB Order 82-13 |

| | |
|---|---|
| | (1) Stating that MCWRA must form assessment district by January 1, 1984 and file final P.L. 984 loan applications by June 30, 1984<br>(2) extending time to begin construction by 1/1/1987, complete construction by 12/1/1988, and complete application of water by 12/1/2008<br>(3) Setting maximum amount of 168,538 AF to be diverted in a given year<br>(4) Combining Permit 11043 (A013225) and Permit 11044 (A013226) by revoking Permit 11044 (A013226) and adding irrigation to Permit 11043 (A013225)<br>(5) Stating that MCWRA must prepare and submit a water conservation plan to the SWRCB within a year |
| March 8, 1983 | Amended Permit Issued |

## SWRCB Order 82-13 to Petitions for Change and Extension of Time (1984-1988)

Following Order 82-13, MCWRA worked diligently with the Monterey Peninsula Water Management District to prepare the Water Conservation Plan required in Permit 11043 (A013225), as amended by Order 82-13. However, the required schedule for preparing the Water Conservation Plan was not feasible and more time was requested and approved for completion of the plan. The final conservation plan was approved on July 8, 1988.

After the issuance of Order 82-13, it became apparent that there was significant local opposition to the Arroyo Seco Dam Project. Therefore, the Petition for Change to update locations of the points of diversion was no longer being pursued and there was no further action on the petition. Without the Arroyo Seco Dam Project, matters were complicated relative to the schedule and requirements defined in Permit 11043 (A013225), as amended by Order 82-13.

The assessment district was going to be formed to finance the Arroyo Seco Dam Project. However, due to the opposition, the formation was put on hold. Instead, an Ad Hoc Committee was formed to evaluate other alternatives to prevent further seawater intrusion. Around the same time, MCWRA entered into a contract with the SWRCB for a grant through the EPA Section 205(j) Water Quality Management Planning Program to conduct a study evaluating alternatives to prevent further seawater intrusion and adopt an action plan. Since MCWRA was no longer in a position to move forward with the Arroyo Seco Dam Project, MCWRA sent a letter requesting the deletion of the term in Permit 11043 (A013225) requiring the formation of an assessment district and the filing of loan applications. In the same letter, MCWRA requested an extension of time pursuant to the term if it could not be deleted. A Notice for Petition of Extension of Time was issued in July of 1984 pursuant to this permit term, but there was no subsequent SWRCB Order on the matter.

The Ad Hoc Committee studied solutions to the seawater intrusion problem and attained agreement among the 11 members for the conceptual design of a project called the “Salinas Valley Seawater Intrusion Project”, eventually shortened to the “Seawater Intrusion Project”. This proposed project would involve a scaled-down surface water irrigation project for the Castroville area and a water supply for Fort Ord and Marina from a proposed dispersed well system to be located in the Salinas Valley.

While MCWRA was in the process of preparing and submitting the Water Conservation Plan, MCWRA filed a Petition for Extension of Time pursuant to the Permit 11043 (A013225) development schedule on December 31, 1986. Within this Petition for Extension of Time, MCWRA petitioned to begin construction work by January 1, 1989.

On December 22, 1988, MCWRA submitted an amendment to the Petition for Extension of Time relative to the development schedule for the Permit. MCWRA amended the Petition to request the following development schedule:

| Action | Date to Which an Extension is Sought |
|---|---|
| Commencement of Construction | December 31, 1994 |
| Completion of Construction | December 31, 1997 |
| Complete Application of Water to Authorized Use | December 31, 2017 |

On December 22, 1988, MCWRA also submitted a Petition for Change to delete two permit terms and change the location of the Castroville Canal Intake Point of Diversion, as shown below. The terms requested to be deleted were 1) the term requiring the formation of an assessment district and the filing of loan applications and 2) the term stating that the permit will stand revoked and of no further effect if MCWRA failed to meet any of the dates specified (unless MCWRA submitted a Petition for Extension of Time and the SWRCB finds good cause for the extension). The removal or extension of the term requiring the formation of an assessment district and the filing of loan applications had been previously requested but there was no subsequent SWRCB Order on the matter. Similarly, no action was ever taken on these new petitions. Therefore, the terms were never removed and are still in Permit 11043 (A013225).

| December 22, 1988, Petition for Change – Point of Diversion (POD) Changes Requested | | |
|---|---|---|
| **Point of Diversion** | **Authorized Location** | **Requested Location** |
| Eastside Canal Intake | NW1/4 of SW1/4 of Projected S36, Tl7S, R6E, MDBM | No Change Requested |
| Castroville Canal Intake | NW1/4 of NE1/4 of Projected Section 23, T15S, R3E | NE1/4 of NE1/4 of Projected S21, Tl4S, R2E, MDBM |

The dates of the significant events related to this time period are listed below.

| Date | Action |
|---|---|
| November 8, 1983 | Letter from MCWRA requesting an extension of time to complete the Water Conservation Plan |
| December 2, 1983 | Letter from MCWRA requesting deletion of the permit term requiring the formation of an assessment district and the filing of loan applications. In the same letter, MCWRA requested an extension of time pursuant to the term if it could not be deleted |
| December 22, 1983 | Letter from SWRCB stating that extensions of time for both the Water Conservation Plan and the permit term requiring the formation of an assessment district and the filing of loan applications would be approved once fees were received |
| May 18, 1984 | Six-month extension granted for the Water Conservation Plan |

| | |
|---|---|
| June 20, 1984 | Letter from MCWRA asking why an extension of time was not granted for the permit term requiring the formation of an assessment district and the filing of loan applications |
| July, 1984 | Issuance of Notice of Petition of Extension of Time for the permit term requiring the formation of an assessment district and the filing of loan applications |
| September 25, 1984 | 18-month extension granted for the Water Conservation Plan |
| April 15, 1985 | Approval of extension of time to January 31, 1986, for the Water Conservation Plan |
| January 27, 1986 | MCWRA submits Water Conservation Plan |
| May 12, 1986 | Office of Water Conservation (OWC), DWR states that the final Water Conservation Plan meets all requirements |
| October 10, 1986 | Comments regarding Water Conservation Plan received from SWRCB |
| December 31, 1986 | Petition for Extension of Time submitted pursuant to the development schedule defined in the permit |
| May 15, 1987 | Letter from SWRCB reminding MCWRA that the Water Conservation Plan was never approved |
| July 20, 1987 | MCWRA submits amended Water Conservation Plan |
| July 8, 1988 | SWRCB approves Water Conservation Plan |
| December 22, 1988 | Amendment to Petition for Extension of Time submitted on December 31, 1986; Petition for Deletion of Permit Terms and Change in Point of Diversion |

## Petitions for Change and Extension of Time to Settlement Agreement (1989-2013)

MCWRA began developing the environmental documentation for the Seawater Intrusion Project, including an Environmental Impact Statement/ Environmental Impact Report (EIS/EIR). Many comments and protests were received on the EIS/EIR, particularly with respect to the proposed Salinas Valley dispersed well system to supply water to Fort Ord and Marina. Many protestants felt that the transfer of water from the valley to coastal urban areas would harm groundwater quality in the valley. Due to ongoing conversations about the best alternative for preventing further seawater intrusion, no action was taken on the Petitions submitted on December 22, 1988. On March 31, 1997, the SWRCB requested that MCWRA submit updated Petitions to reflect the current status of efforts. In response, MCWRA stated that it was completing a computer modeling program for assessing both surface and groundwater supplies and would need to wait to see the results. On September 5, 2000, the SWRCB sent a letter to MCWRA stating that it was no longer a requirement to include a date in the Permit stating when construction will be completed, just a date when construction will commence.

Once again on November 10, 2004, the SWRCB requested that MCWRA submit updated petitions to reflect the current status of efforts within 30 days. In this letter it was also requested that MCWRA conduct CEQA analyses and submit an analysis that demonstrates that the change requested will comply with requirements of the Fish and Game Code and the Federal Endangered Species Act (Water Code section 1701.3) within 60 days. On December 8, 2004, MCWRA requested an additional 90 days to complete the requests. Around the time when the 90 days extension was ending, the SWRCB sent a letter on April 8, 2005, granting an additional 30 days to complete the requests.

On May 10, 2005, MCWRA submitted a new and updated Petition for Extension of Time and Petition for Change to delete permit terms, change the point of diversion, change the point of rediversion, and change the place of use. At this time, MCWRA was developing its Salinas River Diversion Facility (SRDF) for rediversion of stored water in Nacimiento Reservoir and San Antonio Reservoir and wanted to also have the ability to divert water pursuant to Permit 11043 at this facility. Therefore, the goal was to file the updated Petition for Change consistent with the plans for the SRDF, including a change in point of diversion to add the SRDF, as shown below. However, the Petition for Change filed by MCWRA was unclear and caused confusion with the SWRCB. The SWRCB wrote a letter to MCWRA on June 7, 2005, stating that the Petitions were received but corrections and clarifications were needed for consistency with the nature of Permit 11043. The SWRCB felt that the updated Petition for Change was seeking to change a direct diversion water right to allow storage in Nacimiento Reservoir. Moreover, the SWRCB felt that the updated Petition for Change was trying to use Permit 11043 to meet instream flow requirements for the Salinas Valley Water Project (fish and wildlife enhancement is not an authorized purpose of use for Permit 11043). It is unclear whether MCWRA was trying to do either of these things or if the SWRCB was making incorrect assumptions because the Petition for Change was unclear.

| **May 10, 2005, Petition for Change – Point of Diversion (POD) Changes Requested** | | |
|---|---|---|
| **Point of Diversion** | **Authorized Location** | **Requested Location** |
| Eastside Canal Intake | NW1/4 of SW1/4 of Projected S36, Tl7S, R6E, MDBM | No Change Requested |
| Castroville Canal Intake | NW1/4 of NE1/4 of Projected Section 23, T15S, R3E | No Change Requested |
| Salinas River Diversion Facility (SRDF) | Not authorized at the time | SE1/4 of Projected S16, Tl4S, R2E, MDBM |

On July 18, 2008, MCWRA sent the SWRCB a letter with the purpose of withdrawing the Petition for Extension of Time and Petition for Change submitted on May 10, 2005. In this letter, MCWRA stated that it planned to submit new petitions which would include more recent and project-specific plans.

On December 5, 2008, MCWRA submitted a new and updated Petition for Extension of Time. On December 16, 2008, the SWRCB wrote a letter to MCWRA stating that the Petition was received but not complete. In response, on February 27, 2009, MCWRA sent a letter to the SWRCB stating that it was redrafting the Petition. However, a completed Petition was never submitted and the SWRCB issued a Notice of Proposed Revocation on January 6, 2010. In response, MCWRA sent a letter requesting a hearing. On November 20, 2012, the SWRCB issued a Notice of Public Hearing tentatively scheduling a hearing for January 28-30, 2013. The Notice of Public Hearing described two key issues that would be discussed in the hearing, listed below.

1) Should Permit 11043 be revoked in accordance with Water Code section 1410?
2) Did MCWRA prosecute with due diligence and complete construction of the project and apply the water to beneficial use as contemplated by the permit and in accordance with the Water Code and the rules and regulations of the SWRCB?

In response to the Notice of Public Hearing, MCWRA requested an additional six months to prepare for the hearing. MCWRA stated that its efforts had been focused on identifying and securing an alternative water supply to replace California-American Water Company's (Cal-Am) diversions from the Carmel River that were the subject of a SWRCB 2009 Cease and Desist Order. MCWRA and Cal-Am executed a settlement agreement and mutual release on December 4, 2012. December 7, 2012, the same day that MCWRA requested an additional six months to prepare for the hearing, the SWRCB responded and said that they would consider the request but they recommended that MCWRA submit a Notice of Intent to Appear in case the request was denied. In response, MCWRA submitted its Notice of Intent to Appear on December 12, 2012. On January 15, 2013, the SWRCB issued a Notice of Postponement of Public Hearing and on May 6, 2013, the SWRCB issued a Notice of Rescheduling of Public Hearing to August 13-15, 2013. In the Notice of Rescheduling of Public Hearing, the SWRCB added a new key issue ("Key Issue 3") to the two key issues listed in the previous Notice of Public Hearing. Key Issue 3 was described as follows:

3) Did MCWRA meet all of the dates set forth in Paragraph 3[7] of Board Order WR 82-13? If MCWRA did not meet the dates specified in Paragraph 3 of Board Order WR 82-13, did MCWRA petition the Board for an extension of time prior to the date in question, and did the Board find good cause for a time extension?

MCWRA sent a letter on May 23, 2013, stating its objection to the addition of Key Issue 3 for the reason that it was not consistent with the water code. On June 13, 2013, the SWRCB ruled that Key Issue 3 was appropriate and was rightfully included.

On July 1, 2013, MCWRA and the SWRCB entered into a Settlement Agreement, which is further described in the next section. All dates relative to actions and efforts between the Petitions for Change and Extension of Time and the Settlement Agreement are listed below.

| **Date** | **Action** |
|---|---|
| March 31, 1997 | SWRCB letter requesting that MCWRA submit updated Petitions to reflect the current status of efforts |
| September 5, 2000 | SWRCB letter stating that it is no longer a requirement to include a date that construction will be completed, just started |
| November 10, 2004 | SWRCB letter requesting that MCWRA submit updated Petitions to reflect the current status of efforts. This letter also requested that MCWRA conduct CEQA and submit an analysis that demonstrates that the change requested will comply with requirements of the Fish and Game Code and the Federal Endangered Species Act (Water Code section 1701.3) |

[7] Paragraph 3 of Board Order WR 82-13 defined the requirement for the formation of an assessment district and the filing of loan applications pursuant to the Arroyo Seco Dam Project.

| | |
|---|---|
| December 8, 2004 | MCWRA requests additional 90 days to complete requests in SWRCB letter dated November 10, 2004 |
| April 8, 2005 | SWRCB letter granting an additional 30 days to complete requests in SWRCB letter dated November 10, 2004 |
| May 10, 2005 | New and updated Petition for Extension of Time and Petition for Change |
| June 7, 2005 | SWRCB letter stating that correction and clarification of Petitions was needed |
| July 18, 2008 | Withdrawal of May 10, 2005 Petition for Extension of Time and Petition for Change |
| December 5, 2008 | New and updated Petition for Extension of Time |
| December 16, 2008 | SWRCB letter stating that Petition was not complete and more was needed |
| February 27, 2009 | MCWRA letter stating that the Petition is being re-drafted |
| January 6, 2010 | Notice of Proposed Revocation |
| January 15, 2010 | MCWRA requests a hearing |
| November 20, 2012 | SWRCB tentatively schedules hearing for January 28-30, 2013 |
| December 4, 2012 | Settlement Agreement between MCWRA and Cal-Am |
| December 7, 2012 | MCWRA requests an additional 6 months to prepare for hearing |
| December 12, 2012 | MCWRA submits Notice of Intent to Appear |
| January 15, 2013 | SWRCB issues Notice of Postponement of Public Hearing |
| May 6, 2013 | SWRCB issues Notice of Rescheduling of Public Hearing to August 13-15, 2013 |
| May 23, 2013 | MCWRA letter objecting to Key Issue 3 included in Notice of Rescheduling of Public Hearing |
| June 13, 2013 | SWRCB letter ruling that Key Issue 3 is appropriate |
| July 1, 2013 | Settlement Agreement between MCWRA and the SWRCB |

## Settlement Agreement to Current (2013-2025)

In the Settlement Agreement entered into on July 1, 2013, between MCWRA and the SWRCB, it was agreed that the Notice of Proposed Revocation would be withdrawn but that modifications would be made to Permit 11043 (A013225) and milestones would be set for completing Phase II of the Salinas Valley Water Project[8]. The modifications and milestones defined in the Settlement Agreement are as follows:

1. *Amendments to Permit 11043*
    a. *Face Value Amount: The maximum amount of water diverted under Permit 11043 shall be reduced to a quantity not to exceed 135,000 acre feet per year.*
    b. *Bypass Flows: The Agency will refrain from diverting under Permit 11043 unless the natural flow of the Salinas River at the East Side Canal Intake Point of Diversion under Permit 11043, which shall be calculated by subtracting releases by MCWRA from Nacimiento and San Antonio Reservoirs from total flows at the Soledad gauging station on a three day running average, is greater than the following amounts:*

[8] Phase I of the Salinas Valley Water Project included the Nacimiento Reservoir Spillway Modification (completed in 2009) and construction of the SRDF (completed in 2010). Phase II of the Salinas Valley Water Project refers to the development of a project that would utilize Permit 11043.

| ***Month*** | ***Amount (cfs)*** |
|---|---|
| *January* | *3.30* |
| *February* | *6.20* |
| *March* | *6.41* |
| *April* | *16.43* |
| *May* | *17.21* |
| *June* | *20.62* |
| *July* | *24.02* |
| *August* | *18.89* |
| *September* | *20.97* |
| *October* | *10.51* |
| *November* | *4.56* |
| *December* | *2.64* |

*These amounts are to be bypassed before any water is diverted pursuant to Permit 11043. These amounts are based on the best available information of recent diversions from the Salinas River downstream of the East Side Canal Intake Point of Diversion under Permit 11043 as reported to the SWRCB.*

c. *Other terms: All other terms of Permit 11043 will remain unchanged. In particular, the purpose of use of the water appropriated under Permit 11043 will continue to be for municipal and industrial and agricultural purposes and the points of diversion and places of use identified in Permit 11043 will remain unchanged.*

2. *Milestones*
*MCWRA shall make progress towards implementation of Phase II of the Salinas Valley Water Project ("Project") by:*

a. *Submitting a Petition for Extension of Time to the SWRCB within 60 days of the effective date of this Agreement.*
b. *Issuing a Notice of Preparation for the Project by July 1, 2014.*
c. *Releasing a Draft Environmental Impact Report for the Project by July 1, 2015.*
d. *Issuing a draft financing plan for construction and operation of the Project by July 1, 2016.*
e. *Certifying a Final Environmental Impact Report for the Project by July 1, 2017.*
f. *Submitting necessary permit applications for regulatory agency approvals for the Project by July 1, 2018.*
g. *Approving a financing plan for construction and operation of the Project by July 1, 2019.*
h. *Finalizing Project construction drawings by July 1, 2020.*
i. *Submitting a financing plan for construction and operation of the Project for public approval by July 1, 2021.*
j. *Obtaining final permits and other agency approvals for the Project by July 1, 2023.*
k. *Issue notice to proceed with construction of the Project by July 1, 2024.*
l. *Complete construction of the Project and make initial diversion of water under Permit 11043 by July 1, 2026.*

*As required by California Code of Regulations title 23 section 847, MCWRA will file progress reports annually not later than each September 1 with the SWRCB to document progress and completion of each milestone.*

On August 7, 2013, The SWRCB issued Order 2013-0030-EXEC approving the Settlement Agreement and partial revocation of Permit 11043 (from 168,538 AF to 135,000 AF). The approval of the Settlement Agreement decreased the face value of the permit, added bypass flow requirements, and added milestones related to the Salinas Valley Water Project Phase II. All other terms of Permit 11043 remained unchanged, including the development schedule. On September 18, 2013, the SWRCB transmitted Permit 11043 (A013225), as amended by Order 2013-0030-EXEC. This is the current version of Permit 11043 (A013225) as there has been no additional Order or amended permit since.

The development schedule is a standard term defined in all water rights while the milestones added to the permit with the Settlement Agreement and Order 2013-0030-EXEC are part of an additional term for Permit 11043 that is not standard amongst all water rights. From the time that Permit 11043 was issued, there has been a defined development schedule which sets dates for the commencement of construction, completion of construction, and date to complete beneficial use of water. As of the date of this report, the standard permit term pursuant to development schedules has been changed by the SWRCB and now only lists a date to complete beneficial use of water. It is our understanding that the dates for commencing and completing construction defined in the development schedule would be removed in any amended permit issued pursuant to the petitions, but we recommend discussing with legal counsel and the SWRCB.

The first milestone defined in the amended permit was to submit a Petition for Extension of Time to the SWRCB by October 8, 2013. MCWRA met this milestone on October 2, 2013, when it filed an 18-year Petition for Extension of Time pursuant to the development schedule ("2013 Petition"). If approved, the 18-year extension requested in the 2013 Petition would change the date to complete application of water to beneficial use from December 1, 2008, to December 1, 2026. SWRCB policy no longer requires the development schedule to include the date that construction will be initiated or completed, just the date to complete application of water to beneficial use.

On June 25, 2014, MCWRA submitted a Notice of Preparation for the Salinas Valley Water Project Phase II. One day later, June 26, 2014, MCWRA, National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW) hosted an informational meeting regarding the Salinas Valley Water Project Phase II. The presentation at the informational meeting shared information about the Regional Advisory Committee (RAC), which the presentation referred to as a balanced group of Salinas Valley stakeholders assembled in 2013 to evaluate the Salinas Valley Water Project Phase II as proposed and identify and recommend alternative projects to prevent further seawater intrusion. At the time of the presentation, both the Eastside Canal and the Castroville Canal points of diversion were being considered. The addition of storage to Permit 11043 was also being considered.

In 2014, the California Legislature adopted the Sustainable Groundwater Management Act (SGMA) which fundamentally transformed the management of groundwater resources in California. A group of regional stakeholders including Salinas Valley cities, the County of Monterey and other public agencies, and Monterey County agricultural interests (collectively "Consortium") released a Request for Statements of Qualifications (RFQ) on April 20, 2015, for the purpose of developing the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA).

The evaluation of the Salinas Valley Water Project Phase II by the RAC and the passage of SGMA shifted efforts pursuant to Permit 11043 (A013225) due to improved cooperation and coordination of key stakeholders. Based on the projects being discussed at the time, MCWRA prepared a proposed implementation schedule, which was developed into a flow chart. The result of the proposed implementation schedule is that water from Permit 11043 would be put to use four years later than the milestone set in a Permit 11043 (A013225) term, as amended by Order 2013-0030-EXEC. Therefore, MCWRA submitted a four-year Petition for Extension of Time ("2015 Petition") on May 18, 2015, pursuant to the milestones[9] defined in Permit 11043 (A013225). If approved, the four-year extension requested in the 2015 Petition would change the milestone date to complete construction from July 1, 2026, to July 1, 2030. MCWRA attended a meeting with the SWRCB on June 24, 2015, to discuss the two outstanding Petitions for Extension of Time: 1) the 2013 Petition for Extension of Time to extend the development schedule by 18 years and 2) the 2015 Petition for Extension of Time to extend the milestones defined in one of the permit terms by four years. At this time, neither petition had been noticed. On October 21, 2015, the SWRCB sent MCWRA a letter summarizing this discussion. According to the letter, during the discussion, the SWRCB stated that in order to change the milestones permit term, a Petition for Change would be needed, not a Petition for Extension of Time. This is because a Petition for Extension of Time can only extend the time of the standard development schedule defined in all water rights while a Petition for Change is needed to make changes to any permit terms other than the development schedule. MCWRA stated that it would file the Petition for Change and withdraw the 2015 Petition for Extension of Time. The SWRCB also recommended that MCWRA amend the 2013 Petition for Extension of Time pursuant to the development schedule to give itself more time to complete beneficial use of water. Lastly the milestones permit term was discussed in respect to the sentence that states:

> *In the event that right holder fails to timely complete a milestone, right holder shall also file a letter by September 1 of the year noted in the milestone, advising the Division of such failure, providing the basis for failing to meet the milestone and identifying when the milestone will be met.*

The SWRCB requested that MCWRA send a letter to the SWRCB in respect to this permit term. On December 23, 2015, MCWRA complied with this request and sent a letter to the SWRCB stating that it was not able to meet a milestone due to the plethora of studies, projects, and uncertainties at the time; including but not limited to the Basin Investigation (modeling), waterSMART Grant work, SGMA, Pure Water Monterey Project, expansion of MCWRA's

[9] The dates defined in the milestones are not consistent with the dates defined in the development schedule.

recycled water facilities, Salinas River Stream Maintenace Program (SRSMP), and the Interlake Tunnel and San Antonio Spillway Modification Project.

On March 31, 2016, MCWRA filed a Petition for Change to extend the dates defined in the milestones permit term by four years, as recommended by the SWRCB. If approved, the milestone date to complete construction would be extended from July 1, 2026, to July 1, 2030. MCWRA also submitted a letter on March 31, 2016, stating that it would like to extend the date to complete application of water to beneficial use to December 31, 2040. While it doesn't explicitly say that this request was being made as an amendment to the 2013 Petition for Extension of Time, it can be reasonably inferred. Therefore, this would change the 2013 Petition for Extension of Time from an 18-year extension request to a 32-year (and 30-day) extension request. If approved, the now 32-year Petition for Extension of Time would change the date to complete application of water to beneficial use from December 1, 2008, to December 31, 2040. Since the 2016 filing and amendment, there has been no action on these petitions by the SWRCB. Files documenting recent communication between Division staff indicate that the SWRCB may be interested in taking action relative to these petitions. However, it appears that Division staff are not familiar with the petitions or the conversations with MCWRA that occurred in 2015.

All dates relative to actions and efforts from the time of the Settlement Agreement to present are summarized below.

| Date | Action |
|---|---|
| July 1, 2013 | Settlement Agreement between MCWRA and the SWRCB |
| August 7, 2013 | Order 2013-0030-EXEC issued by the SWRCB approving Settlement Agreement |
| September 18, 2013 | Amended Permit 11043 issued by the SWRCB pursuant to Settlement Agreement and Order 2013-0030-EXEC |
| October 2, 2013 | Petition for Extension of Time – 18 years (development schedule) |
| June 25, 2014 | Notice of Preparation for Phase II of Salinas Valley Water Project |
| June 26, 2014 | Informational Meeting with MCWRA, NMFS, and CDFW |
| April 20, 2015 | Release of Request for Statements of Qualifications (RFQ) for developing the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) |
| May 18, 2015 | Petition for Extension of Time – 4 years (milestones) (withdrawn) |
| June 24, 2015 | SWRCB and MCWRA meeting to discuss the permit and the Petitions for Extension of Time |
| October 21, 2015 | Letter from the SWRCB summarizing June 24, 2015, meeting and SWRCB recommendations |
| December 23, 2015 | Letter from MCWRA regarding milestones permit term |
| March 31, 2016 | Petition for Change (milestones) and letter amending 2013 Petition for Extension of Time |

## Current Permit 11043 (A013225)

**Priority Date**: July 11, 1949
**Permit Issuance Date**: November 20, 1957
**Source**: Salinas River
**Water Right Type**: Direct Diversion
**Rate**: 400 cfs
**Quantity**: 135,000 AF
**Purpose of Use**: Irrigation, Municipal
**Point of Diversion**:

Eastside Canal Intake - NW1/4 of SW1/4 of Projected S36, T17S, R6E, MDBM
Castroville Canal Intake - NW1/4 of NE1/4 of Projected Section 23, T15S, R3E

**Places of Use**:

Irrigation - 86,500 net acres within a gross of 107,000 acres within portions of Zone 2 of the Monterey County Water Resources Agency
Municipal - Within portions of Zone 2 of the Monterey County Water Resources Agency

**Significant Permit Terms**

Development Schedule –

- Construction of both the Castroville and Eastside Canal projects shall commence by January 1, 1987.
- Construction work on Castroville and Eastside projects shall be completed by December 1, 1988.
- Complete application of the water to the authorized use shall be made by December 1, 2008.

Assessment District and Loan Applications:

- Form assessment district by January 1, 1984
- File final P.L. 984 loan applications by June 30, 1984

Failure to Meet Dates

- This permit shall stand revoked and of no further effect if right holder fails to meet any of the dates specified unless:
    - Right holder petitions the Board for an extension of time prior to the date in question, and
    - The Board finds good cause for a time extension.

Bypass Flows

- Right holder shall not divert water unless the natural flow of the Salinas River at Eastside Canal Intake is greater than the amounts listed in the table below. The natural flow shall be calculated by subtracting reservoir releases from Nacimiento and San Antonio Reservoirs from total flows at the Soledad gaging station on a three-day running average.

| ***Month*** | ***Amount (cfs)*** |
|---|---|
| *January* | *3.30* |
| *February* | *6.20* |
| *March* | *6.41* |
| *April* | *16.43* |
| *May* | *17.21* |

| | |
|---|---|
| *June* | *20.62* |
| *July* | *24.02* |
| *August* | *18.89* |
| *September* | *20.97* |
| *October* | *10.51* |
| *November* | *4.56* |
| *December* | *2.64* |

Milestones

This permit is subject to timely completion of the following actions towards implementation of Phase II of the Salinas Valley Water Project (Project):

- Submitting a petition for extension of time by October 8, 2013.
- Issuing a Notice of Preparation for the Project by July 1, 2014.
- Releasing a Draft Environmental Impact Report for the Project by July 1, 2015.
- Issuing a draft financing plan for construction and operation of the Project by July 1, 2016.
- Certifying a Final Environmental Impact Report for the Project by July 1, 2017.
- Submitting necessary permit applications for regulatory agency approvals for the Project by July 1, 2018.
- Approving a financing plan for construction and operation of the Project by July 1, 2019.
- Finalizing Project construction drawings by July 1, 2020.
- Submitting a financing plan for construction and operation of the Project for public approval by July 1, 2021.
- Obtaining final permits and other agency approvals for the Project by July 1, 2023.
- Issue notice to proceed with construction of the Project by July 1, 2024.
- Complete construction of the Project and make initial diversion of water under the permit by July 1, 2026.

Right holder shall file documentation of its progress and completion of each milestone with the annual electronic report of water diversion and use. In the event that right holder fails to timely complete a milestone, right holder shall also file a letter by September 1 of the year noted in the milestone, advising the Division of such failure, providing the basis for failing to meet the milestone and identifying when the milestone will be met.

**Outstanding Petitions**

2013 Petition for Extension of Time – Pursuant to Development Schedule

- Requests to extend time to complete beneficial use of water to 2040.

2016 Petition for Change – Pursuant to Milestones

- Requests to extend the dates defined in the milestones permit term by four years. Currently the milestones state that construction will be completed and diversion will commence by July 1, 2026. The Petition for Change, if approved, would extend this date to July 1, 2030.

## A032263

MCWRA submitted an application with the SWRCB on May 19, 2014, for the year-round direct diversion of 300 cubic feet per second (cfs) from the Blanco Drain, Reclamation Ditch and Tembladero Slough for irrigation, domestic and municipal purposes, for a total of 25,000 acre-feet per year. On November 10, 2014, the SWRCB identified deficiencies in the application and requested additional information within 60 days to address (1) the nature and amount of proposed use (2) potential effect on fish and wildlife (3) unappropriated water availability and (4) proper maps. On December 18, 2014, MCWRA requested a meeting with SWRCB staff to discuss the application deficiencies and for a time extension to provide responses. A meeting was held on January 8, 2015, and the SWRCB approved an extension until March 10, 2015. In response, MCWRA submitted additional information to address the deficiencies on March 9, 2015. The projects were further defined with the goal of continuing to address both Bulletin 52 recommendations and complimenting other regional water projects, in a phased approach. Additionally, MCWRA furthered their partnership with the regional wastewater treatment provider, now known as Monterey One Water[10] and the Monterey Peninsula Water Management District and included the Pure Water Monterey Project, which was designed to address both the over pumping of the Carmel River and the need for additional source water in the Castroville Seawater Intrusion Project. In order to address the proposed phased approach to project development, MCWRA requested that the application be split into 5 separate applications, with the same priority date.

On March 25, 2015, the SWRCB accepted the revised application and requested additional detail regarding the split applications and the status of the necessary environmental review. That information was provided to the SWRCB on July 29, 2015, and in November of 2015, Application 32263 was split into five individual applications. A032263A (Blanco Drain) and A032263B (Reclamation Ditch) were proposed for the Pure Water Monterey Project and were permitted on March 17, 2017, as Permits 21376 and 21377, respectively. The project has been operating since 2019 per an agreement between Monterey One Water and MCWRA. The outstanding applications (A032263C, A032263D, and A032263E) have not yet been permitted and are described below.

### A032263C

Application 32263C was also associated with Pure Water Monterey and proposed to divert surface flow in Tembladero Slough at Castroville to the Monterey One Water Regional Treatment Plant (RTP) for two purposes: 1) to create purified recycled water for injection into the Seaside Groundwater Basin and extraction through the Cal-Am Monterey distribution system; and 2) to provide additional recycled water for agricultural use in the Castroville Seawater Intrusion Project Area. The application states that detailed information is contained in the Draft Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, circulated April 22, 2015. Notice of public hearing to certify the final

[10] Previously known as the Monterey Regional Water Pollution Control Agency (MRWPCA)

EIR was provided in September 2015. The application was put on hold in 2015 at MCWRA's request.

Application 32263C proposes to directly divert up to 3 cfs of water and collect to underground storage up to 1,500 AF, not to exceed 1,500 AF per year combined by direct diversion and collection to storage. The source of water is Tembladero Slough for year-round diversion, and water would be treated and then put underground via injection wells in the Seaside Groundwater Basin. The application, a November 5, 2015, memorandum, and a February 3, 2016, memorandum provided analyses of water availability, but the files do not include documentation of review or acceptance of the analysis by SWRCB staff. The purposes of use are irrigation, in the Castroville area, and municipal, associated with the Seaside Groundwater Basin. The places of use are within the Castroville Seawater Intrusion Project Service Area, a gross 12,043 acres of Zone 2B of MCWRA for irrigation, and within a gross 33,703 acres of the of the California American Water Company for municipal. Application 32263C was determined "complete" and publicly noticed on December 18, 2015.

In January 2016, a draft Biological Assessment was submitted to the Division and a site visit was conducted with USFWS and CDFW staff. On February 16, 2016, protests were received on Application 32263C. CDFW filed a protest based on concern of impacts to the wetland functions of Tembladero Slough for the Elkhorn Slough estuary. NMFS filed a protest based on concern of impacts to steelhead and their habitat from surface flow reductions in Tembladero Slough and downstream waterways. MCWRA responded to the protests on March 18, 2016. Numerous meetings and correspondence occurred between MCWRA, CDFW, NMFS, and Division staff during the spring of 2016. In June 2016, per protest dismissal terms pursuant to Applications 32263A and 32263B, MCWRA committed to cease efforts to pursue A032263C for the Pure Water Monterey Project and requested that processing of Application 32263C be suspended.

MCWRA reserves the right to pursue Application 32263C, independently, only if all of the following circumstances occur: (1) a future, new project (i.e., not the Pure Water Monterey Project) is proposed by MCWRA that would divert and use the diversion, (2) the new project or projects are subject to a new CEQA process, and (3) the water right application is amended, for example through filing a petition to change the water right application, to be consistent with that future proposed project. Application 32263C will remain active with the SWRCB and the NMFS protest of the application would also remain active and be addressed when and if MCWRA proceeds with a new project. A settlement agreement was executed in October 2016 with CDFW. On September 20, 2019, MCWRA requested to keep Application 32263C on hold.

In 2024, the Division requested supplemental information related to Application 32263C and MCWRA's intent. MCWRA met with the Division in December of 2024. In early May of 2025, Division staff identified that this application should no longer be kept on hold and needs to make forward progress, or it may risk cancellation. MCWRA met with Division staff in late May 2025 and identified concern with CDFW conditions involving the application. Division staff agreed to review its records and to meet again in August 2025. Water can't be diverted under this water right until a permit is issued.

## A032263D

Application 32263D was proposed to support the Coastal Sustainability Agricultural Project, to support the goal of combating seawater intrusion. As proposed, it would add water sources to allow for the expansion of the existing Castroville Seawater Intrusion Project to serve additional areas and reduce dependance on groundwater wells. The application states that MCWRA would conduct a feasibility study to inform the final design of the project and prepare a CEQA document. The application was put on hold in 2015 at MCWRA's request.

Application 32263D proposes to directly divert up to 30 cfs of water and collect to storage up to 9,800 AF, not to exceed 9,800 AF per year combined by direct diversion and collection to storage. The sources of water are Blanco Drain, Reclamation Ditch, and Tembladero Slough for year-round diversion. The application included an analysis of water availability, but the files do not include documentation of review or acceptance of the analysis by Division staff. The purpose of use is irrigation.

In 2024, the Division notified MCWRA that it needed to make progress relative to Application 32263D and provided a draft public notice. MCWRA has met with Division staff in 2025 to discuss potential changes to the application ahead of its public notice. These changes requested include the confirmation of underground storage, adding a point of diversion, moving two of the existing points of diversion, and expansion of the place of use. The application can be easily revised prior to public notice, but once the application has been noticed major changes would require a Petition for Change process. It is our understanding that MCWRA is currently preparing an updated application package for Application 32263D which will include these requested changes and be resubmitted to the Division. Water can't be diverted under this water right until a permit is issued.

## A032263E

Application 32263E was proposed to support the Municipal Sustainability Project, to support the goal of combating seawater intrusion. As proposed, it would diversify the current water sources for municipalities, residences, and industries to add drought resilience and reduce dependance on groundwater wells. The application states that MCWRA would conduct a feasibility study to inform the final design of the project and prepare a CEQA document. The application was put on hold in 2015 at MCWRA's request.

Application 32263E proposes to directly divert up to 55 cfs of water and collect to storage up to 8.700 AF, not to exceed 8,700 AF per year combined by direct diversion and collection to storage. The sources of water are Blanco Drain, Reclamation Ditch, and Tembladero Slough for year-round diversion. The application included an analysis of water availability, but the files do not include documentation of review or acceptance of the analysis by Division staff. The purposes of use are municipal, irrigation, and domestic.

In 2024, the Division notified MCWRA that it needed to make progress relative to Application 32263E and provided a draft public notice. MCWRA has met with Division staff in 2025 to discuss potential changes to the application ahead of its public notice. These changes requested include the confirmation of underground storage and expansion of place of storage. The application can be easily revised prior to public notice, but once the application has been noticed major changes would require a Petition for Change process. It is our understanding that MCWRA is currently preparing an updated application package for Application 32263E which will include these requested changes and be resubmitted to the Division. Water can't be diverted under this water right until a permit is issued.

# SWRCB Order 76-12

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

| | |
|---|---|
| In the Matter of Permits 11043 and 11044, Issued on Applications 13225 and 13226, MONTEREY COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, Permittee. | Order : 76-12<br>Source: Salinas River<br>County: Monterey |

ORDER GRANTING EXTENSION OF TIME

BY BOARD MEMBER DODSON:

A hearing having been held pursuant to Section 1410 of the Water Code before the State Water Resources Control Board on the eighth day of July, 1975, in the Resources Building, 1416 Ninth Street, Sacramento, California, for the purpose of allowing Monterey County Flood Control and Water Conservation District, hereinafter called the permittee, to show cause why Permits 11043 and 11044 should not be revoked pursuant to Water Code Section 1410; due notice of the time, place, and nature of said hearing having been given by certified mail to said permittee; said notice having been received, as is evidenced by signed return receipt; said permittee having appeared at said hearing; the Department of Water Resources having appeared as an interested party; evidence having been presented and received at said hearing and having been duly considered, the Board finds as follows:

1. On November 20, 1957, Permit 11043 was issued to Monterey County Flood Control and Water Conservation District on Application 13225. The permit authorized appropriation of 400 cubic feet per second (cfs)* from January 1 to December 31 at two points of diversion on the Salinas River in Monterey County for municipal purposes. At the same time, Permit 11044 was issued, which is identical to Permit 11043 except that it authorizes irrigation and domestic use of the same water.

2. The time authorized in said permit for application of water to beneficial use expired on December 1, 1973, after three extensions of time. A petition for extension of said time for a period of three years was filed on January 24, 1974.

3. The project originally envisioned by the permittee has changed since issuance of the permits. At the time of hearing, only that portion of the original project known as the Castroville Irrigation Project, which will divert water for irrigation purposes from one of the permitted points of diversion, was being actively pursued (RT 6). However, permittee has not abandoned the other portion of the project, known as the East Side Canal Project, and hopes to develop it in the future (RT 6, 24, 25).

4. Permittee has applied for a federal loan pursuant to Public Law 984 to finance the Castroville Irrigation Project and is very confident that necessary financing will be forthcoming (RT 6, 8, 36). Additionally, permittee has prepared and circulated through the State Clearinghouse an environmental impact report

*Total amount to be diverted under either or both permits.

disclosing the impacts of that project (RT 6). Permittee has not applied for financing for the East Side Canal Project, but may finance that project through a Public Law 984 loan as well (RT 24).

5. Permittee has exercised due diligence in its efforts to obtain financing for the Castroville Irrigation Project portion of its original project and has indicated that the East Side Canal Project remains a sufficiently viable project to justify an extension of time.

6. The Department of Water Resources has found the Castroville area of Monterey County to be "potentially one of the best sites for waste water reclamation in California...". That Department has urged that the Board compel the permittee and the Monterey Peninsula Water Pollution Control Agency (which has applied to the Board for a Clean Water Grant for a regional wastewater treatment facility) to examine more fully the possibility of substituting reclaimed wastewater for the proposed water supply for the Castroville Irrigation Project.

7. The record does not show that permittee has adequately considered the substitution of reclaimed wastewater as suggested by the Department of Water Resources. Failure to make this showing is not considered entirely the fault of the permittee since it does not have comprehensive control over the water resources planning process in Monterey County. However, because the water resources of the State must be put to use to the fullest extent of which they are capable, it is in the public interest to require

permittee to consider further the use of reclaimed wastewater as a supply for the Castroville Irrigation Project. Therefore, construction of the Castroville Irrigation Project or any project utilizing water covered by Permits 11043 and 11044 should not commence until further order of the Board, preceded by a hearing at which permittee demonstrates that all practicable alternatives, including use of reclaimed wastewater, have been fully considered and that permittee has made all reasonable effort to coordinate its water supply decisions with local water pollution control agencies.

8. Permittee also holds Permit 12261 (A16761) which allows rediversion of stored San Antonio River water (tributary to the Salinas River) at the same two points of diversion specified in Permits 11043 and 11044. The development period for Permit 12261 expired on December 1, 1975. Permittee has requested an extension of time for development under Permit 12261, and the Board shall consider conditioning any extension which may be granted to provide for a joint hearing on all three permits.

It is concluded from the foregoing findings that further extension of time until December 1, 1979, is justified.

NOW THEREFORE IT IS ORDERED:

1. Time to commence construction under Permits 11043 and 11044 is extended to December 1, 1979.

2. Construction shall not commence until further order of the Board upon a hearing and a showing by the permittee that the use of all practicable alternative water supplies, including

the use of reclaimed wastewater, have been adequately considered and that permittee has made all reasonable effort to coordinate its water supply decisions with local water pollution control agencies. If authorization to commence construction is given, the further Board order will include appropriate standard and special permit terms, including terms concerning the time allowed for completion of construction and for application of water to beneficial use. Jurisdiction to so condition these permits is reserved.

3. In addition, the Board specifically reserves jurisdiction to impose further terms and conditions on Permits 11043 and 11044 requiring permittee to use reclaimed wastewater to satisfy all or some of its water needs should the public interest so require.

Dated: September 16, 1976

ROY E. DODSON
Roy E. Dodson, Member

JOHN E. BRYSON
John E. Bryson, Chairman

W. DON MAUGHAN
W. Don Maughan, Vice Chairman

W. W. ADAMS
W. W. Adams, Member

JEAN AUER
Jean Auer, Member

# SWRCB Order 82-13

P11043

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

| | | |
|---|---|---|
| In the Matter of Permits 11043 and 11044, Issued on Applications 13225 and 13226, MONTEREY COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, Permittee | ) | ORDER: WR 82-13<br>SOURCE: Salinas River<br>COUNTY: Monterey |

ORDER GRANTING EXTENSION OF TIME

BY VICE CHAIRMAN MITCHELL:

A hearing having been held pursuant to Section 1410 of the Water Code before the State Water Resources Control Board on August 11, 1982, for the purpose of allowing Monterey County Flood Control and Water Conservation District to show cause why Permits 11043 and 11044 should not be revoked; permittee having appeared at the hearing; the Department of Fish and Game having appeared as an interested party; evidence having been presented and received and having been duly considered, the Board finds as follows:

1. On November 20, 1957, Permits 11043 and 11044 were issued to Monterey County Flood Control and Water Conservation District pursuant to Applications 13225 and 13226. The permits currently authorize appropriation of 400 cubic feet per second (cfs)* from January 1 to December 31 at two points of diversion on the Salinas River in Monterey County for municipal, irrigation and domestic use.

2. The time authorized in said permits for application of water to beneficial use expired on December 1, 1979, after four extensions of time. A petition for an additional extension was filed on August 17, 1981.

*Total amount to be diverted under either or both permits.

3. The project originally envisioned by the permittee has changed significantly since issuance of the permits.

4. Board Order WR 76-12 provided for extension of the time to commence construction to December 1, 1979. It also provides that:

> "2. Construction shall not commence until further order of the Board upon a hearing and a showing by the permittee that the use of all practicable alternative water supplies, including the use of reclaimed wastewater, have been adequately considered and that permittee has made all reasonable effort to coordinate its water supply decisions with local water pollution control agencies...."

The order is silent regarding timing of the hearing, the studies to be conducted and who was to institute the hearing process.

5. Permittee has been diligent in pursuit of the conditions of Order WR 76-12 in that:

(a) Permittee has investigated reasonable alternative supplies of water including well fields, other dams, the State Water Project, the Corps of Engineers' groundwater studies, and the Arroyo Seco Dam project;

(b) Permittee is cooperating in the investigation of the use of reclaimed wastewater as a source of supply for the Castroville Irrigation Project through membership on a task force coordinating the Monterey Wastewater Reclamation Study. This study will not be completed until 1985. The extended time for completion of this study is beyond the control of permittee.

6. Permittee has adopted a plan for the Arroyo Seco Dam project which includes the Castroville and Eastside Irrigation Projects as integral parts of the main project.

7. It is in the public interest to grant an extension of time in this case because the canal projects will be a useful part of an overall Monterey County water plan and no other agency is known which can make any reasonable use of the water at this time.

8. The Arroyo Seco Dam feasibility study Final Report is relevant to the issues of this hearing and should be admitted into evidence.

9. Since a permittee is no longer required to file a separate application for municipal, domestic, and irrigation uses, it is proper to combine the two permits into one.

10. A portion of the schedule set forth by the permittee should be adopted so that future diligence or the lack thereof may be determined.

NOW THEREFORE IT IS ORDERED:

1. That Permits 11043 and 11044 shall be combined as Permit 11043.

2. The permit shall include all applicable standard permit terms including 8, 10, 11, 12 and 13.*

3. Based upon permittee's Arroyo Seco Project implementation Schedule, permitee shall:

(a) Form assessment district by January 1, 1984.

(b) File final P. L. 984 loan applications by June 30, 1984.

(c) Commence both Castroville and Eastside Canal project construction by January 1, 1987.

(d) Construction work on Castroville and Eastside projects shall be completed by December 1, 1988.

(e) Complete application of the water to the authorized use shall be made by December 1, 2008.

(4) This permit shall stand revoked and of no further effect if permittee fails to meet any of the dates in Paragraph 3 of this Order, unless:

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* The Board maintains a list of standard permit terms. Copies of these may be obtained upon request.

(a) Permittee petitions the Board for an extension of time prior to the date in question, and

(b) The Board finds good cause for a time extension.

4. The Arroyo Seco Feasibility Study Final Report is admitted into evidence in the hearing in this matter.

6. In addition, the Board specifically reserves jurisdiction to impose further terms and conditions on Permit No. 11043 (which combines Permits Nos. 11043 and 11044) requiring permittee to use reclaimed wastewater to satisfy all or some of its water needs should the public interest so require.

7. To the extent that water available for use under this permit is return flow, imported water, or wastewater, this permit shall not be construed as giving any assurance that such supply will continue.

8. Permittee shall consult with the Division of Water Rights and the Department of Water Resources and develop and implement a water conservation program or actions. A progress report on development of the program shall be

submitted to the Board within six months. The program or proposed actions shall be presented to the Board for approval within one year from the date of this Order or such further time as may, for good cause shown, be allowed by the Board.

Dated: November 18, 1982

L. L. Mitchell, Vice Chairman

Carole A. Onorato, Chairwoman

Jill D. Golis, Member

F. K. Aljibury, Member

Warren D. Noteware, Member

# 2013 Settlement Agreement

Execution Copy

## SETTLEMENT AGREEMENT

This Settlement Agreement ("**Agreement**") is entered into and effective this 1st day of ~~June,~~ July 2013 by and among the Prosecution Team of the State Water Resources Control Board's ("State Water Board" or "Board") Division of Water Rights ("**Division Prosecution Team**"), and the Monterey County Water Resources Agency ("**Agency**"). Each of the parties to this Agreement is sometimes referred to as a "**Party**" and are collectively sometimes referred to as the "**Parties**."

Recitals

A. Permit 11043 (Application 13225) authorizes Monterey County Flood Control and Water Conservation District (now known as Monterey County Water Resources Agency) to divert 400 cubic feet per second from the Salinas River for municipal, industrial and agricultural uses. The maximum amount of water diverted under Permit 11043 is not to exceed 168,538 acre-feet per year.

B. The Agency originally submitted Application 13225 (and Application 13226 that was combined into Permit 11043) in response to the problems of seawater intrusion in the Salinas Valley Groundwater Basin that were examined in the California Department of Public Works, Division of Public Works' Bulletin 52 published in 1946. Bulletin 52 ascertained the extent and cause of seawater intrusion into the Basin and proposed the diversion of Salinas River water for delivery to the East Side Area and Pressure Areas of the Basin to alleviate groundwater pumping in those areas. The express intent of Applications 13225 and 13226 was to implement the solution outlined in Bulletin 52 to combat seawater intrusion.

C. In 2010, the Agency, together with funding assistance and policy support from the Board, successfully implemented Phase I of the Salinas Valley Water Project to stop seawater intrusion in the Basin by delivering water for agricultural use in the areas identified in Applications 13225 and 13226 in lieu of groundwater pumping. Phase II of the Project will provide the additional surface water needed, based on actual monitoring data of the effectiveness of Phase I, to bring complete resolution to seawater intrusion by the delivery of surface water to the areas identified in Applications 13225 and 13226. Permit 11043 is an important part of the Phase II solution to seawater intrusion.

D. On January 6, 2010, the Division Prosecution Team issued a Notice of Proposed Revocation of Permit 11043. The Division Prosecution Team asserted that the Agency had failed to commence, prosecute with due diligence and complete the work necessary to appropriate water under Permit 11043. Upon request by the Agency, the Board, on November 21, 2012, issued a Notice of Public Hearing for the proposed revocation of Permit 11043. The hearing is currently scheduled to commence on August 13, 2013.

E. The Parties have engaged in settlement negotiations seeking to set aside the proposed revocation of Permit 11043 in light of the important public interest in solving seawater intrusion in the Salinas Valley. The Parties believe that the provisions of this Agreement serve the public interest and so believe that proceeding with the proposed revocation and hearing is not in the best interests of any Party or the public.

F. This Settlement Agreement will be submitted to the State Water Board's Executive Director for approval and adoption pursuant to Government Code section 11415.60 as a decision by settlement and will become effective when the State Water Board's Executive Director issues an order approving the settlement.

G. The Parties wish to resolve the issues identified in the Notice of Proposed Revocation by means of this Agreement, as follows:

Agreements

1. Amendments to Permit 11043.

a. *Face Amount*. The maximum amount of water diverted under Permit 11043 shall be reduced to a quantity not to exceed 135,000 acre-feet per year.

b. *Bypass Flows*. The Agency will refrain from diverting under Permit 11043 unless the natural flow of the Salinas River at the Eastside Canal Intake point of diversion under Permit 11043, which shall be calculated by subtracting releases by the Agency from Nacimento and San Antonio Reservoirs from total flows at the Soledad gaging station on a three-day running average, is greater than the following amounts:

| Month | Amount (cfs) |
|---|---|
| January | 3.30 |
| February | 6.20 |
| March | 6.41 |
| April | 16.43 |
| May | 17.21 |
| June | 20.62 |
| July | 24.02 |
| August | 18.89 |
| September | 20.97 |
| October | 10.51 |
| November | 4.56 |
| December | 2.64 |

These amounts are to be bypassed before any water is diverted pursuant to Permit 11043. These amounts are based on the best available information of recent diversions from the Salinas River downstream of the Eastside Canal Intake point of diversion under Permit 11043 as reported to the Board.

c. *Other terms.* All other terms of Permit 11043 will remain unchanged. In particular, the purpose of use of the water appropriated under Permit 11043 will continue to be for municipal and industrial and agricultural purposes and the points of diversion and places of use identified in Permit 11043 will remain unchanged.

2. Milestones. The Agency shall make progress towards implementation of Phase II of the Salinas Valley Water Project ("**Project**") by:

a. Submitting a Petition for Extension of Time to the Board within 60 days of the effective date of this Agreement.

b. Issuing a Notice of Preparation for the Project by July 1, 2014.

c. Releasing a Draft Environmental Impact Report for the Project by July 1, 2015.

d. Issuing a draft financing plan for construction and operation of the Project by July 1, 2016.

e. Certifying a Final Environmental Impact Report for the Project by July 1, 2017.

f. Submitting necessary permit applications for regulatory agency approvals for the Project by July 1, 2018.

g. Approving a financing plan for construction and operation of the Project by July 1, 2019.

h. Finalizing Project construction drawings by July 1, 2020.

i. Submitting a financing plan for construction and operation of the Project for public approval by July 1, 2021.

j. Obtaining final permits and other agency approvals for the Project by July 1, 2023.

k. Issue notice to proceed with construction of the Project by July 1, 2024.

l. Complete construction of the Project and make initial diversion of water under Permit 11043 by July 1, 2026.

As required by California Code of Regulations, title 23, section 847, the Agency will file progress reports annually not later than each September 1 with the Board to document progress and completion of each milestone.

3. <u>Withdrawal of Notice of Proposed Revocation</u>. The Division Prosecution Team agrees, within 5 business days of the effective date of this Agreement, to withdraw the Notice of Proposed Revocation of Permit 11043 and support cancelation of the public hearing by the Board.

4. <u>No Admissions</u>. Nothing in this Agreement shall be construed as an admission by any Party regarding any subject matter of this Agreement. Nothing herein shall be interpreted as any endorsement, assertion or rejection of water rights claimed by third parties not subject to this Agreement. The Parties agree that California Evidence Code sections 1152 and 1154, and Federal Rule of Evidence 408, render this Agreement inadmissible as evidence against either of the Parties in any adjudicative or quasi-adjudicative proceeding, except: (i) that either Party may offer this Agreement as evidence in an action that seeks to compel the other Party to perform its obligations under this Agreement, and (ii) this Agreement and the Agency's performance of the terms of this Agreement may be offered as evidence in the event that the Division Prosecution Team seeks to renew its efforts to revoke Permit 11043. Notwithstanding the preceding sentence, the Parties agrec that they may jointly offer this Agreement in evidence to support the Board's actions under paragraph 3 in the event that such actions are challenged, either before the Board or in any other administrative, legislative or judicial forum.

5. <u>Costs and Fees</u>. Each Party shall bear its own fees and costs, including attorneys' and experts' fees, associated with the Proposed Revocation and this Agreement, including any dispute or other proceeding regarding this Agreement that may arise in the future.

6. <u>Postpone Hearing</u>. The Agency and the Division Prosecution Team have requested that the hearing in this matter be indefinitely postponed pending approval of this Settlement Agreement by the Executive Director.

7. <u>Waiver of Reconsideration</u>. The Agency waives its right to request reconsideration of the State Water Board Executive Director's order approving this Settlement Agreement, provided no material modifications to this Settlement Agreement or additional requirements beyond the requirements of this Settlement Agreement are included in that order.

8. <u>General Provisions</u>

   a. *Authority*. Each signatory of this Agreement represents that s/he is authorized to execute this Agreement on behalf of the Party for which s/he signs. Each Party represents that it has legal authority to enter into this Agreement and to perform all obligations under this Agreement.

   b. *Amendment*. This Agreement may be amended or modified only by a written instrument executed by each of the Parties to this Agreement.

c. *Jurisdiction and Venue.* This Agreement shall be governed by and construed in accordance with the laws of the State of California.

d. *Headings.* The paragraph headings used in this Agreement are intended for convenience only and shall not be used in interpreting this Agreement or in determining any of the rights or obligations of the Parties to this Agreement.

e. *Construction and Interpretation.* This Agreement has been arrived at through negotiations and each Party has had a full and fair opportunity to revise the terms of this Agreement. As a result, the normal rule of construction that any ambiguities are to be resolved against the drafting Party shall not apply in the construction or interpretation of this Agreement.

f. *Entire Agreement.* This Agreement constitutes the entire agreement of the Parties with respect to the subject matter of this Agreement and supersedes any prior oral or written agreement, understanding, or representation relating to the subject matter of this Agreement.

g. *Partial Invalidity.* If, after the date of execution of this Agreement, any provision of this Agreement is held to be illegal, invalid, or unenforceable under present or future laws effective during the term of this Agreement, such provision shall be fully severable. However, in lieu thereof, there shall be added a provision as similar in terms to such illegal, invalid or unenforceable provision as may be possible and be legal, valid and enforceable.

h. *Successors and Assigns.* This Agreement shall be binding on and inure to the benefit of the successors and assigns of the respective Parties to this Agreement. No Party may assign its interests in or obligations under this Agreement without the written consent of the other Parties, which consent shall not be unreasonably withheld or delayed.

i. *Waivers.* Waiver of any breach or default hereunder shall not constitute a continuing waiver or a waiver of any subsequent breach either of the same or of another provision of this Agreement and forbearance to enforce one or more of the remedies provided in this Agreement shall not be deemed to be a waiver of that remedy.

j. *Necessary Actions.* Each Party agrees to execute and deliver additional documents and instruments and to take any additional actions as may be reasonably required to carry out the purposes of this Agreement.

k. *Compliance with Law.* In performing their respective obligations under this Agreement, the Parties shall comply with and conform to all applicable laws, rules, regulations and ordinances.

l. *Third Party Beneficiaries*. This Agreement shall not create any right or interest in any non-Party or in any member of the public as a third party beneficiary. In particular, the Parties explicitly agree and acknowledge that the bypass flows set forth above in Paragraph 1.b do not create a right or other interest in such flows in favor of any third party.

m. *Counterparts*. This Agreement may be executed in one or more counterparts, each of which shall be deemed to be an original, but all of which together shall constitute but one and the same instrument.

n. *State Water Board Is Not Liable*. Neither the State Water Board members nor the Board's staff, attorneys or representatives shall be liable for any injury or damage to persons or property resulting from acts or omissions by the Agency or its directors, officers, employees, agents, representatives or contractors in carrying out activities pursuant to this Settlement Agreement, nor shall the State Water Board, its members or staff be held as parties to or guarantors of any contract entered into by the Agency or its directors, officers, employees, agents, representatives or contractors in carrying out activities pursuant to this Settlement Agreement.

o. *Notices*. All notices, requests, demands or other communications required or permitted under this Agreement shall be in writing unless provided otherwise in this Agreement and shall be deemed to have been duly given and received on: (i) the date of service if served personally or served by facsimile transmission on the Party to whom notice is to be given at the address(es) provided below, (ii) on the first day after mailing, if mailed by Federal Express, U.S. Express Mail, or other similar overnight courier service, postage prepaid, and addressed as provided below, or (iii) on the third day after mailing if mailed to the Party to whom notice is to be given by first class mail, registered or certified, postage prepaid, addressed as follows:

STATE WATER RESOURCES CONTROL BOARD

Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000
Attention: Assistant Deputy Director, Permitting and Enforcement Branch

MONTEREY COUNTY WATER RESOURCES AGENCY

David Chardavoyne
General Manager
893 Blanco Circle
Salinas, CA 93901

Dated: July 1, 2013

STATE WATER RESOURCES CONTROL BOARD

By: [signature]
James W. Kassel
Assistant Deputy Director
State Water Board, Division of Water Rights

Prosecution Team

Dated: July 1, 2013

Approved As To Form:

By: [signature]
David Rose
Staff Attorney
State Water Board, Division of Water Rights

Prosecution Team

Dated: 28 June 2013

MONTEREY COUNTY WATER RESOURCES AGENCY

By: David Chardavoyne
David Chardavoyne
General Manager

Dated: June 28, 2013

Approved As To Form:

By: [signature]
David R.E. Aladjem
Counsel



1324233.1

# SWRCB Order 2013-0030-EXEC

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

**ORDER WR 2013-0030-EXEC**

In the Matter of the Diversion and Use of Water by

**Monterey County Water Resources Agency**

# ORDER APPROVING SETTLEMENT AGREEMENT AND PARTIAL REVOCATION

**BY THE EXECUTIVE DIRECTOR**[1]

## 1.0 INTRODUCTION

This matter comes before the Executive Director of the State Water Resources Control Board (State Water Board or Board) following the issuance of a Notice of Proposed Revocation to the Monterey County Water Resources Agency (Agency). In accordance with the attached Settlement Agreement, the State Water Board's Division of Water Rights prosecution team (Division Prosecution Team) and the Agency have agreed to settle this matter in lieu of proceeding to a hearing. The issuance of a decision or order pursuant to a settlement agreement is authorized under Government Code section 11415.60. The settlement is approved.

## 2.0 BACKGROUND

The Agency originally submitted Application 13225 (and Application 13226 that was combined into Permit 11043) in response to the problems of seawater intrusion in the Salinas Valley Groundwater Basin that were examined in the California Department of Public Works, Division of Public Works' Bulletin 52 published in 1946. Bulletin 52 ascertained the extent and cause of seawater intrusion into the Basin and proposed the

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[1] State Water Board Resolution No. 2002 - 0104 delegates to the Executive Director the authority to issue a decision or order by settlement of the parties under Government Code section 11415.60.

diversion of Salinas River water for delivery to the East Side Area and Pressure Areas of the Basin to alleviate groundwater pumping in those areas. The express intent of Applications 13225 and 13226 was to implement the solution outlined in Bulletin 52 to combat seawater intrusion.

Permit 11043 authorizes Monterey County Flood Control and Water Conservation District (now known as Monterey County Water Resources Agency) to divert 400 cubic feet per second from the Salinas River for municipal, industrial and agricultural uses. The maximum amount of water diverted under Permit 11043 is not to exceed 168,538 acre-feet per year. The permit required that construction work be completed by July 1, 1962 and that the water be applied to the authorized use by July 1, 1967.

Permittee has been granted five time extensions. Time extensions were approved by orders dated March 22, 1968, April 2, 1964 and October 24, 1963, and by Orders WR 76-12 and WR 82-13.

In 2010, the Agency, together with funding assistance and policy support from the Board, successfully implemented Phase I of the Salinas Valley Water Project to stop seawater intrusion in the Basin by delivering water for agricultural use in the areas identified in Applications 13225 and 13226 in lieu of groundwater pumping. Phase II of the Project will provide the additional surface water needed based on actual monitoring data of the effectiveness of Phase I, to bring complete resolution to seawater intrusion by the delivery of surface water to the areas identified in Applications 13225 and 13226. Permit 11043 is an important part of the Phase II solution to seawater intrusion.

On January 6, 2010, the Division Prosecution Team issued a Notice of Proposed Revocation of Permit 11043. The Division Prosecution Team asserted that the Agency had failed to commence, prosecute with due diligence and complete the work necessary to appropriate water under Permit 11043. Upon request by the Agency, the Board, on

November 21, 2012, issued a Notice of Public Hearing for the proposed revocation of Permit 11043.

The Agency and the Division Prosecution Team have agreed to settle the matters identified in the Notice of Proposed Revocation through the attached Settlement Agreement in lieu of a hearing on said matters. On July 5, 2013, at the request of the Division Prosecution Team, the hearing was postponed. A number of parties requested copies of the Settlement Agreement, which was provided by the Division Prosecution Team on July 10, 2013. Pursuant to the November 21, 2012 hearing notice, the Board, by email dated July 11, 2013, provided the parties to the hearing an opportunity to comment on the settlement. Seven comments were received from parties to the hearing and two from non-parties; all were considered.

## 3.0 SETTLEMENT AGREEMENT

The Agency and the Division Prosecution Team engaged in settlement discussions and reached an agreement on language that is mutually acceptable and is contained in the Settlement Agreement that is attached hereto. The general terms of the settlement are: (1) the Agency agrees to partial revocation of the face value of Permit 11043 to 135,000 acre-feet per year; (2) the Agency agrees to bypass flows, as specified in paragraph 1.b. of the Settlement Agreement, prior to diverting any water pursuant to Permit 11043; (3) the Agency agrees to the identified milestones towards implementation of Phase II of the Salinas Valley Water Project; and (4) the Division Prosecution Team agrees to withdraw the Notice of Proposed Revocation dated January 6, 2010. The parties recognize that approval of the Settlement Agreement does not constitute State Water Board approval of any petitions for change or extension of time that may be required for completion of the Project.

**ORDER**

**IT IS HEREBY ORDERED THAT** the attached Settlement Agreement between the Division Prosecution Team and the Agency is approved and is incorporated by reference into this Order.

STATE WATER RESOURCES CONTROL BOARD

*Thomas Howard*
*Executive Director*

Dated: August 7, 2013

# Permit 11043 (Amended)

**STATE OF CALIFORNIA**
**CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY**
**STATE WATER RESOURCES CONTROL BOARD**

**DIVISION OF WATER RIGHTS**

# RIGHT TO DIVERT AND USE WATER

APPLICATION 13225 PERMIT 11043

Right Holder: Monterey County Water Resources Agency
P.O. Box 930
Salinas, CA 93902-0930

The State Water Resources Control Board (State Water Board) authorizes the diversion and use of water by the right holder in accordance with the limitations and conditions herein SUBJECT TO PRIOR RIGHTS. The priority of this right dates from **July 11, 1949**. This right is issued in accordance with the State Water Board delegation of authority to the Deputy Director for Water Rights (Resolution 2012-0029) and the Deputy Director for Water Rights redelegation of authority dated July 6, 2012. This right supercedes any previously issued right on **Application 13225**.

**Right holder is hereby granted a right to divert and use water as follows:**

1. Source of water: **(1) Salinas River**

   tributary to: **(2) Pacific Ocean**

   within the County of **Monterey**

2. Location of points of diversion

| By California Coordinate System of 1983 in Zone 4 | 40-acre subdivision of public land survey or projection thereof | Section (Projected)* | Township | Range | Base and Meridian |
|---|---|---|---|---|---|
| **Eastside Canal Intake:** **North 2,038,821 feet and East 5,891,976 feet** | **NW ¼ of SW ¼** | **36** | **17S** | **6E** | **MD** |
| **Castroville Canal Intake:** **North 2,118,722 feet and East 5,796,575 feet** | **NW ¼ of NE ¼** | **23** | **15S** | **3E** | **MD** |

| 3. Purpose of use | 4. Place of use | | | | | |
|---|---|---|---|---|---|---|
| | 40-acre subdivision of public land survey or projection thereof | Section (Projected)* | Township | Range | Base and Meridian | Acres |
| **Irrigation** | **86,500 net acres within a gross of 107,000 acres within portions of Zone 2 of the Monterey County Water Resources Agency** | | | | | |
| **Municipal** | **Within portions of Zone 2 of the Monterey County Water Resources Agency** | | | | | |

The place of use is shown on map filed with the State Water Board.

5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **400 cubic feet per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **135,000 acre-feet per year.**
(0000005A)

6. Construction of both the Castroville and Eastside Canal projects shall commence by January 1, 1987.
(0000007)

7. Construction work on Castroville and Eastside projects shall be completed by December 1, 1988.
(0000008)

8. Complete application of the water to the authorized use shall be made by December 1, 2008.
(0000009)

9. Based upon right holder's Arroyo Seco Project implementation schedule, right holder shall:

(a) Form assessment district by January 1, 1984

(b) File final P.L. 984 loan applications by June 30, 1984
(0320300)

10. This permit shall stand revoked and of no further effect if right holder fails to meet any of the dates specified unless:

(a) Right holder petitions the Board for an extension of time prior to the date in question, and

(b) The Board finds good cause for a time extension.
(0010300)

11. The Board specifically reserves jurisdiction to impose further terms and conditions on this permit requiring right holder to use reclaimed wastewater to satisfy all or some of its water needs should the public interest so require.
(0000600)

12. Any right which may be consummated under this application and permit is subject to the prior right for municipal use only which the City of Paso Robles may consummate under Application 17123.
(0000112)

13. Right holder shall not divert water unless the natural flow of the Salinas River at Eastside Canal Intake (NAD 83, Zone 4, North 2,038,821 feet and East 5,891,976 feet) is greater than the amounts listed in the table below. The natural flow shall be calculated by subtracting reservoir releases from Nacimento and San Antonio Reservoirs from total flows at the Soledad gaging station on a three-day running average.

| Month | Amount (cubic feet per second) |
|---|---|
| January | 3.3 |
| February | 6.2 |
| March | 6.41 |
| April | 16.43 |
| May | 17.21 |
| June | 20.62 |
| July | 24.02 |
| August | 18.89 |
| September | 20.97 |
| October | 10.51 |
| November | 4.56 |
| December | 2.64 |

(0160300)

14. This permit is subject to timely completion of the following actions towards implementation of Phase II of the Salinas Valley Water Project (Project):

(a) Submitting a petition for extension of time by October 8, 2013.

(b) Issuing a Notice of Preparation for the Project by July 1, 2014.

(c) Releasing a Draft Environmental Impact Report for the Project by July 1, 2015.

(d) Issuing a draft financing plan for construction and operation of the Project by July 1, 2016.

(e) Certifying a Final Environmental Impact Report for the Project by July 1, 2017.

(f) Submitting necessary permit applications for regulatory agency approvals for the Project by July 1, 2018.

(g) Approving a financing plan for construction and operation of the Project by July 1, 2019.

(h) Finalizing Project construction drawings by July 1, 2020.

(i) Submitting a financing plan for construction and operation of the Project for public approval by July 1, 2021.

(j) Obtaining final permits and other agency approvals for the Project by July 1, 2023.

(k) Issue notice to proceed with construction of the Project by July 1, 2024.

(l) Complete construction of the Project and make initial diversion of water under the permit by July 1, 2026.

Right holder shall file documentation of its progress and completion of each milestone with the annual electronic report of water diversion and use. In the event that right holder fails to timely complete a milestone, right holder shall also file a letter by September 1 of the year noted in the milestone, advising the Division of such failure, providing the basis for failing to meet the milestone and identifying when the milestone will be met.

(0270700)

**THIS RIGHT IS ALSO SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:**

A. Right holder is on notice that: (1) failure to timely commence or complete construction work or beneficial use of water with due diligence, (2) cessation or partial cessation of beneficial use of water, or (3) failure to observe any of the terms or conditions of this right, may be cause for the State Water Board to consider revocation (including partial revocation) of this right. (Cal. Code Regs., tit. 23, § 850.)

(0000016)

B. Right holder is on notice that when the State Water Board determines that any person is violating, or threatening to violate, any term or condition of a right, the State Water Board may issue an order to that person to cease and desist from that violation. (Wat. Code, § 1831.)

(0000017)

C. Right holder is not authorized to make any modifications to the location of diversion facilities, place of use or purposes of use, or make other changes to the project that do not conform with the terms and conditions of this right, prior to submitting a change petition and obtaining approval of the State Water Board.

(0000018)

D. Once the time to develop beneficial use of water ends under this permit, right holder is not authorized to increase diversions beyond the maximum annual amount diverted or used during the authorized development schedule prior to submitting a time extension petition and obtaining approval of the State Water Board.

(0000019)

E. Only the amount of water applied to beneficial use during the authorized diversion season, as determined by the State Water Board, shall be considered when issuing a license. (Wat. Code, § 1610.)

(0000006)

F. Right holder shall maintain records of the amount of water diverted and used under this right to enable the State Water Board to determine the amount of water that has been applied to beneficial use.

(0000015)

G. Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and use under this right and documentation of compliance with the terms and conditions of this right.

(0000010)

H. No water shall be diverted under this right unless right holder is operating in accordance with a compliance plan, satisfactory to the Deputy Director for Water Rights. Said compliance plan shall specify how right holder will comply with the terms and conditions of this right. Right holder shall comply with all reporting requirements in accordance with the schedule contained in the compliance plan.

(0000070)

I. Right holder shall grant, or secure authorization through right holder's right of access to property owned by another party, the staff of the State Water Board, and any other authorized representatives of the State Water Board the following:

1. Entry upon property where water is being diverted, stored or used under a right issued by the State Water Board or where monitoring, samples and/or records must be collected under the conditions of this right;

2. Access to copy any records at reasonable times that are kept under the terms and conditions of a right or other order issued by State Water Board;

3. Access to inspect at reasonable times any project covered by a right issued by the State Water Board, equipment (including monitoring and control equipment), practices, or operations regulated by or required under this right; and,

4. Access to photograph, sample, measure, and monitor at reasonable times for the purpose of ensuring compliance with a right or other order issued by State Water Board, or as otherwise authorized by the Water Code.

(0000011)

J. This right shall not be construed as conferring right of access to any lands or facilities not owned by right holder.

(0000022)

K. All rights are issued subject to available flows. Inasmuch as the source contains treated wastewater, imported water from another stream system, or return flow from other projects, there is no guarantee that such supply will continue.

(0000025)

L. This right does not authorize diversion of water dedicated by other right holders under a senior right for purposes of preserving or enhancing wetlands, habitat, fish and wildlife resources, or recreation in, or on, the water. (Wat. Code, § 1707.) The Division of Water Rights maintains information about these dedications. It is right holders' responsibility to be aware of any dedications that may preclude diversion under this right.

(0000212)

M. No water shall be diverted or used under this right, and no construction related to such diversion shall commence, unless right holder has obtained and is in compliance with all necessary permits or other approvals required by other agencies. If an amended right is issued, no new facilities shall be utilized, nor shall the amount of water diverted or used increase beyond the maximum amount diverted or used during the previously authorized development schedule, unless right holder has obtained and is in compliance with all necessary requirements, including but not limited to the permits and approvals listed in this term.

Within 90 days of the issuance of this right or any subsequent amendment, right holder shall prepare and submit to the Division of Water Rights a list of, or provide information that shows proof of attempts to solicit information regarding the need for, permits or approvals that may be required for the project. At a minimum, right holder shall provide a list or other information pertaining to whether any of the following permits or approvals are required: (1) lake or streambed alteration agreement with the Department of Fish and Wildlife (Fish & G. Code, § 1600 et seq.); (2) Department of Water Resources, Division of Safety of Dams approval (Wat. Code, § 6002); (3) Regional Water Quality Control Board Waste Discharge Requirements (Wat. Code, § 13260 et seq.); (4) U.S. Army Corps of Engineers Clean Water Act section 404 permit (33 U.S.C. § 1344); and (5) local grading permits.

Right holder shall, within 30 days of issuance of any permits, approvals or waivers, transmit copies to the Division of Water Rights.

(0000203)

N. Urban water suppliers must comply with the Urban Water Management Planning Act (Wat. Code, § 10610 et seq.). An "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

Agricultural water users and suppliers must comply with the Agricultural Water Management Planning Act (Act) (Water Code, § 10800 et seq.). Agricultural water users applying for a permit from the State Water Board are required to develop and implement water conservation plans in accordance with the Act. An “agricultural water supplier” means a supplier, either publicly or privately owned, supplying more than 50,000 acre-feet of water annually for agricultural purposes. An agricultural water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers.

(0000029D)

O. Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this right, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this right with a view to eliminating waste of water and to meeting the reasonable water requirements of right holder without unreasonable draft on the source. Right holder may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this right and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by right holder in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution, article X, section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

P. The quantity of water diverted under this right is subject to modification by the State Water Board if, after notice to right holder and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

Q. This right does not authorize any act which results in the taking of a candidate, threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a "take" will result from any act authorized under this right, right holder shall obtain any required authorization for an incidental take prior to construction or operation of the project. Right holder shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this right.

(0000014)

*This right is issued and right holder takes it subject to the following provisions of the Water Code:*

*Section 1390. A permit shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code), but no longer .*

*Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).*

STATE WATER RESOURCES CONTROL BOARD

ORIGINAL SIGNED BY:
PHILLIP CRADER FOR

*Barbara Evoy, Deputy Director*
*Division of Water Rights*

Dated: SEP 18 2013

# Appendix B

## Evaluation of Salinas River Water Rights and Alternatives

OCTOBER 2025

# Evaluation of Salinas River Water Rights and Alternatives

Prepared for the Salinas Valley Basin Groundwater Sustainability Agency

**PRESENTED BY:**
**ANNE WILLIAMS & KELSEY GILL**
**MBK ENGINEERS**
**455 UNIVERSITY AVE. SUITE 100**
**SACRAMENTO, CA 95825**

## Table of Contents

# Introduction

This is the second report prepared to support the first phase of a multi-phase study by the Salinas Valley Basin Groundwater Sustainability Agency (GSA) to support Sustainable Groundwater Management Act implementation pursuant to State of California Department of Water Resources (DWR) grant funding. The GSA is evaluating the Castroville and Eastside Canals and Alternatives to identify potential projects to halt the advancement of seawater intrusion and raise groundwater levels. The first report in this series is titled History of Water Rights – A013225 (Permit 11043), A032263C, A032263D, and A032263E, dated July 2025.

## Purpose

The purpose of this report is to identify and evaluate water right options for the use of water from the Salinas River and/or its tributaries by means of diversion, including under existing water rights held by Monterey County Water Resources Agency (MCWRA) or other potential approaches. This report first provides options for using Permit 11043 (A013225) as it is currently defined in the amended permit, and second identifies an approach to change the amended permit for projects that do not fit within the parameters currently defined in the amended permit. This report also describes potential options for moving forward with Applications A032263C, A032263D, and A032263E. In the case that any of the existing water rights held by MCWRA cannot be used for a proposed project, this report lastly provides options for obtaining a new water right, both standard and temporary. Some additional potential approaches described in this report include diverting under flood conditions for groundwater recharge, the use of state filed applications, and pumping groundwater from a shallow well field. Understanding the opportunities, limitations, cost, and time associated with each option will help the Salinas Valley Basin GSA determine feasibility of potential projects it is considering.

# Permit 11043 (A013225)

Permit 11043 (A013225) is held by MCWRA for year-round direct diversion of 400 cfs from the Salinas River for the purpose of irrigation and municipal uses. Two points of diversion are authorized: 1) the Eastside Canal Intake near the city of Soledad and 2) the Castroville Canal Intake, approximately 3 miles upstream of the town of Spreckels. The places of use for both irrigation and municipal reference portions of Zone 2 of the MCWRA service area. Due to the multiple State Water Resources Control Board (SWRCB) hearings and Orders associated with this permit, the most current version of amended Permit 11043 includes multiple terms and limitations, including bypass flow requirements based on downstream demand. The bypass flow requirements must be met at the Salinas River near Soledad stream flow gage prior to diversion at either the East Side Canal Intake or Castroville Canal Intake.

## Petition for Extension of Time and Petition for Change

Permit Term 10 states that "this permit shall stand revoked and of no further effect if right holder [MCWRA] fails to meet any of the dates specified" in the permit, unless MCWRA petitions the SWRCB for an extension of time prior to the date in question, and the SWRCB finds good cause for a time extension. Pursuant to this permit term, MCWRA submitted a Petition for Extension of Time along with a Petition for Change approximately ten years ago, which are still with the

SWRCB and have not been publicly noticed. The Petition for Extension of Time was submitted in 2013 and amended in 2016 to request an extension of the development schedule defined in Permit Terms 6, 7, and 8 – approval of this request would extend the date to complete application of water to beneficial use from December 1, 2008, to December 31, 2040. The Petition for Change was submitted in 2016 to request an extension of the milestone dates defined in Permit Term 14 – approval of this request would extend the date to complete construction from July 1, 2026, to July 1, 2030. Within these petitions, MCWRA stated that it would be unreasonable to continue pursuing a project pursuant to Permit 11043 until the petitions are approved, due to the difficulty of obtaining voter approval of the necessary financing without certainty that Permit 11043 could be utilized.

It is our understanding that an approved Petition for Extension of Time and Petition for Change will be needed in order to use Permit 11043, specifically with respect to Permit Term 10. The ability and risks to proceeding with use of Permit 11043 as is (without a SWRCB Order approving a Petition for Extension of Time and Petition for Change) should be discussed with legal counsel. Water right permits issued by the SWRCB define points of diversion, places of use, and purposes of use, but in most cases do not define the infrastructure used to move the water from the point of diversion to the place of use. Therefore, using Permit 11043 for the project currently defined in the permit would limit the project to immediate[1] irrigation and municipal use within portions of Zone 2 of the MCWRA service area with water diverted at two points of diversion, one near Soledad and one approximately 3 miles upstream of Spreckels. Under the current parameters defined in amended Permit 11043, MCWRA and the Salinas Valley Basin GSA would still have options for how water is diverted (pump, gravity diversion, Ranney collector, etc) and what infrastructure is used to move the diverted water to the place of use (pipeline, canal, treatment, etc).

### Petition Process (Noticing, Protests, Order Issuance, Environmental Review)

A Petition for Extension of Time or Petition for Change can be submitted at any time to the SWRCB. Once a petition is accepted, the SWRCB is required by law to publish a notice of the petition. Once public notice of the petition occurs, there is a protest period and a subsequent period to respond to protests. Any "interested person" may file a protest to a petition. For large projects with unresolved protests, a hearing is held before one or more members of the SWRCB or the Administrative Hearings Office. The SWRCB's decision is based upon the record established during the hearing. The petition process is expensive and time consuming. The SWRCB's website identifies a range of approximately three months to ten years for completion of a Petition for Change process. However, it can also take longer, as seen with the outstanding petitions submitted pursuant to Permit 11043. The SWRCB's process is depicted in Figure 1.

In previous discussion between MCWRA and the SWRCB pursuant to other projects, the SWRCB has recommended that MCWRA file Petitions for Extension of Time and Petitions for Change concurrently for the same water right. In such previous projects, the Division of Water Rights (Division) has then noticed the petitions together. Despite the concurrent submittal of Petitions for Extension of Time and Petitions for Change, protests can be filed on one, the other,

[1] Generally, water must be used within 30 days pursuant to a direct diversion right.

or both. Furthermore, a protestant could choose to protest part of a petition rather than everything in a petition. For example, someone could protest a request to add underground storage, but not a request to move the point of diversion. If the SWRCB determines that only part of the requested changes can be approved, then that will be detailed in an Order pursuant to the petition.

Compliance with the California Environmental Quality Act (CEQA) is necessary for filing and approval of a Petition for Extension of Time or Petition for Change. Legal counsel should be consulted for advice on compliance with CEQA.

The milestone dates defined in Permit Term 14 set a date for issuance of a Notice of Preparation (NOP), release of a draft Environmental Impact Report (EIR), certification of a final EIR, submittal of necessary permit applications for regulatory agency approvals, and obtainment of final permits and other agency approvals. MCWRA submitted the NOP prior to the date specified in the milestones. However, the other steps in the environmental review process were not completed. The time specified in the milestones for completing these steps has passed. The NOP, submitted on June 24, 2015, defined a project that would incorporate the Eastside Canal Intake and the Castroville Canal Intake. It was stated in the NOP that the EIR would explore different possibilities for conveyance and delivery facilities including treatment methods, injection wells, percolation ponds, and turnouts for direct use of the water.

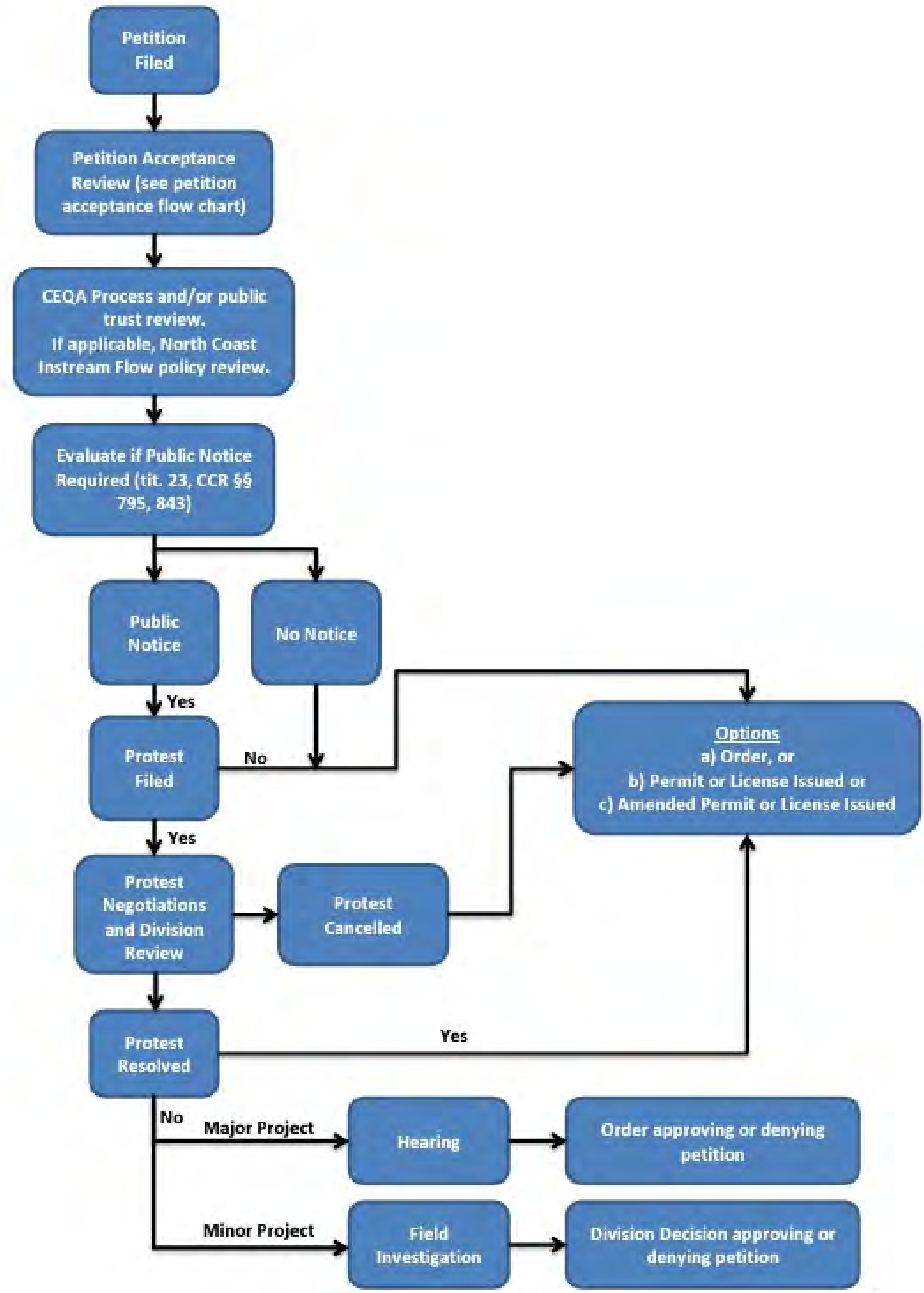


*Figure 1: SWRCB Figure of Petition for Change Process (source: https://www.waterboards.ca.gov/waterrights/board_info/docs/petprocess.pdf)*

### Petition Amendments and/or New Petitions

As noted above, the Petition for Extension of Time and Petition for Change have not been publicly noticed. Prior to public notice, there may be an opportunity to request changes to the existing petitions to update them based on changed circumstances. Additional changes that might be needed (depending on the project that MCWRA and the Salinas Valley Basin GSA proceed with) pursuant to Permit 11043 are described below. We recommend consulting with legal counsel regarding any changes to the existing petitions.

An amendment to the existing Petition for Extension of Time pursuant to Permit 11043 that may be needed regardless of the project:

1) Further extension of time to complete beneficial use pursuant to the anticipated timing for project implementation (the current Petition for Extension of Time requests an extension to December 31, 2040).

Amendments to the existing Petition for Change pursuant to Permit 11043 that may be needed regardless of the project:

1) Further extension of time to complete the milestones defined in Permit Term 14 pursuant to the anticipated timing for project implementation (the current Petition for Change requests an extension to July 1, 2030, pursuant to construction completion).
2) Removal of Permit Term 9 – This term is based on the planning and financing of the Arroyo Seco Project, which was a proposed project to build a reservoir on the Arroyo Seco that would include the Eastside Canal and the Castroville Canal as integral parts of the project. However, the Arroyo Seco project has not been pursued due to significant local stakeholder opposition.
3) Removal of Permit Terms 6 and 7 – These were standard terms that set dates for the commencement and completion of construction, respectively. Since the current version of amended Permit 11043 was issued, the SWRCB has deleted these standard permit terms and no longer issues permits with these terms listed. It is our understanding that these permit terms would be removed in any amended permit issued pursuant to the petitions, but we recommend having a conversation with the Division and legal counsel regarding these terms in an amended Petition for Change.

Additional amendments to the existing Petition for Change that may be needed if MCWRA and the Salinas Valley Basin GSA are to proceed with a project that does not fit within the parameters currently defined in Permit 11043:

1) Addition of permit term allowing underground storage along with addition of points of rediversion for every injection/extraction well
2) Addition of permit term allowing surface storage
3) Change of place of use
4) Change of purpose of use
5) Addition/removal or moving of points of diversion from the Salinas River and/or points of rediversion

Once accepted and publicly noticed, the petitions may be protested by any interested person[2]. We anticipate the petition process to be time consuming regardless of requested changes and the risk of protests will depend on the specific requests made in the petitions.

### Adding Storage to a Direct Diversion Water Right

It has been emphasized by the Salinas Valley Basin GSA that adding storage to Permit 11043 would greatly increase the usability of the permit. The preliminary flow analysis conducted by Montogomery & Associates during this phase shows that in many years there is a large amount of water available during the winter but little to no water available in the summer. The GSA is interested in capturing this winter flow and storing it for utilization during times when demand is high and available supply is low (e.g. during the summer and extended dry periods). There have been conversations related to both underground storage and surface storage. We are aware of an example where an entity was able to add underground storage to a permit for direct diversion. It could also be possible to add off-stream surface storage to a permit for direct diversion, but we are not aware of an example where this has been done.

Regarding the potential addition of underground storage to Permit 11043, the end purpose of use needs to be determined. The California Code of Regulations (CCR) lists beneficial purposes of use for which water can be applied. Common beneficial uses include domestic, irrigation, power generation, municipal, industrial, fish and wildlife enhancement, and recreation use. Underground storage is commonly referred to as groundwater recharge, which is not a beneficial use of water on its own, but rather is one method of diverting and storing water that takes advantage of the natural storage capacity of groundwater aquifers. To obtain a water right to divert water to underground storage, the eventual beneficial use of the water that would occur must be identified. This most commonly involves identifying the beneficial use(s) that occurs after water is extracted. Most water rights with authorized underground storage are for extractive beneficial uses, such as irrigation or municipal uses. However, we are aware of one example where an entity (Scotts Valley Irrigation District) was able to obtain a water right (Permit 21465) with underground storage for a non-extractive beneficial use. With its water right, Scotts Valley Irrigation District is authorized to divert water from the Scott River and put it into underground storage for later instream fish and wildlife preservation and enhancement. The assumption made is that the water will naturally return to the Scott River from the underground storage to enhance spring and summer flows which in turn benefits fish and wildlife. The Scott River reaches were identified as the place of use. Fish and wildlife preservation and enhancement is a beneficial use defined in the California Code of Regulations (CCR).

The Sustainable Groundwater Management Act (SGMA) identifies six undesirable results, listed below, that could potentially be addressed with underground storage and could support the need for a non-extractive beneficial use.

1. Chronic lowering of groundwater levels
2. Reduction of groundwater storage
3. Seawater intrusion

[2] Recently water right changes by MCWRA have been protested by NMFS, CDFW, the Salinas Valley Water Coalition (SVWC), and the Nacimiento Regional Water Management Advisory Committee (NRWMAC).

4. Degraded water quality, including migration of contaminant plumes
5. Land subsidence that substantially interferes with surface land uses
6. Depletions of interconnected surface water that have adverse impacts on beneficial uses of the surface water

We are not aware of any examples of an underground storage permit that has been approved for use to address undesirable results under SGMA. Legal counsel should be consulted to discuss issues related to beneficial use of water for addressing undesirable results under SGMA.

### *Underground Storage Example*

The successful example of adding underground storage to a direct diversion water right with a Petition for Change is Woodland-Davis Clean Water Agency's (WDCWA) Permit 20281. WDCWA submitted a Petition for Change requesting a change in point of rediversion and the terms and conditions pursuant to Permit 20281. WDCWA included the Underground Storage Supplement with the petition, which describes the facilities to be used for underground storage. This document is required when seeking a water right with underground storage. Within the Petition for Change, WDCWA requested the addition of nine injection/extraction wells as points of rediversion pursuant to the permit and requested the addition of a permit term authorizing underground storage, setting quantity and rate limitations, and stating requirements for permitting.

An amended permit was issued pursuant to the Petition for Change, authorizing the addition of underground storage. The amended permit listed the nine injection/extraction wells as "points of diversion to and withdrawal from underground storage" and listed the "location of place of underground storage". The SWRCB modified the permit term requested by WDCWA and included the following term in the amended permit:

*Permittee's diversion of water from the Sacramento River to underground storage is limited to storage within the Yolo Sub-basin (Sub-basin 5-21.67) of the Sacramento Valley Groundwater Basin (as defined in the California Department of Water Resources Bulletin 118, 2003 (Yolo Sub-basin)), and as shown on the map filed with the Division dated June 16, 2017. Storage of water underground and withdrawal of the water for beneficial use pursuant to this permit is subject to the following conditions:*

> *a. The total amount of water that may be held in underground storage in the Yolo Sub-basin from City of Woodland Wells 28 – 36 shall not exceed 100,000 acre-feet.*
>
> *b. The cumulative instantaneous rate of withdrawal from underground storage in the Yolo Sub-basin from City of Woodland Wells 28 – 36 shall not exceed 23.4 cubic feet per second.*
>
> *c. The amount of water that may be withdrawn from underground storage in the Yolo Sub-basin from City of Woodland Wells 28 – 36 shall not exceed 10,360 acre-feet per year.*

*d. Water may be diverted to and withdrawn from the Yolo Sub-basin only at the points of diversion to underground storage (City of Woodland Wells 28 – 36) specified in this permit.*

*e. No water may be diverted to or withdrawn from underground storage in the Yolo Sub-basin until Permittee has obtained all applicable permits from local and state authorities, including any permit for the City of Woodland's Aquifer Storage and Recovery (ASR) program required by the Central Valley Regional Water Quality Control Board for coverage under the State Water Board's [SWRCB]General Order 2012-0010 regarding ASR projects, or any updates thereto.*

*f. This term does not affect the rights of Permittee's members to extract groundwater from the Yolo Subbasin from groundwater wells other than the City of Woodland Wells 28 – 36.*

*g. Any water diverted to underground storage that is not withdrawn during that water year will have the net storage amount reduced by 10 percent per year, due to advection and dispersion of groundwater, for groundwater withdrawal monitoring and reporting purposes.*

*h. If groundwater levels rise to less than 10 feet below ground surface (bgs) during diversion to underground storage, the injection rates will be significantly reduced to cause the groundwater table to drop below 10 feet bgs.*

### Time to Process Petitions

It is common for the SWRCB to take many years to process petitions. However, the outstanding Petition for Extension of Time and Petition for Change filed by MCWRA have been filed and without a public notice for longer than the regular process. The SWRCB generally processes petitions based on the date they were filed. However, given the large number of pending petitions, priority is given to projects that meet defined "importance" and "demonstrated progress" criteria. These criteria are provided in the "new water right" section of this report and are on the SWRCB's website[3]. We recommend that these criteria are considered and projects that meet them are developed in order to expedite the petition process. We recommend that any communication or documentation filed with the SWRCB emphasizes how the proposed project meets the criteria and provides evidence that:

1) Due diligence has been exercised;
2) Failure to comply with previous time requirements has been occasioned by obstacles which could not be reasonably avoided; and
3) Satisfactory progress will be made if an extension is granted.

Specifically, the following project specific questions should be addressed:

1) Where would the point(s) of diversion generally be located?
2) What would the approximate diversion rate and volume be?

[3] The criteria can be found on the SWRCB's website at this link:
https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/priority_criteria.html

3) Would the project include underground storage?
   a. Where/how would water be put underground?
   b. Would the water stored underground be extracted later?
4) Would the project include surface storage?
5) What would the end beneficial use be?
6) Generally, where would the place of use be?
7) What is the anticipated timing for project implementation?
8) What efforts are currently underway to proceed with the project?

### Minor Change Request

In some instances, changes to water rights can be made through a Minor Change Request. The Minor Change Request is an expedited process with no filing fees and no opportunity for public protest, although changes are publicly noticed and available for public comment. Minor Change Requests are typically processed and issued within a few months of submittal. Projects must meet certain criteria including:

1) The change does not enlarge or increase the authorized rate, amount, or season of diversion.
2) The change does not increase the total area subject to inundation by water diverted to storage or the area where facilities will be constructed.
3) The change is not substantial or constitutes a reduction, agreed to by the applicant, in the authorized diversion, affected area, or other feature of the application.
4) The change does not have the potential to adversely affect the water supply of other legal users of water or instream beneficial uses.

## Applications A032263C, A032263D, & A032263E

MCWRA holds Applications A032263C, A032263D, and A032263E, which were originally filed as one application on May 19, 2014, and split into individual applications in November of 2015. These applications are currently outstanding and have not yet been permitted.

Application 32263C proposes to directly divert up to 3 cfs of water and collect to underground storage up to 1,500 AF, not to exceed 1,500 AF per year combined by direct diversion and collection to storage. The source of water is Tembladero Slough for year-round diversion, and water would be treated and then put underground via injection wells in the Seaside Groundwater Basin. The application was publicly noticed and was protested by the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS).

Application 32263D was proposed to support the Coastal Sustainability Agricultural Project and would add water sources to allow for the expansion of the existing Castroville Seawater Intrusion Project to serve additional areas and reduce dependance on groundwater wells. Application 32263D proposes to directly divert up to 30 cfs of water and collect to storage up to 9,800 AF, not to exceed 9,800 AF per year combined by direct diversion and collection to storage. The sources of water are Blanco Drain, Reclamation Ditch, and Tembladero Slough for year-round diversion. Application 32263D has not been publicly noticed.

Application 32263E was proposed to support the Municipal Sustainability Project to diversify the current water sources for municipalities, residences, and industries to add drought resilience and reduce dependance on groundwater wells. Application 32263E proposes to directly divert up to 55 cfs of water and collect to storage up to 8.700 AF, not to exceed 8,700 AF per year combined by direct diversion and collection to storage. The sources of water are Blanco Drain, Reclamation Ditch, and Tembladero Slough for year-round diversion. Application 32263E has not been publicly noticed.

The GSA can coordinate with MCWRA to review these pending applications to facilitate potential projects and proceed with the permitting process.

## New Water Right

In some cases, entities choose to file a new water right application concurrently with a petition to begin the process of obtaining a new water right in case its petition is not approved.

Water cannot be diverted and used under a new water right until a permit[4] is issued. To obtain a new water right permit in California, a complete Application to Appropriate Water by Permit (application) must be filed with the SWRCB Division of Water Rights along with the required fees. The application must specifically describe the proposed project's source, place of use, purpose, point(s) of diversion, quantity to be diverted, and other necessary information. Pursuing and obtaining a new appropriative water right requires separate applications for separate projects, depending on details, such as, but not limited to, location, type, and status. Acceptance of the application by the Division establishes the priority date of the application.

To issue a permit pursuant to an application, the SWRCB must find that there is unappropriated water available to supply the applicant and that the applicant's appropriation is in the public interest. If the proposed appropriation does not meet these criteria, conditions may be imposed to ensure the criteria are satisfied or the application may be denied. A Water Availability Analysis (WAA) is performed to support the determination that water is available. The SWRCB maintains a list of fully appropriated stream systems and the season when there is insufficient supply for new water right applications.[5] The Salinas River is fully appropriated from May 15th to December 31st from the upper Salinas River at Salinas Dam[6] down to the Nacimiento River, including any accretion flows with hydraulic continuity. Any project considering a new water right should not consider surface water sources or seasons deemed fully appropriated.

Similar to petitions, applications must comply with CEQA. Legal counsel should be consulted for advice on compliance with CEQA.

### Standard Permit Process

Figure 2 shows the SWRCB's process for obtaining a water right. The SWRCB's website identifies at least a year to process an application, but also says can take significantly longer

[4] Water right registrations are available for different types of small water right projects, but are not described herein since they are not applicable to the size and types of projects the GSA is considering. In addition, riparian rights are not described herein as riparian rights do not allow for storage, which we understand to be an integral component of a potential project.
[5] Link to SWRCB listing of fully appropriated stream systems: https://www.waterboards.ca.gov/waterrights/water_issues/programs/fully_appropriated_streams/
[6] Located in San Luis Obispo County, California, and forms the Santa Margarita Lake Reservoir

depending on the project. Once an application is accepted, the SWRCB is required by law to publish a notice of the application. Once public notice of the application occurs, there is a protest period and a subsequent period to respond to protests. Any person may file a protest to the application. For large projects with unresolved protests, a hearing is held before one or more members of the SWRCB. The SWRCB's decision is based upon the record established during the hearing. A permit will include standard permit terms and other conditions, such as deadlines to put water to beneficial use and any conditions developed in protest resolution including environmental flow requirements.

Currently, the water rights permitting process is estimated by the SWRCB to require five to seven years for regular priority projects from the time an application is received to the time that a decision is rendered. However, the process can be longer, particularly if a hearing is necessary due to protests and/or if there is potential to harm threatened or endangered species. There is also additional time needed for initial coordination with SWRCB staff and other regulatory agencies, such as CDFW and NMFS, that is recommended well in advance of submitting an application.

The SWRCB generally processes water right applications based on the date they were filed. However, similar to petitions, given the large number of pending water right applications, priority is given to projects that meet defined "importance" and "demonstrated progress" criteria. These criteria are provided below and are on the SWRCB's website[7]. We recommend that the GSA consider these criteria and develop projects that meet them in order to expedite the permitting process. Subsequently, we recommend that any communication or documentation filed with the SWRCB emphasizes how the proposed project meets the criteria. Despite the priority criteria, we estimate the permitting process to require a minimum of five years from the time an application is received to the time that a decision is rendered, assuming CEQA is completed prior to or soon after application filing, there is significant coordination with Division staff on application preparation, and no protests are received.

Importance Criteria:

- *The proposed application or petition is for a project of regional or statewide significance.*
- *The proposed application or petition is for a project that assists a community in obtaining safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes, or for a project that will substantially address a regional chronic shortage of water for beneficial uses other than use for human consumption, cooking, and sanitation.*
- *The proposed application or petition is for a project that addresses critical aquifer overdraft or subsidence, or other undesirable results identified by the Sustainable Groundwater Management Act.*

[7] The criteria can be found on the SWRCB's website at this link: https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/priority_criteria.html

- *The applicant or petitioner has provided documentation showing the application or petition will enhance conditions for fish and wildlife. This may include reductions in riparian use and/or diversions under another valid basis of right as a result of application/petition approval, if relevant.*
- *The proposed application or petition is for a completely unbuilt project or change and the applicant or petitioner is following procedures and complying with laws and regulations.*
- *The project has pending state, federal, or philanthropic non-profit funding for which an agreement cannot be executed without first completing the water right application or petition.*
- *A project that is urgent and temporary in nature, such as a temporary transfer petition, a temporary urgency change or a temporary permit.*
- *Any other project that is adjacent or related to another high priority project in a watershed where the water right processing can be grouped, including where groups of applicants or petitioners, on their own initiative, coordinate development of technical information.*

Demonstrated Progress Criteria:

- *The applicant or petitioner has consulted with the California Department of Fish and Wildlife, National Marine Fisheries Service, the Regional Water Quality Control Boards, and other agencies with permitting or jurisdictional authority, and the Division has documentation of the agencies' approval or support for the proposed application or petition.*
- *The proposed application or petition is consistent with the principles of the Policy for Maintaining Instream Flows in Northern California Coastal Streams* [1].
- *Review under the California Environmental Quality Act is substantially completed and the applicant or petitioner has agreed to proposed mitigation measures or project modifications.*
- *The applicant or petitioner has complied with deadlines established by the Division.*
- *Protests have been resolved or negotiations are substantially underway.*

Based on recent experience, it can be extremely complicated, time consuming, and expensive to apply for and obtain a new appropriative water right permit within California, particularly in watersheds with fishery or environmental concerns. However, depending upon the perspective and vision of various state and public agencies, and by meeting the criteria for prioritization, this process could be expedited. Support and assistance for expedition would be needed from various agencies at both the high management level and at the staff level. Our best estimate of the cost to prepare an application, prepare a WAA, and assist with the permitting process is $500,000, not including the SWRCB filing fee, legal, or CEQA costs.

The SWRCB filing fee for a new water right, as defined in the SWRCB Water Rights Fiscal Year 2024-2025 Fee Schedule Summary, is:

*i) Less than 10 acre-feet per year, $5,000*
*ii) Equal to or more than 10 acre-fee but less than 200 acre-feet per year, $40,000*
*iii) Equal to or more than 200 acre-fee but less than 1,000 acre-feet per year, $43,000*
*iv) Equal to or more than 1,000 acre-fee but less than 5,000 acre-feet per year, $55,000*
*v) Equal to or more than 5,000 acre-fee but less than 10,000 acre-feet per year, $117,000*
*vi) Equal to or more than 10,000 acre-fee but less than 15,000 acre-feet per year, $192,000*
*vii) Equal to or more than 15,000 acre-fee but less than 20,000 acre-feet per year, $266,000*
*viii) Equal to or more than 20,000 acre-fee but less than 25,000 acre-feet per year, $341,000*
*ix) Equal to or more than 25,000 acre-fee but less than 30,000 acre-feet per year, $415,000*
*x) Equal to or more than 30,000 acre-fee but less than 35,000 acre-feet per year, $489,000*
*xi) More than 35,000 acre-fee but less than 40,000 acre-feet per year, $564,000*
*xii) More than 40,000 acre-fee but less than 200,000 acre-feet per year, $649,000*
*xiii) More than 200,000 acre-fee, $811,000*

In addition to the standard permit fee payable to the SWRCB, there is an $850 fee payable to CDFW.

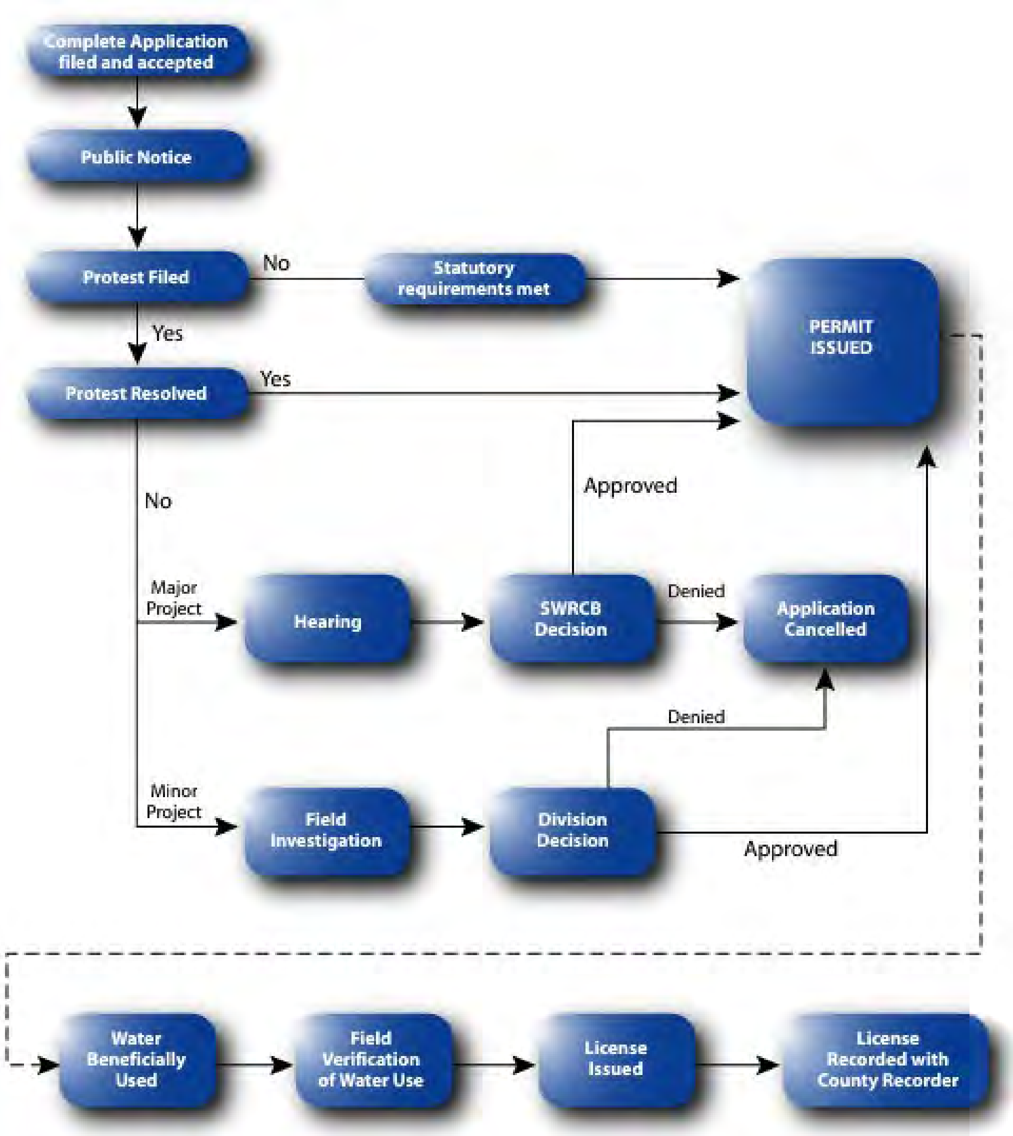


*Figure 2: SWRCB Figure of Process to Obtain a Water Right (source: https://www.waterboards.ca.gov/waterrights/board_info/docs/wr_process.pdf)*

### Streamlined Standard Permit – Groundwater Recharge

The SWRCB has established a "streamlined pathway" for groundwater recharge applications, which accelerates the timeline for permitting and provides a 25% discount off the cost of a standard permit. The "streamlined pathway" requires the applicant to follow certain criteria which are designed to protect ecosystem functions, instream needs, and senior water right holders by limiting diversions to times of high flows, wet water year types, and winter storm events. The criteria for the "streamlined pathway" are:

*(a) The application must be for diversion of water only between December 1 and March 31 except no restriction on season for diversion for flood flows per part (e);*

*(b) The application must be primarily for diversion to underground storage in a groundwater basin identified in Bulletin 118;*

*(c) The applicant must be a Groundwater Sustainability Agency or local agency as defined in Water Code section 10721;*

*(d) The applicant has completed all environmental documents required under the California Environmental Quality Act (CEQA);*

*(e) The application proposes diversions only when either the streamflow at the point(s) of diversion is above the 90th percentile calculated from gage data during the period-of-record and the diversion rate is limited to 20 percent of the total streamflow (90/20 Method), or when flows in the source waterbody at or near the point of diversion exceed thresholds that trigger flood control actions necessary to mitigate threats to human health and safety according to established written flood management protocols adopted by a flood control agency (Threat of Flood Conditions Method)*

The SWRCB's primary option for the "streamlined pathway" WAA methodology is the 90/20 Method which utilizes a gage record, of at least 30-years, to establish 90th percentile daily flow thresholds. When flows exceed the daily threshold, diversions will be limited to the lesser of the actual total flow in excess of the daily 90$^{th}$ percentile measured at the gage or 20% of the total daily flow measured at the gage. Recent experience and analysis indicates significantly limited opportunities for diversion when using the 90/20 Method. There are ongoing discussions related to options for protective diversion criteria other than the SWRCB's 90/20 Method that could increase the opportunity for groundwater recharge.

The second "streamlined pathway" WAA methodology is the Threat of Flood Conditions Method which relies on the presence of an imminent threat of flood conditions to demonstrate water availability. This may be demonstrated by proposing to divert when flows exceed thresholds that trigger flood control actions necessary to reduce threats to human health and safety. These thresholds and actions need to be established in written flood management protocols adopted by a flood control agency. However, this method has seen minimal adoption in permits as the conditions that correspond to such criteria generally only occur during exceptional hydrologic conditions and/or during flood emergencies.

### Temporary Permits (Including Streamlined) – Groundwater Recharge

A temporary water right permit is less expensive than a standard water right permit, and generally involves less risk and fewer processes. However, temporary permits are not water rights. Temporary permits are a conditional approval to divert and use available water that has not been claimed by a water right holder. Temporary permits are junior to all water rights and include terms and conditions that prohibit diversions in times of water shortage when the demands of other right holders may not be met. Using a temporary water right permit for groundwater recharge projects gives the diverter the ability to refine its project and water use before putting forth the effort to file a standard water right application. This has been an appropriate option for recharge projects that are utilizing existing facilities (typically recharge through percolation).

There are temporary permits available for 180-days or 5-years. To receive multiple subsequent 180-day temporary permits, the applicant needs to show effort is being made to obtain a standard permit. The Division has recently noted that 5-year temporary permits can only be issued once, then a standard permit would need to be obtained for continuation of the project. The SWRCB's website identifies the estimated processing time for 180-day temporary permits and 5-year temporary permits to be 3-4 months and 9-12 months[8], respectively. For both 180-day and 5-year temporary permits, if the application is submitted at least 120 days prior to the requested season of diversion, the application fee is 15% of the standard permit fee. If the application is submitted less than 120 days prior to the requested season of diversion, the application fee is 25% of the standard permit fee. For 180-day temporary permits, the CDFW fee is an additional $850. For 5-year temporary permits, the $850 CDFW fee also applies, but there is an additional fee as follows:

*(i) For a petition to divert less than 10,000 acre-feet of water per year, $3,000 plus $0.10 per acre-foot of water applied for; or*

*(ii) For a petition to divert 10,000 acre-feet of water per year or more, $5,000 plus $0.10 per acre-foot of water applied for.*

The "streamlined pathway" described in the prior section also applies for temporary permits for groundwater recharge. For temporary permits using the "streamlined pathway", the timeline for permitting is accelerated and a 25% discount is given off the cost of the temporary permit.

The Governor's Executive Order B-39-17 and N-7-22 temporarily suspends CEQA requirements for groundwater recharge projects targeting high flows in counties with an Emergency Drought Proclamation. Monterey County is not included in the current Emergency Drought Proclamation. The CEQA suspension applies for 180-day and 5-year temporary permits, but an applicant should not rely on the CEQA suspension for standard permits because although it may be available at the time of application submittal, it may not be available at the time of permit issuance (years later).

## Flood Exemptions

On July 10, 2023, Senate Bill 122 added section 1242.1 to the California Water Code (Water Code § 1242.1) with the dual purpose of managing floods and providing opportunity for groundwater recharge. Water Code § 1242.1 allows for diversion of flood water without a water right during extreme flood events for the purpose of reducing flood impacts and conducting groundwater recharge. Water Code § 1242.1 includes reporting requirements and other protective conditions that are intended to prevent impacts to sensitive infrastructure, ecosystems, and existing water rights holders. The general requirements for diverting water under Water Code § 1242.1 are:

[8] Source: https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/groundwater_recharge/pending_applications.html

- Diversions can only occur if a local or regional agency has issued a public notice that flows downstream of the point of diversion are at imminent risk of flooding and inundation of lands, roads, or structures.
- Diversions must comply with Water Code § 1242.1's specified protective conditions, including noticing and reporting requirements.
- Section 1242.1 expires on January 1, 2029.

On January 31, 2025, Governor Gavin Newsom issued Executive Order N-16-25 to facilitate the use of flood waters to recharge California's aquifers by suspending certain requirements of Water Code § 1242.1. The suspension only applies to counties with an Emergency Drought Proclamation (does not include Monterey County). The Executive Order suspends the need for agencies to determine the imminent risk of flooding based off of local planning documents and instead allows the agencies to determine the presence of flood conditions by other means. This includes the use of readily available information and expertise to determine imminent risk. Agencies continue to be required to issue a public notification that flows are at imminent risk of flooding and inundation of lands, roads, or structures.

Water Code § 1242.1 does not create a water right or any right to ownership or control of the water diverted to underground storage. The diverted surface water goes toward the net benefit of the groundwater basin. If one exists, the GSA may choose to establish a crediting program or individual groundwater pumpers can use the water consistent with overlying and appropriative groundwater rights. Parties wishing to assert a right to ownership or control of the diverted surface water need a standard or temporary water right.

## State Filed Applications

State Filed Applications are applications that were filed by a state agency for the development of water resources based on preliminary predictions of potential future project locations. A major benefit of acquiring a State Filed Application is acquiring the priority date of that filing. Parties may petition the SWRCB for assignment of all or part of a State Filed Application. To petition for assignment of an application, the proposed use of water must be consistent with the State Filed Application (rate of diversion, season of use, place of use, etc.). In addition, a proposed use under a State Filed Application must not be in conflict with a general or coordinated plan or water quality objectives established pursuant to law. In the Salinas Watershed, there are three State Filed Applications, all of which are for surface storage and have not been assigned. These State Filed Applications are summarized below.

**Summary of State Filed Applications in the Salinas River Watershed**

| Water Right | Source | County | Storage Quantity | Year of Priority |
|---|---|---|---|---|
| A025863SF | Arroyo Seco | Monterey | 250,000 AF | 1978 |
| A024388SF | Jack Creek | San Luis Obispo | 25,000 AF | 1973 |
| A024389SF | Santa Rita Creek | San Luis Obispo | 15,000 AF | 1973 |

During the late 1970's and early 1980's, MCWRA was considering the construction of a dam along the Arroyo Seco through a partial assignment (125,000 acre-feet [AF]) of A025863SF. MCWRA called this project concept the Arroyo Seco Dam Project and was planning to include the Castroville Canal Intake and East Side Canal Intake as integral parts of the project to provide additional water. However, MCWRA has not pursued the Arroyo Seco Dam Project due to significant local opposition.

MCWRA and the Salinas Valley Basin GSA are considering projects that could increase surface water supply during the irrigation season, which would decrease groundwater pumping. Therefore, these State Filed Applications could potentially be used to construct and operate reservoirs to capture water during the winter for use during the irrigation season. Additional research of these State Filed Applications would be needed.

## Shallow Well Field

California Water Code indicates that underflow and subterranean streams are to be regulated by California's surface water rights system (through the SWRCB). Under California law, landowners can assert a right to extract groundwater for a beneficial use on land overlying the groundwater basin from which the water was extracted without a permit from the SWRCB or a court. Since surface water and groundwater are often physically interconnected, it can be difficult to determine what category of water is being pumped by a shallow well field. Any projects considering a shallow well field need to determine which category of water would be pumped by the shallow well field. If the shallow well field was to divert underflow or water from a subterranean stream, a water right with the SWRCB would be needed. This could include use of Permit 11043 if the shallow well field is located at an authorized point of diversion, or could include acquisition of a new water right through the process discussed in the new water right section of this report.

## Summary of Cost, Time, and Risks

This report evaluates multiple options relative to the use of water from the Salinas River and/or its tributaries by means of diversion under existing water rights held by MCWRA, or other potential approaches. This report focuses on the use of Permit 11043, for which a Petition for Extension of Time and Petition for Change are pending. For the SWRCB to approve a Petition for Change, it must be found that the action won't injure other legal users of water, doesn't create a new water right, and is in the public interest. We anticipate the petition process to take a long time and involve many stakeholders. In the following table, we have summarized water rights and water supply options to potentially support projects being considered by the Salinas Valley Basin GSA and MCWRA. This table also includes approximate cost and time estimates for each water right option to help the Salinas Valley Basin GSA determine feasibility, although there is significant uncertainty relative to these estimates.

## Summary of Options for Water Rights / Supplies for Potential Projects

| Potential Approach | Estimated Time to Obtain Water Right (authorization to divert) | Estimated Cost (SWRCB Filing Fees, Engineering Support to Complete Filings, Environmental Support to Complete CEQA/EIR) | Key Requirements |
|---|---|---|---|
| **Permit 11043 (A013225)** | | | |
| Using Permit 11043 as currently defined in the amended permit | 2-5 Years | SWRCB - N/A (assumes new petitions are not needed)<br>Engineering ~ $75,000<br>Environmental ~ $1M+ | Would need approval of the existing Petition for Extension of Time and Petition for Change with required updates to timeframes; Would need to conduct CEQA (only NOP was completed); Could potentially require a hearing |
| Using Permit 11043 with modifications (e.g. to add underground storage) | 4-6 Years | SWRCB ~ $21,000 (assumes new petitions are needed)<br>Engineering ~ $200,000<br>Environmental ~ $1M+ | Would need an approved Petition for Extension of Time and Petition for Change with required updates to timeframes plus additional changes; Would need to conduct CEQA; Could potentially require a hearing |
| **A032263C, A032263D, and A032263E** | | | |
| A032263C | 3-5 Years | SWRCB ~ $2,500<br>Engineering ~ $75,000<br>Environmental ~ $450,000 - $550,000 | Has been publicly noticed; Would need to respond to outstanding protests; Would need a Petition for Change; Would need to conduct CEQA; Could potentially require a hearing |
| A032263D | 2-4 Years | SWRCB - N/A<br>Engineering ~ $100,000<br>Environmental ~ $550,000 - $650,000 | Has not been publicly noticed; Could need updated Water Availability Analysis; Would need to conduct CEQA; Could potentially require a hearing |
| A032263E | 2-4 Years | SWRCB - N/A<br>Engineering ~ $100,000<br>Environmental ~ $550,000 - $650,000 | Has not been publicly noticed; Could need updated Water Availability Analysis; Would need to conduct CEQA; Could potentially require a hearing |
| **Alternatives** | | | |
| Standard Permit | 5-10 Years | SWRCB ~ $650,000<br>Engineering ~ $500,000<br>Environmental - Estimate not available | Submit application and obtain approval from SWRCB; Would need to conduct CEQA |
| Streamlined Standard Permit | 2-5 Years | SWRCB ~ $500,000<br>Engineering ~ $200,000<br>Environmental - Estimate not available | Submit application and obtain approval from SWRCB; Would need to conduct CEQA |
| Temporary 180-Day Water Right Permit | 3-4 Months | SWRCB ~ $100,000 ($75,000 with streamlined pathway)<br>Engineering ~ $50,000<br>Environmental - Estimate not available | Submit application and obtain approval from SWRCB; Would need to conduct CEQA |
| Temporary 5-Year Water Right Permit | 9-12 Months | SWRCB ~ $100,000 ($75,000 with streamlined pathway)<br>Engineering ~ $75,000<br>Environmental - Estimate not available | Submit application and obtain approval from SWRCB; Would need to conduct CEQA |
| Groundwater Recharge with Flood Exemptions (Water Code § 1242.1) | Immediate - no water right<br>(once facilities are constructed) | SWRCB - N/A<br>Engineering - N/A<br>Environmental - Estimate not available | Diversions must be to reduce downstream flooding; Does not create a water right or any right to ownership or control of the water diverted to underground storage |
| State Filed Application | 4-10 Years | SWRCB ~ $290,000 - $840,000<br>Engineering ~ $500,000<br>Environmental - Estimate not available | Conform with State Filed Application and related plans; Submittal of petition for assignment and permit issuance by SWRCB; Would need to conduct CEQA |
| Shallow Well Field (percolating groundwater) | Immediate - no water right<br>(once facilities are constructed) | SWRCB - N/A<br>Engineering - N/A<br>Environmental - Estimate not available | It would need to be determined that water pumped is percolating groundwater and not from underflow or a subterranean stream; Would need to conduct CEQA |
| Shallow Well Field (underflow or subterranean stream) | See applicable water right potential approach. | See applicable water right potential approach. | See applicable water right potential approach. |

Notes:

1. Filing fees with SWRCB are estimated based on face value for existing water rights and 135,000 acre-feet for new water rights.
2. Estimated engineering costs includes rough estimates based on experiences with water right processes, including preparation of the appropriate documents for submittal.
3. Estimated environmental costs are rough estimates intended to provide an initial sense of potential costs. Actual costs, including anticipated expenses for supporting technical analyses, may vary significantly depending on the scope of work, level of technical analysis required, and agency coordination.
4. Estimated Implementation Timing is an estimate based on experiences with water right processes, including preparation of the appropriate documents for submittal.
5. Key Requirements are not exhaustive.
6. Legal counsel should be contacted for guidance regarding any/all of the potential options and for specific aspects of a proposed project.

# Appendix C

# Historical Documents Review

# TECHNICAL MEMORANDUM

**DATE:** October 27, 2025 **PROJECT #:** 9100.78

**TO:** Piret Harmon, Emily Gardner, Sarah Hardgrave, SVBGSA

**CC:** Shaunna Murray, Amy Woodrow, Peter Kwiek, MCWRA

**FROM:** Victoria Hermosilla, P.G., Abby Ostovar, Ph.D., and Tim Leo, P.G., C.Hg., M&A
Greg Hulburd, P.E., and Travis Vazquez, P.E., Wallace Group

**PROJECT:** Castroville and Eastside Canals and Alternatives Study

**SUBJECT:** Task 2 – Historical Documents Review and Summary

## INTRODUCTION

This technical memorandum summarizes the results of a historical documents review conducted by Montgomery & Associates (M&A) and Wallace Group (WG) for the Castroville and Eastside Canals and Alternatives (C&E) Canals Study. The historical documents review is Task 2 of Phase 1 of the C&E Canals Study.

The Monterey County Water Resources Agency (MCWRA) holds water right Permit 11043, which provides a conditional right to divert Salinas River water for irrigation and municipal uses. Using the Permit to divert Salinas River water for beneficial use has been considered many times since it was issued in 1957, including in the Groundwater Sustainability Plans (GSPs) developed by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and partner agencies.

The C&E Canals Study is being conducted to better understand options and constraints for diverting Salinas River water under the Permit to achieve at least 1 of the following 4 goals:

1. Mitigate seawater intrusion
2. Raise groundwater levels in the northern Eastside and southern Langley Subbasins
3. Raise groundwater levels in the southern 180/400 and Eastside Subbasins
4. Raise groundwater levels in the Deep Aquifers

In the next phase of the study, project concepts will be developed for further analysis relative to specific sustainability goals.

Over the nearly 80-year history of the Permit, numerous projects have been proposed to divert and use surface water for beneficial uses. Given this extensive body of historical work, it is important to understand previously proposed projects to help inform development of future efforts to achieve groundwater sustainability goals. However, current conditions—including infrastructure, environmental regulations, permitting requirements, and costs—will influence the applicability of these historical project concepts.

The goals of the historical documents review were to:

- Compile a list of conceptual water resources projects that have been previously proposed to address undesirable conditions caused by groundwater overdraft in the Salinas Valley.
- Summarize conceptual Salinas River diversion projects that could be considered using the existing or modified Permit, or an alternative water right approach. Some of these projects will be further evaluated in later phases of the C&E Canals Study.
- Review previously identified project considerations and constraints to inform evaluation in later phases.

## DOCUMENTS REVIEWED AND METHODS

SVBGSA, MCWRA, M&A, and WG worked together to identify documents relevant to Permit 11043 and, subsequently, to the C&E Canals Study. Table 1 lists 29 documents identified and reviewed by M&A and/or WG for this review. All documents are publicly available. The majority of the documents reviewed were prepared for MCWRA, with some for the State, and a few more recently for SVBGSA. Since the 1940s, MCWRA has been the main agency monitoring surface water and groundwater conditions. Fundamental to the MCWRA's mission to sustainably manage water resources while minimizing impacts from flooding, MCWRA owns and operates 2 dams on principal tributaries to the Salinas River—Nacimiento and San Antonio—along with associated reservoirs. These documents range from field studies to planning and technical studies related to the Permit. They span a wide variety of perspectives and approaches that have been considered over the last almost 80 years.

The historical document review was completed using the following 3 main steps:

1. **Review of Proposed Projects and Context:** The team examined the listed historical documents to identify previously proposed projects, with a focus on Salinas River Diversion projects that may use Permit 11043. This step also involved understanding the water resource challenges proposed projects sought to address and the strategies proposed to overcome them.

   This review first categorizes projects in terms of whether they are river diversion projects, which are projects that move water off a river or stream for use elsewhere. In contrast, non-diversion projects address water resource management through other means, such as irrigation efficiency improvements or water importation. Of those, it identifies Salinas River diversion projects. These may involve modifications to the Permit, such as changes to the diversion location or addition of storage, but do not include projects on other streams aside from the Salinas River.

2. **Identification of Key Components:** Each proposed project was broken down into its main project components. This analysis revealed common elements across projects, highlighted differences in approach, and laid the groundwork for understanding potential constraints and implementation considerations.

3. **Summary of Constraints and Considerations:** While most proposed projects were documented at a conceptual level, some included additional details such as implementation challenges, constraints, and—where available—reasons certain projects were not pursued. This information was analyzed and summarized to inform future phases of the C&E Canals Study, which will further develop and refine project concepts for a Salinas River diversion.

Table 1. Documents Reviewed for C&ES Project

| No. | Title | Author | Recipient | Year | Reviewed By |
|---|---|---|---|---|---|
| 1 | Bulletin 52-B, Salinas Basin Investigation Summary Report | State of California - Department of Public Works Division of Water Resources | State of California | 1946 | M&A, WG |
| 2 | Bulletin 19, Salinas River Basin Investigation | State of California | State of California | 1956 | M&A, WG |
| 3 | Investigation of an Eastside Canal Project, Salinas Valley | MCF&WCD (MCWRA) | MCF&WCD (MCWRA) | 1968 | WG |
| 4 | Salinas River Well Field Evaluation | Koretsky | MCWRA | 1976 | M&A |
| 5 | Water Capital Facilities Plan | Boyle Engineers | MCWRA | 1991 | M&A, WG |
| 6 | Hydrogeologic Investigation of Arroyo Seco Cone | SGD, Inc. | MCWRA | 1994 | M&A |
| 7 | Hydrogeologic Investigation of Salinas River Enhanced Infiltration Well Field | SGD, Inc. | MCWRA | 1994 | M&A |
| 8 | Hydrogeology and Water Supply of Salinas Valley: A White Paper | Salinas Valley Ground Water Basin Hydrology Conference | MCWRA | 1995 | M&A |
| 9 | Salinas Valley Water Project Draft Master Environmental Impact Report SCH #97-121020 | EDAW, Inc. | MCWRA | 1998 | M&A, WG |
| 10 | Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 | EDAW, Inc. | MCWRA and USACE | 2001 | M&A, WG |
| 11 | Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 – Volume I and Volume II | EDAW, Inc. | MCWRA and USACE | 2002 | M&A, WG |
| 12 | Salinas Valley Water Project Engineers Report | RMC | MCWRA | 2003 | M&A, WG |
| 13 | Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River | MCWRA | MCWRA | 2005 | M&A |
| 14 | National Marine Fisheries Service Biological Opinion | National Marine Fisheries Service, Southwest Region | MCWRA | 2007 | M&A |
| 15 | Salinas Valley Water Project EIR Addendum | ENTRIX & RMC Water and Environment | MCWRA | 2007 | M&A, WG |
| 16 | Order WR 2008-0037-DWR for Nacimiento and San Antonio Rivers | SWRCB | MCWRA | 2008 | M&A |
| 17 | Protective Elevations to Control Sea Water Intrusion in the Salinas Valley | GeoScience | MCWRA | 2013 | M&A |
| 18 | Order WR 2013-0030-EXEC Approving Settlement Agreement and Partial Revocation | SWRCB | MCWRA | 2013 | M&A |

| No. | Title | Author | Recipient | Year | Reviewed By |
|---|---|---|---|---|---|
| 19 | Application 13225, Permit 11043 Right to Divert and Use Water | SWRCB | MCWRA | 2013 | M&A |
| 20 | Regional Advisory Committee Meetings Summaries for 2013 (focused on use of 11043 Permit) | MCWRA | MCWRA | 2013 | M&A |
| 21 | Regional Advisory Committee Meetings Summaries for 2014 (focused on use of 11043 Permit) | MCWRA | MCWRA | 2014 | M&A |
| 22 | Notice of Preparation, Salinas Valley Water Project, Phase II | MCWRA | State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties and Organizations | 2014 | M&A, WG |
| 23 | Salinas Valley Water Project, Phase II – Timeline of Relevant Events | MCWRA | State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties and Organizations | 2014 | M&A |
| 24 | Recommendations to Address the Expansion of Seawater Intrusion | MCWRA | MCWRA | 2017 | M&A |
| 25 | Jerrett Reservoir Informational Report | MCWRA | MCWRA | 2019 | M&A |
| 26 | Recommendations to Address the Expansion of Seawater Intrusion: 2020 Update | MCWRA | MCWRA | 2020 | M&A |
| 27 | 180/400 Subbasin and Eastside Aquifer Subbasin Groundwater Sustainability Plans | M&A | SVBGSA | 2020 & 2022 | M&A |
| 28 | Preliminary Feasibility Study: Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion | M&A and SVBGSA | SVBGSA | 2025 | M&A, WG |
| 29 | Salinas Basin Water Alliance Pipeline Proposal Alternatives | Salinas Basin Water Alliance | SVBGSA | 2025 | M&A, WG |

## REVIEW OF PREVIOUSLY PROPOSED CONCEPTUAL PROJECTS

Over the past 80 years, more than 120 conceptual projects or policy measures have been proposed to address undesirable groundwater conditions in the Salinas Valley. Terminology and language have changed over time, and the summary of project descriptions below tries to capture the essence of the proposal in standardized, contemporary terms.

The general understanding of the Valley's water challenges has remained largely consistent since the 1940s, though more recent analyses have refined and deepened that understanding. Most documents focused on 2 interrelated challenges: seawater intrusion along the coast and chronically depressed groundwater levels in what is now designated as the Eastside Subbasin. Documents linked these 2 issues through the landward hydraulic gradient, which has been caused by groundwater overdraft. Physical constraints—such as the presence of an aquitard that limits surface water recharge and clay-rich alluvial fans in the northern Valley—have long been acknowledged as challenges to addressing these issues. Since the application for Permit 11043 was originally filed in 1949 to address the groundwater and seawater intrusion challenges, these challenges have remained at the forefront of water management efforts and the key focus of proposed conceptual projects.

Table 2 catalogues all projects that have been proposed to address these groundwater challenges in the Salinas Valley, as documented since the publication of Bulletin 52 in 1946. Projects that do not involve diversion from the Salinas River are included for completeness but will not be further evaluated in the C&E Canals Study because they fall outside the scope of Permit 11043 and the river diversion alternatives considered in this study. However, some of these projects may warrant further consideration in separate, future studies. Some documents listed in Table 2 do not describe specific projects but are included to provide context, particularly regarding the permit revisions and discussions in relation to proposed projects.

Table 2 includes 2 columns that show the classification of proposed projects:

- **Diversion** – projects that move surface water away from a river, stream, or other source, including recycled, industrial, and stormwater; well field projects that could be drawing surface water are included, and it is assumed that the project would be designed to draw surface water from a water rights perspective.
- **Salinas River Diversion** – projects that divert surface water from the Salinas River; these could potentially use Permit 11043. Projects that redivert water previously stored in Nacimiento or San Antonio Reservoirs are not included.

In Table 2, diversion projects that are not Salinas River diversion projects are highlighted in blue, and Salinas River diversion projects are highlighted in yellow.

Table 2 illustrates how proposed projects have evolved over time. The earliest documents date back to the 1940s, shortly after seawater intrusion was first identified in the Salinas Valley. In the 1950s and 1960s, much of the focus centered on the development of the Nacimiento and San Antonio Reservoirs. A surge of documents in the 1990s reflects renewed interest in launching another major project likely driven by the worsening seawater intrusion, the state's notices of potential Salinas Basin adjudication, the State Water Resources Control Board's notice of proposed revocation of Permit 11043, and the introduction of new pollution regulations requiring wastewater treatment.

The 1990s saw the development of the Monterey County Water Recycling Projects and the Castroville Seawater Intrusion Project (CSIP). In 1998, tertiary treated wastewater began to be delivered as an in-lieu water supply through CSIP to much of the seawater-intruded area. Concurrently, attention shifted to the Salinas Valley Water Project (SVWP). The SVWP Draft Environmental Impact Report (EIR) produced in 1998 was refined for the 2002 Master EIR. The 1998 Draft EIR originally described a river diversion near Spreckels, and became the Salinas River Diversion Facility (SRDF) in the 2002 Final EIR after multiple iterations of stakeholder feedback, CEQA analyses, and project development. The SRDF rediverts stored water from Nacimiento and San Antonio Reservoirs to support CSIP and became operational in 2010. Diversion of Salinas River water with Permit 11043 was still viewed as a potential component for SVWP Phase II.

In 2013, there was a Settlement Agreement between MCWRA and the State Water Resources Control Board involving Permit 11043, through which there was a partial reduction of the total allowable volume of water for diversion and a revised timeline for project implementation. In 2013 and 2014, MCWRA led Regional Advisory Committee (RAC) meetings to (1) update and retain Permit 11043, (2) determine feasibility of utilizing water pursuant to this permit within the context of the original permit, and (3) identify the water available pursuant to Permit 11043 and work together to identify feasible projects that put those water resources to beneficial use. Membership included MCWD, Monterey County Farm Bureau, Monterey One Water, Salinas Valley Water Coalition, California Water Service, Castroville Community Services District, City of Salinas, Grower-Shipper, MCWRA Board members, and a few members of the public representing North County and the Eastside area.

RAC meetings focused on project proposals and selection with no conclusions reached. In 2015, an extreme drought and the prior year's passage of the Sustainable Groundwater Management Act (SGMA) introduced new state-level pressure to manage groundwater sustainably, as well as uncertainty about how it would affect local management. Since then, MCWRA has been working closely with the SVBGSA on groundwater sustainability efforts, which include discussions on using Permit 11043.

A key theme across the majority of the documents was a comprehensive approach to solving the challenge. This primarily meant implementing a diversion project along with demand management measures. Most of the documents acknowledge groundwater overdraft in the Basin is the primary cause of both coastal seawater intrusion and chronically depressed groundwater levels in the Eastside Subbasin. To address the challenge and ensure it does not worsen or repeat itself, most studies described the importance of coupling demand management with diversion solutions.

Table 2. Summary of Proposed Projects and Associated Documents by Report

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| 1946 | Bulletin 52-B, Salinas Basin Investigation Summary Report | Determine if appreciable groundwater storage in shallow sediments | N | N |
| | | Reservoir sites - Arroyo Seco, Nacimiento, and San Antonio | N | N |
| | | Increase irrigation efficiency | N | N |
| | | Groundwater adjudication | N | N |
| | | Mix effluent from City of Salinas with 400-Foot Aquifer Water for Irrigation | Y | N |
| | | Recover industrial water outflow | Y | N |
| | | Increase percolation/recharge | N | N |
| | | Salvage some waste from Forebay area | N | N |
| | | Cyclic storage of underground reservoirs | N | N |
| | | Prohibit construction of defective wells that may allow for comingling of waters with contamination | N | N |
| | | Repair existing defective wells | N | N |
| | | Abandon defective wells | N | N |
| | | Create a central government well filing agency | N | N |
| | | Divert surplus (45,000 AFY) spring flows in Salinas River into canal along Gabilan Range and deliver to Eastside and Pressure Areas, allowing ~35% to go into cyclic underground storage | Y | Y |
| 1956 | Bulletin 19, Salinas River Basin Investigation | Reservoir Sites: 17 viable options, 23 non-viable options | N | N |
| | | Develop surface and groundwater storage capacity | N | N |
| | | Convey water through conduit, not Salinas River, to prevent losses | Y | Y |
| | | Conservation of water during wet periods for subsequent use during drought | N | N |
| | | Import 300,000 AFY from outside Basin, from Feather River Project | N | N |
| | | Planned operation of groundwater storage in Forebay Area to service Pressure and Eastside areas in coordination with upstream storage | Y | Y |
| 1968 | Investigation of an Eastside Canal Project, Salinas Valley | Low diversion dam near Soledad into canal for irrigation. Noted percolation ponds and streambeds to replenish aquifers could also be considered. | Y | Y |

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| 1976 | Salinas River Well Field Evaluation | Construct and operate groundwater production wellfields along the Salinas River to provide a supplemental water supply for the Castroville Irrigation Project | Y | Y |
| 1991 | Water Capital Facilities Plan | Urban conservation | N | N |
| | | Agricultural water management - Phase 1 | N | N |
| | | Agricultural water management - Phase 2 | N | N |
| | | SWIP – Castroville Irrigation Water Supply Project | N | N |
| | | SWIP – Regional Water Reclamation Supply Project | N | N |
| | | SWIP – Fort Ord-Marina Potable Water Supply Project | N | N |
| | | Widen San Antonio Spillway | N | N |
| | | Widen Nacimiento Spillway | N | N |
| | | Arroyo Seco Dam – Greenfield Site (Low) | N | N |
| | | Arroyo Seco – Salinas River Conveyance Canal | Y | N |
| | | Salinas Valley M&I Water Delivery Project | N | N |
| | | Nacimiento – San Antonio Interlake Tunnel | N | N |
| 1994 | Hydrogeologic Investigation of Arroyo Seco Cone | Reduce pumping in the sea water intruded areas | N | N |
| | | Basin redistribution project: capture excess surface water flows in south and transfer via pipeline to north, where "excess surface water flow" is unmanaged streamflow that does not naturally percolate and become stored groundwater, rather it flows to the ocean as loss | Y | Y |
| | | Spreading basins on Arroyo Seco Cone to capture Arroyo Seco flows coupled with extraction program for operational targeted groundwater levels | Y | N |
| | | Retention structure on upper Arroyo Seco to control extreme variations in flow, coordinated with basins | Y | N |
| 1994 | Hydrogeologic Investigation of Salinas River Enhanced Infiltration Well Field | Well field along Salinas River between Greenfield and Chualar to induce recharge/infiltration in this reach, and use pumped water for direct or artificial recharge in the north | Y | Y |
| 1995 | Hydrogeology and Water Supply of | Recommend solution proposed in 1946: Divert Salinas River near Soledad and send water in canal to north | Y | Y |

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| | Salinas Valley: A White Paper | Determine relationship between fertilizer application, irrigation practices, plant growth, and groundwater contamination | N | N |
| | | Evaluate seawater intrusion monitoring | N | N |
| | | Continue MCWRA surface water and groundwater monitoring program for quantity and quality | N | N |
| 1998 | Salinas Valley Water Project Draft Master Environmental Impact Report SCH #97-121020 | Salinas Valley Water Project: | | |
| | | Nacimiento Spillway modification | N | N |
| | | Reoperation of Nacimiento and San Antonio Reservoirs | N | N |
| | | Storage and use of recycled water from Monterey County Wastewater Recycling Plant (MCWRP, now Monterey One Water) with storage at Merritt Lake location | Y | N |
| | | Subsurface diversion, storage, and use of previously-stored Salinas River water, for 80 cfs and diversion near Hwy 68 (early version of SRDF) | Y | N |
| | | Treatment and delivery to balance agricultural and urban deliveries | N | N |
| | | Delivery area pumping restrictions | N | N |
| | | Nitrate management | N | N |
| 2001 | Draft Environmental Impact Report/ Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 | Salinas Valley Water Project Revised: | | |
| | | Nacimiento Spillway modification | N | N |
| | | Reoperation of Nacimiento and San Antonio Reservoirs | N | N |
| | | Subsurface diversion, storage and use of previously-stored Salinas River water | Y | N |
| | | Storage and use of recycled water from the MCWRP | Y | N |
| | | Treatment and delivery (to Ag and possibly urban uses) | N | N |
| | | Delivery area pumping restrictions | N | N |
| 2002 | Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 – Volume I and Volume II | Salinas Valley Water Project: Final Project Revision | | |
| | | Nacimiento Spillway modification | N | N |
| | | Reoperation of Nacimiento and San Antonio Reservoirs | N | N |
| | | Salinas River recharge, conveyance of additional flows, and surface rediversion of stored water (SRDF) | Y | N |
| | | Distribution and delivery of surface water in combination with recycled water | Y | N |
| | | Pumping management in delivery area | N | N |
| | | Total demand management (Alternative) | N | N |

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| | | Demand management through State adjudication (Alternative) | N | N |
| 2003 | Salinas Valley Water Project Engineers Report | Salinas Valley Water Project: Implemented | | |
| | | Operation and maintenance of the existing reservoirs for ~29,000 AFY | N | N |
| | | Construction of the Nacimiento Dam Spillway Modifications | N | N |
| | | Construction of the Salinas River Diversion Facility (SRDF) for ~12,800 AFY | Y | N |
| 2005 | Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River | Flow prescription for Steelhead trout for SVWP | N/A | N/A |
| 2007 | National Marine Fisheries Service Biological Opinion | National Marine Fisheries Service Biological Opinion for impacts on the Salinas River Diversion Facility | N/A | N/A |
| 2007 | Salinas Valley Water Project EIR Addendum | EIR for SVWP (2003 version) | N | N |
| | | Includes modified flows regimes from flow prescription | N | N |
| | | Revises SRDF capacity from 85 cfs to 45 cfs | Y | N |
| 2008 | Order WR 2008-0037-DWR for Nacimiento and San Antonio Rivers | Permit changes Order from SWRCB | N | N |
| 2013 | Protective Elevations to Control Sea Water Intrusion in the Salinas Valley | Use Permit 11043 to help increase groundwater levels in pressure and Eastside subareas to control seawater intrusion | Y | Y |
| | | Groundwater recharge, direct and in-lieu, to Forebay and Eastside areas | N | N |
| | | Report determined groundwater levels needed to control seawater intrusion, and determined Basin needed ~60,000 AFY to achieve that | N | N |
| 2013 | Order WR 2013-0030-EXEC Approving Settlement Agreement and Partial Revocation | Settlement of Permit 11043 with SWRCB's revocation order | PERMIT | PERMIT |
| | | 400 cfs instantaneous | | |
| | | 135,000 AF annual, as partial revocation of right | | |
| | | MCWRA agrees to bypass flows | | |
| | | MCWRA agrees to identified milestones toward implementation of SVWP Phase 2 | | |

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| | | Purpose of water appropriated under Permit 11043 will continue to be for municipal and agricultural uses | | |
| | | Points of diversion and places of use identified in Permit 11043 will remain unchanged | | |
| | | Revocation order rescinded | | |
| 2013 | Application 13225, Permit 11043 Right to Divert and Use Water | Defining Permit 11043 post-Settlement, including terms and conditions | PERMIT | PERMIT |
| 2013 | Regional Advisory Committee Meetings Summaries for 2013 | Summary of Regional Advisory Committee (RAC) meetings to provide input for best options to utilize water under Permit 11043, and move projects forward, and provide MCWRA staff guidance to start NOP | CONVERSATIONS ABOUT PERMIT | CONVERSATIONS ABOUT PERMIT |
| 2014 | Regional Advisory Committee Meetings Summaries for 2014 | Continuation of 2013 RAC meetings | | |
| | | Primary project proposal to use Permit 11043 | | |
| | | Urban & Ag Use: Deliver River water during winter months, similar to SVWP | Y | Y |
| | | ASR of diverted Salinas River water | Y | Y |
| | | Delivery to Eastside groundwater depression of diverted Salinas River water | Y | Y |
| | | Surface water treatment plant of diverted Salinas River water | Y | Y |
| | | Interlake pipeline | N | N |
| | | Interlake tunnel | N | N |
| | | Eastside pipeline, multiple configurations, for diverted Salinas River water | Y | Y |
| | | Armstrong Ranch below ground storage of diverted Salinas River water | Y | Y |
| | | Eastside hybrid: shorter canal using 2nd diversion point, part of multiple configurations for diverted Salinas River water | Y | Y |
| | | Jerrett Reservoir site | N | N |
| | | San Lorenzo retention dam and diversion of Salinas River water | Y | Y |
| | | Armstrong Ranch above ground storage of diverted Salinas River water | Y | Y |
| | | Topo Ranch reservoir storage for diverted Salinas River water | Y | Y |
| | | Eastside canal for diverted Salinas River water | Y | Y |
| | | Pump water from Salinas River into San Antonio Reservoir | Y | Y |
| 2014 | Notice of Preparation, Salinas Valley Water Project, Phase II | Offset groundwater pumping in northern and coastal portions of the Basin using Surface Water supply with Permit 11043 by implementing Phase 2 of SVWP | Y | Y |

| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| 2014 | Salinas Valley Water Project, Phase II – Timeline of Relevant Events | Timeline of SVWP Phase 2 | N/A | N/A |
| 2017 | Recommendations to Address the Expansion of Seawater Intrusion | Six recommendations: | | |
| | | 1. Immediate moratorium on groundwater extraction from new wells in Pressure 400-Foot Aquifer within Area of Impact | N | N |
| | | 2. Enhance and expand CSIP | N | N |
| | | 3. Terminate all pumping from existing wells in 180- and 400-Foot wells in Area of Impact (exceptions: municipal, CSIP, or MCWRA monitor wells) | N | N |
| | | 4. Destroy wells in MCWRA Zone 2B | N | N |
| | | 5. Moratorium on GW extraction from new wells in Deep Aquifers in 180/400- and Monterey Subbasins | N | N |
| | | 6. Deep Aquifers Investigation | N | N |
| 2019 | Jerrett Reservoir Informational Report | Alternative proposal to Interlake Tunnel project | | |
| | | Jerrett Reservoir to encompass 2 dams within Nacimiento watershed, upstream of Nacimiento Reservoir, potentially to impound ~130,000 AF | N | N |
| 2020 | Recommendations to Address the Expansion of Seawater Intrusion: 2020 Update | Nine Recommendations | | |
| | | 1. Immediate prohibition of groundwater extraction from new wells in 180- and 400-Foot Aquifers in Area of Impact | N | N |
| | | 2. Install new groundwater level and water quality monitoring locations in coastal region | N | N |
| | | 3. Implement new methodologies for groundwater level and water quality characterization | N | N |
| | | 4. Enhance and expand CSIP service area | N | N |
| | | 5. Terminate all pumping within Area of Impact after expansion of CSIP service area | N | N |
| | | 6. Destroy wells in Zone 2B | N | N |
| | | 7. Prohibition of groundwater extractions from new wells within entirety of Deep Aquifers until Deep Aquifers Study completed | N | N |
| | | 8. Conduct Deep Aquifers Study | N | N |
| | | 9. Participate in coordinated efforts with other Agencies for beneficial management of aquifers in coastal Salinas Valley | N | N |

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| Year | Document Title | Proposed Project(s) | Diversion (Y/N?) | Salinas River Diversion Project? (Y/N?) |
|---|---|---|---|---|
| 2020 & 2022 | 180/400 Subbasin and Eastside Aquifer Subbasin Groundwater Sustainability Plans | Pump 3,000 AF/yr. via 3 new wells from near Somavia Road to Eastside Subbasin for agricultural irrigation or groundwater recharge. | Y | Y |
| 2025 | Preliminary Feasibility Study: Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion | Seasonal releases from the reservoirs with Aquifer Storage and Recovery (ASR) wells; to include a treatment plant, ASR wells, and CSIP distribution of recovered water | Y | Y |
| 2025 | Salinas Basin Water Alliance Pipeline Proposal Alternatives | Three diversion and pipeline proposals: | | |
| | | 1. Divert at Bradley, convey in pipeline to Chualar/Gonzales, operate in conjunction with rubber dam at Somavia Road | Y | Y |
| | | 2. Divert at King City, convey in pipeline to Somavia Road | Y | Y |
| | | 3. Diversion via shallow wellfield in Forebay Subbasin, as originally proposed in Bulletin 52 | Y | Y |
| | | **Total Diversion and Permit 11043 Project Proposals** | **39** | **27** |

NOTE: Non-Salinas River diversion projects highlighted in blue

NOTE: Salinas River diversion projects highlighted in yellow

## IDENTIFIED KEY COMPONENTS

Those projects identified as Salinas River diversion projects were examined in greater depth, since they may potentially be used with Permit 11043. Many of the proposed Salinas River diversion projects effectively have the same structure: divert, convey, and deliver. Sometimes storage is included and sometimes treatment is included, depending on the project description and end user. Among the previously proposed Salinas River diversion projects, there are variations in these core components:

- **Diversion** – all conceptual projects included some form of diversion of excess Salinas River flows during high-flow, low-demand winter months. The permitted locations are the Eastside Canal Intake near Soledad and the Castroville Canal Intake downstream of Chualar.
    - **Location:** Proposed diversion locations fall into 3 primary groups: the Northern group, which includes the Castroville Intake, Spreckels, and Armstrong Ranch diversions; the Central group, which includes the Eastside Intake and anything within the Forebay Subbasin; and the Southern group, which includes San Ardo, Bradley, San Lorenzo Creek, and King City.
    - **Method:** There are a variety of diversion methods that have been proposed, such as Ranney collectors, infiltration galleries, shallow wellfields, retention structures, and rubber dams.
    - **Capacity:** The diversion methods have been proposed with a wide range of capacities, from 30 cfs up to 400 cfs, which is the maximum permitted diversion capacity.
- **Conveyance** – Most of the conceptual projects included conveyance of the diverted surface water to the end use via canal, pipeline, or both depending on ease of implementation. This may connect directly to delivery if no storage or treatment is required.
- **Storage** – The Permit currently allows for direct diversion, which generally means water must be used and cannot be stored for longer than 30 days. Other projects have been proposed with long-term storage components, which would require modification to the Permit and/or a new water right.
    - **Method:** Several historical documents proposed regulating reservoirs for diverted water to better join supply and demand, even with the direct-use timeframe limitations. If water is stored for less than 30 days, it would not be considered stored by the water rights. These regulating reservoirs have often been proposed

as surface storage in the form of small lakes or tank storage. Longer-term storage components include surface reservoirs, spreading basins, or an ASR style project.

- **Capacity:** The capacity of proposed storage has ranged from 90 AF to over 9,000 AF, depending on the method and timing of storage.

- **Treatment** – For several of the proposed direct-use projects, treatment of the water was discussed where the defined end-user was municipal users. These projects would require treatment of the water to drinking water standards. The projects that included ASR components would also require treatment of diverted water to Title 22 standards as injection into aquifers used for drinking water needs to meet drinking water standards. Some of the proposed projects mentioned a lower level of treatment for some agricultural users.
- **Delivery** – All proposed conceptual projects included some form of delivery of diverted surface water to the end users. In some cases, new distribution systems would be needed for delivery. For tie-ins with municipal users, coordination with the providers, direction of flow in main service lines, and water chemistry analyses would need to be analyzed extensively to ensure public safety and infrastructure protection when surface water is introduced into a traditionally groundwater-supplied system.

Each of these components has many important and potentially constraining considerations related to end uses and users, project size, permitting, land acquisition, and engineering feasibility, among others. These considerations will be further evaluated in later phases of the C&E Canals Study. For the purposes of Phase 1, these are described in more detail in the WG's technical memorandum on technical components.

The WG's review of the historical documents focused on the technical components of the proposed Salinas River diversion projects, if information about these components were available in the documents. Table 3 summarizes the results of the historical documents review for conceptual Salinas River diversion projects that included information on the components. Most proposed conceptual Salinas River diversion projects did not include discussion of components and are therefore not included in this table.

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Table 3. Summary of Technical Components for Previously Proposed Salinas River Diversion Projects

| Report | Date | Project Title | Estimated annual yield, AF | Diversion Location (Approx) | Diversion Method | Diversion Capacity, cfs | Conveyance | Storage Method | Storage capacity | Treatment Required | Infrastructure Notes | Additional Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bulletin 52 - DWR | 1946 | Proposed Diversion System | 45,000 | Soledad | Shallow well field | 250 cfs | Concrete canal to East Side and Pressure units | Regulating Reservoir (to balance supply & demand of diverted water close to end use) | Heins Lake - 300 AF | None specified | - 36 diversion wells, 16" casings, up to 200' deep<br>- Conveyed to regulating reservoir, where concrete pipe used for tie into distribution systems. Also utilizes Espinosa Slough to the Salinas-Castroville Hwy crossing | For direct use in overdraft areas in lieu of local groundwater pumping |
| Bulletin 19 - SWRCB | 1956 | San Lucas-East Side Alternate Conduit | 86,000 | San Lucas | Surface river diversion | 250 cfs | Concrete canal 63 mi to East Side and Pressure units | Several Reservoir sites identified, majority in southern basin | Not quantified | None specified | - This is an alternative to exclude the San Lucas Dam, which would be an in-stream Salinas River reservoir<br>- San Lucas location is much farther south than Soledad Bulletin 52 diversion | This report also notes that Forebay well field not desirable due to stakeholder concern over lowered groundwater levels |
| East Side Canal - MCWRA | 1968 | East Side Canal | Not Quantified | Soledad | Surface river diversion and, when river is low, well field | 220-400 cfs | 37 mi long canal, concrete lined for first 19.5 mi, then earth lined through the Chualar-Quail and Alisal fans to help aquifer, and then distribution system for direct use | Utilizes underground storage for 2 of 3 plans | Not quantified | None specified | - Low diversion dam 3 mi SE of Soledad, pumping plant to lift water to head of canal<br>- 50' long concrete lined intake channel off side of river<br>- Direct use via pipes to fields<br>- 3 plans varying on direct delivery, percolation ponds, and natural stream channels to replenish aquifers<br>- Well field used when river is low, pumps into the reservoir behind the diversion dam | - Groundwater levels in Pressure Area would be improved<br>- In lieu surface delivery in the Chualar-Quail and Alisal fan areas could be percolated to replenish the underground water supply |
| Capital Facilities Plan - Boyle Engineering | 1991 | #31 East Side Irrigation Water Supply Project - Alt A | 21,000 | Spence Road | Surface river diversion | 130 cfs intake pumping plant | 15" to 60" pipelines | Regulating Reservoirs (x2) | 90 AF combined | None specified | Intermediate booster stations (x3) | Assumes water for project purposes is released from the Nacimiento and San Antonio reservoirs on a continuous 24 hour/day basis.<br>Assumes operational storage in the Salinas River upstream of diversion dam to buffer daily demand |
| Capital Facilities Plan - Boyle Engineering | 1991 | #31 East Side Irrigation Water Supply Project - Alt B | 34,000 | Spence Road | Surface river diversion | 200 cfs intake pumping plant | 15" to 72" pipelines | x2 Regulating Reservoirs and groundwater recharge | 90 AF combined | None specified | - Intermediate booster stations (x3)<br>- Turnouts for groundwater recharge at Gabilan Creek, Natividad Creek, Alisal Creek, and Quail Creek | None |
| SVWP Draft Master EIR - EDAW, Inc. | 1998 | Salinas River Conveyance & Diversion | 27,400 | Spreckels | Ranney collectors and/or infiltration galleries | 80 cfs | Pipeline | Regulating reservoir up to 3,000 AF | Merritt Lake ~3,000 AF to 9,600 AF, dam-location dependent | End-use dependent, but likely | -Ranney Collector proposal estimated at $36 million (1998)<br>-Infiltration Gallery proposal estimated at $58 million (1998)<br>-Total construction timeline ~2-3yr | -Subsurface collector types selected to accommodate for endangered fish species in River |

| Report | Date | Project Title | Estimated annual yield, AF | Diversion Location (Approx) | Diversion Method | Diversion Capacity, cfs | Conveyance | Storage Method | Storage capacity | Treatment Required | Infrastructure Notes | Additional Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eastside Aquifer Subbasin Groundwater Sustainability Plan | 2022 | Eastside Irrigation Water Supply Project | 3,000 | Somavia Road | Extraction Wells | 3,000 gpm or 6.7 cfs total | 15" to 72 " Pipelines | Steel storage tanks | Not quantified | None specified | New extraction wells, pump stations, and storage tanks. Could potentially use existing distribution systems.<br>Original project described in 1991 Boyle Report. | Extracted water expected to be replaced by winter flows in Salinas River due to gap in Salinas Valley Aquitard at this location. |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study | 12,900 | SRDF | Surface river diversion | Utilize exist SRDF, about 36 cfs | Pipelines from SRDF to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system | Utilizes underground storage | Not quantified | Title 22 Treatment Required | Initially proposed shifting reservoir releases to winter/spring. Divert to treatment plant to be conveyed to ASR wells in both 180- and 400-Ft Aquifers, and direct municipal use. Additional groundwater pumping would be needed to meet CSIP demands since SRDF would no longer be used for CSIP supply | None |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study - Alt 1 | 6,700 | Diversion site was not evaluated | Ranney collector wells | Up to 45 cfs | Pipelines from radial Ranney collector wells to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system | Utilizes underground storage | Not quantified | Title 22 Treatment Required | New diversion facility instead of changing SRDF and reservoir operations | None |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study - Alt 1A | 6,700 | Diversion site was not evaluated | Ranney collector wells | Up to 45 cfs | Pipelines from radial Ranney collector wells to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system | Utilizes underground storage | Not quantified | Title 22 Treatment Required | Same as above, except 1A only injects into 400-Ft Aquifer as seawater intrusion has slowed in the 180-Ft Aquifer | None |

## IDENTIFIED CONSTRAINTS AND OTHER CONSIDERATIONS IN HISTORICAL DOCUMENTS

Several historical documents identified implementation considerations and constraints that could affect the feasibility and development of diversion projects. Key constraints include:

- **Cost**: Capital cost, operating cost, and cost per acre-foot of water are critical factors in determining project feasibility and scale. For example, the 1998 Master EIR for the SVWP eliminated a pipeline project from consideration in part due to its estimated cost of $400 million for approximately 20,000 AF/yr. of water In today's dollars, this is equivalent to nearly $800 million.
- **Environmental Impacts**: Environmental considerations of any project are a major constraint. For example, the 2008 Biological Opinion associated with the SVWP highlights the key ecological sensitivities associated with River-related activities, which must be addressed in any diversion project.
- **Permitting**: Multiple documents reference the complex, multi-agency permitting requirements at the federal, state, and local levels. The 1998 Master EIR outlines the regulatory framework applicable to the Salinas Valley Water Project, which will similarly affect future diversion efforts, together with new permitting requirements since then.
- **Land Acquisition**: Any project with diversion, conveyance, treatment, and/or delivery will require purchasing or legal access (e.g., easements) to land for infrastructure. For example, if the Permit is modified to include underground storage and this approach is considered, access to land will be required for the conveyance system, recharge basins, and recovery wells. Acquiring land can be expensive and time-consuming.
- **Interested Party Acceptance**: Gaining public support is a critical factor in project development and implementation, particularly for securing funding. Project ideas are informed through feasibility studies. Project concepts, costs, and benefits are developed while receiving interested party input and assessing impacts on the community. A recent example of a public process prior to SGMA was demonstrated in records of the 2013-2014 MCWRA-hosted RAC meetings, which documented conversations where many ideas were offered, but no consensus around selection or direction were provided from the committee to MCWRA staff to move forward with.
- **Project Development Timeframe**: The amount of time it will take to bring a diversion project online will be a significant consideration, as is demonstrated in the time it took to develop, permit, and construct Phase 1 of the SVWP. Before a project can be selected, it will require a series of steps that all require substantial time to complete including selecting the project, gaining public support, determining funding mechanisms, securing

water rights, environmental and regulatory permitting, and designing, constructing, and begin operations of the project. Timely action is needed to select a project and begin the implementation process to minimize the continuing impacts of groundwater overdraft.

In addition to these constraints identified in historical documents, several new considerations have emerged over time that will affect project development. Since the publication of Bulletin 52 and other early studies, MCWRA has constructed and operates the Nacimiento and San Antonio Reservoirs. The management of these facilities stores water that otherwise may have flowed down the Salinas River and been available for diversion under the Permit.

Furthermore, new federal and state environmental laws—such as the National Environmental Policy Act, California Environmental Quality Act, and the Endangered Species Act—have introduced regulatory requirements that did not exist in the early to mid-20th century. For example, river flow obligations associated with the construction and operation of the SVWP must now be considered. At the time of this C&E Canals Study, MCWRA is also developing a Habitat Conservation Plan for Salinas River Operations, which may quantitatively affect the availability of water for diversion from the Salinas River and will further affect the environmental review process and requirements for any future diversion projects. The passage of the SGMA added another layer of complexity, requiring local agencies to achieve groundwater sustainability by 2040 or 2042 according to specific indicators.

These additional considerations—none of which were in place when Bulletin 52 was published, when early conceptual projects were proposed, or when the Permit was issued in 1957—now play a critical role in shaping the feasibility and design of potential projects. Furthermore, Nacimiento and San Antonion Reservoirs are in need of maintenance, without which groundwater conditions may become more severe, and groundwater sustainability as a long-term goal. Further evaluation of constraints and considerations will be performed in later phases of the C&E Canals Study.

## KEY FINDINGS

The historical document review conducted by M&A and WG revealed the following key insights that are relevant to potential use of the Permit and development of a Salinas River diversion project:

- Many of the 120 conceptual projects identified in the historical documents were high-level ideas or concepts that lacked specificity, including details on the project components. The majority were not diversion projects from the Salinas River and/or related to the Permit. Projects not related to diverting the Salinas River are not considered for further evaluation within this C&E Canals Study. Approximately 30 Salinas River diversion projects were described in the historical documents.

- A key finding from the historical documents review is the majority of Salinas River diversion projects were proposed along with demand management measures. Most documents described the importance of coupling demand management with diversion solutions to address the groundwater overdraft, the root of seawater intrusion, and chronically depressed groundwater levels. Most noted the confined aquifer system and clay-rich alluvial fans as physical constraints that make addressing these challenges difficult.
- Previously proposed projects are effectively one project structure with variations on the following components: diversion, conveyance, and delivery, sometimes with storage and treatment before delivery. A common challenge noted in more recent documents is the mismatch between wet-season river flows and peak summer demand, underscoring the need for substantial seasonal storage.
- Identified constraints that will need to be considered to select projects include cost, environmental impacts, permitting, land acquisition, interested party acceptance, and project development timelines. Several federal and state environmental laws—many of which were enacted after publication of most of the historical documents—are expected to present significant constraints.
- Since the Permit was issued in 1957 and many of the conceptual projects were proposed, a number of new considerations have emerged that affect the design and feasibility of a river diversion project, such as new infrastructure (e.g., the reservoirs and SVWP) that require specific operating conditions, new regulatory requirements (e.g., NEPA, CEQA, ESA, and SGMA) that require extensive and uncertain permit approval processes, and growing public participation in water resource decision making. These considerations, and potentially others, will be further evaluated in later phases of the C&E Canals Study.

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# Appendix D

# Historical Flows Analysis

# TECHNICAL MEMORANDUM

| | | |
|---|---|---|
| **DATE:** | October 16, 2025 | **PROJECT #:** 9100.78 |
| **TO:** | Piret Harmon, Emily Gardner, and Sarah Hardgrave, SVBGSA | |
| **CC:** | Shaunna Murray, Peter Kwiek, and Amy Woodrow, MCWRA | |
| **FROM:** | Josh Shultz, Tim Leo, P.G., C.Hg., and Victoria Hermosilla, P.G. | |
| **PROJECT:** | Castroville & Eastside Canals and Alternatives Project | |
| **SUBJECT:** | Historical Salinas River Flow Analysis | |

# INTRODUCTION

Monterey County Water Resources Agency (MCWRA) holds water right Permit 11043 (Permit), which authorizes conditional diversion of Salinas River water for irrigation and municipal use (California State Water Resources Control Board, Division of Water Rights, 2013). By diverting available Salinas River water according to the Permit, water that would otherwise reach the ocean could be redirected to areas experiencing low groundwater levels or seawater intrusion.

To advance development of a potential river diversion project, the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA)—in collaboration with MCWRA—is conducting the Castroville and Eastside Canals and Alternatives (C&E Canals) Preliminary Feasibility Study (Study). The C&E Canals Study is designed to review historical project concepts, develop project concepts through which the Permit could be used, and conduct preliminary feasibility of the most viable concepts. Diversion of Salinas River water could help mitigate seawater intrusion or raise groundwater levels in the Eastside Aquifer (Eastside), 180/400-Foot Aquifer (180/400), and/or Langley Area (Langley) Subbasins. A river diversion project could be considered part of a portfolio of projects and actions that jointly achieve groundwater sustainability goals.

As part of the C&E Canals Study, Montgomery & Associates (M&A) analyzed historical Salinas River flow data to estimate an upper bound quantity and timing of potential diversion under the Permit. Unless specified otherwise in this document, references to diversion imply they are related to the Permit. The C&E Canals Study will also evaluate additional options for obtaining surface water rights to divert water from the Salinas River for use. Future feasibility work will refine estimates of flow that could be diverted, such as through considering non-11043 Permit flow obligations. This may lower the estimated volume of water available for diversion under the Permit compared to the analysis reported herein.

The analysis expands on previous work conducted by M&A in 2019 and 2021 for the 180/400 and Eastside Subbasin Groundwater Sustainability Plans. The 2019 analysis evaluated Salinas River flows from water years (WY) 1969 through 2018 at United States Geological Survey (USGS) Salinas River at Soledad gage (gage number 11151700). In 2021, M&A expanded the analysis to include WY 2019 through WY 2024 and evaluated Salinas River flows at a second USGS gage, Salinas River near Chualar (gage number 11152300).

The Permit allows diversion rates up to 400 cubic feet per second (cfs) and 135,000 acre-feet per year (AF/yr). The analysis used Microsoft Excel and computer scripts to compile historical data on Salinas River flow, releases from the Nacimiento and San Antonio Reservoirs, and Permit diversion conditions. This information was then used to estimate an upper bound amount of surface water that could have been diverted at various diversion rates. For an initial estimate of the upper bound of flow, it was assumed that diversion would occur at only 1 of the 2 permitted diversion locations. Additional evaluation with diversions at both locations may be considered in the next phase of the C&E Canals Study.

## HISTORICAL SALINAS RIVER FLOW CONDITIONS

Figure 1 shows the location of the 2 USGS surface water monitoring gages used in this analysis: Soledad and Chualar. Figure 1 also shows the location of the USGS Arroyo Seco gage (gage number 11152000) because flow data from this gage are used to assign the water year type for the Salinas Valley (water year spans from October 1 through September 30), which was used for this analysis. Table 1 shows the criteria used to determine water year type, which is based on indexing the unimpaired average annual flow rates from the Arroyo Seco watershed as described in the Nacimiento Dam Operation Policy (MCWRA, 2018).

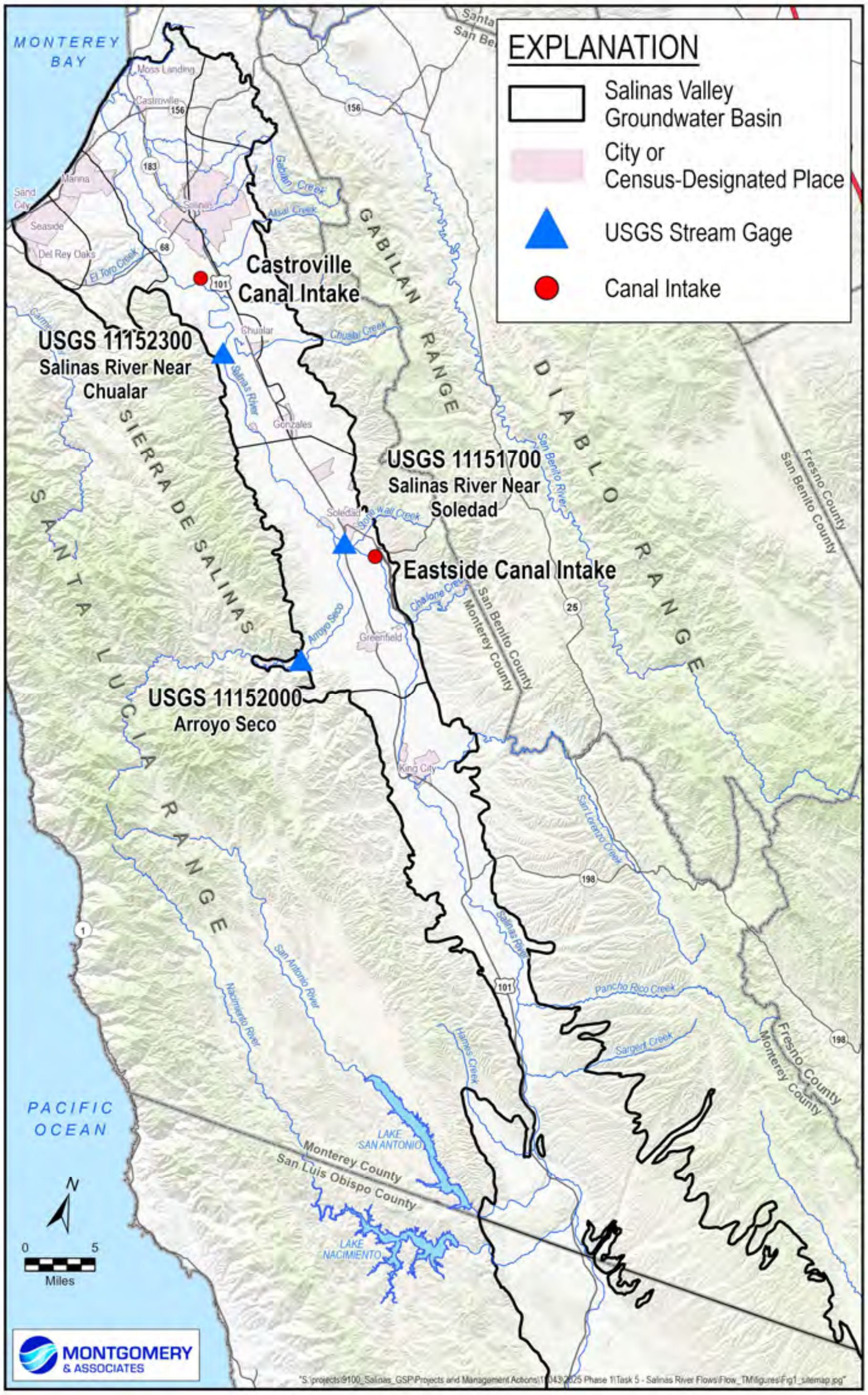


Figure 1. Study Area Map

Table 1. Criteria for Determining Water Year Type

| Water Year Type | Percentile Range of Average Daily Flow (exceedance probability) |
|---|---|
| Wet | 0% to and including 25% |
| Wet-Normal | Over 25% to and including 41.7% |
| Normal | Over 41.7% to and including 58.3% |
| Dry-Normal | Over 58.3% to and including 75% |
| Dry | Over 75% to and including 100% |

Daily average flow data from the Salinas River Soledad and Chualar gages were used to evaluate the magnitude and variation in river flow rates. These gages are near the locations of the permitted points of diversion, shown as red circles on Figure 1. The Salinas River Soledad gage is near the Eastside Canal Intake diversion location, and the Salinas River Chualar gage is near the Castroville Canal Intake diversion location. The USGS has recorded flow, surface water level, and selected water quality parameters at the Soledad gage since WY 1969 and at the Chualar gage since WY 1977.

Table 2 shows the average flow rate at the 2 gages for various periods, including from the start of available data through WY 1999 (historical period) and from WY 2000 through WY 2024 (recent period). The recent period was used for all analyses reported herein.

Table 2. Daily Average Salinas River Flow Rates

| Time Period Water Years (WY) | Gage | Average Flow Rate (cfs) |
|---|---|---|
| Historical Period (WY 1969 – WY 1999) | Soledad [a] | 442 |
| Historical Period (WY 1977 – WY 1999) | Soledad | 424 |
| Historical Period (WY 1977 – WY 1999) | Chualar | 527 |
| Recent Period (WY 2000 – WY 2024) | Soledad | 239 |
| Recent Period (WY 2000 – WY 2024) | Chualar | 245 |

[a] – a data gap exists at the Soledad Gage from 1979 to 1983

The recent period was evaluated to assess changes in average flow rates over time and to evaluate data from both gages over a common recent timeframe. The average surface water flow rate at the 2 gages in the recent period is approximately half of the rate in the historical period. The analysis later shows 5 large flow events in the historical period that raise the average flow rate. For the recent period, the similarity of average flow rates at the 2 gages likely reflects the net result of several counterbalancing hydrologic factors including infiltration and evapotranspiration losses and watershed inflows to the Salinas River between Soledad and Chualar.

Figure 2 is a graph of daily average flows at the Soledad and Chualar gages superimposed on the color-coded water year type for the period of record.

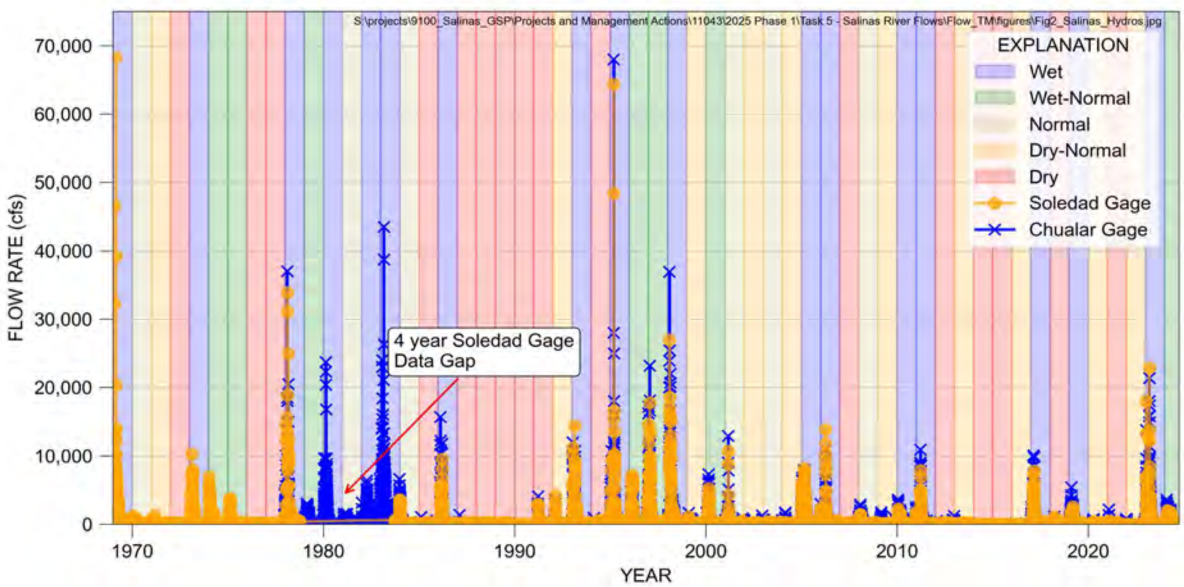


Figure 2. Daily Average Flow (cfs) at the Soledad and Chualar Gages on the Salinas River, WY 1969–2024

The graph shows lower peak flows in the recent period at the 2 gages compared to the historical period. Prior to WY 2000, there were 5 high flow events that exceeded 30,000 cfs at 1 or both gages, whereas there were none after WY 2000. The lower average daily peak flow rates in the recent period reflect an extended period of fewer high flow events. In the recent period, there are also a small number of days with high flows above 10,000 cfs—large outliers that raise the average.

Figure 3 is a graph of average monthly flow rates at the Soledad (orange bars) and Chualar (blue bars) gages for the recent period.

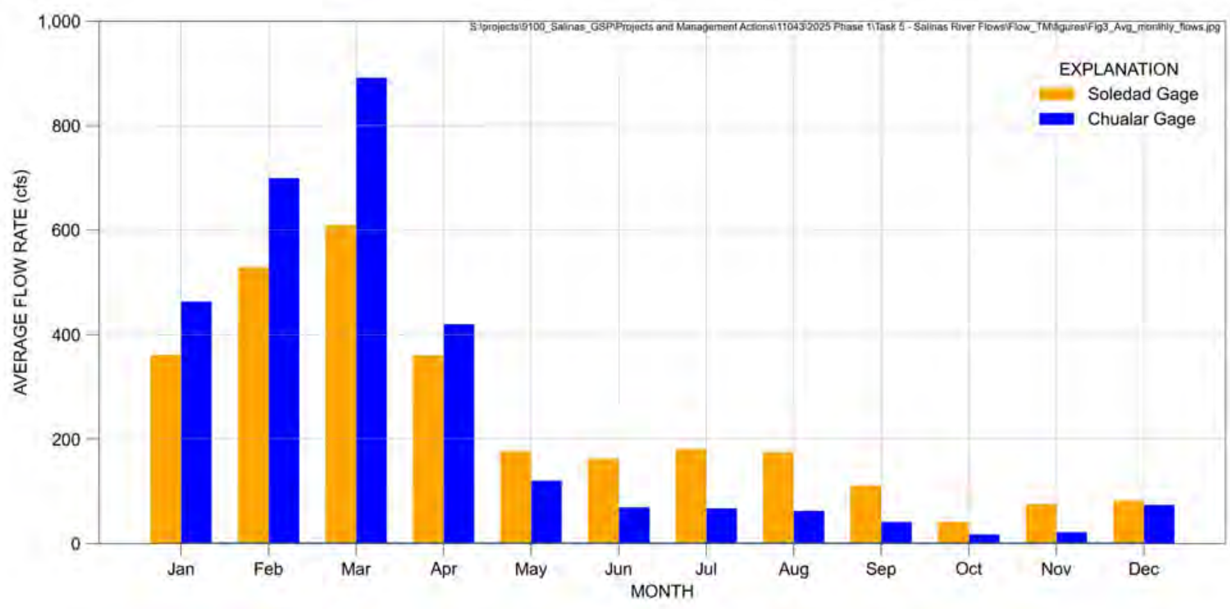


Figure 3. Average Monthly Salinas River Flow Rates for the Recent Period

The graph indicates that the highest average flow rates occurred in January through April, which coincides with most of the typical wet period in the Salinas Valley. After April, average Salinas River flow rates are less than 200 cfs.

## RESERVOIR RELEASES

The Nacimiento and San Antonio Reservoirs are operated by MCWRA for multiple purposes and are regulated by various State and Federal Agencies. Daily total release data for the Nacimiento and San Antonio Reservoirs were obtained from the MCWRA's website. Release data are available from WY 1959 for the Nacimiento Reservoir and WY 1967 for the San Antonio Reservoir.

Reservoir operational considerations include groundwater recharge, flood protection, water supply, operation of the Salinas River Diversion Facility (SRDF), environmental flows for habitat and fish passage, agriculture, recreation, and dam safety. MCWRA accounts for the water at its reservoirs using the 30-day rule pursuant to its water rights, which is standard practice for storage water rights. This accounting categorizes water flowing from the reservoir (release) as either withdrawal or regulation. Withdrawal is the release of water that has been stored for 30 days or more and generally occurs when storage is decreasing and when releases are made to meet an intended use such as rediversion at the SRDF, instream flow requirements, or groundwater recharge. Flows that are withdrawn from the reservoir for an intended use would not be available downstream for diversion pursuant to another water right. At times, withdrawal of previously stored water may occur for flood control purposes (without another intended use) to ensure adequate space is maintained in the reservoirs for additional incoming flows. Regulation is generally water that moves through the reservoir, such as inflow that is bypassed or spilled when the reservoir is full. Withdrawal for flood control purposes and regulation would generally be available downstream for diversion pursuant to another water right, such as Permit 11043. But available flows from the Nacimiento and San Antonio Rivers would likely coincide with wet periods and high flow conditions in the Salinas River. Regardless of withdrawal or regulation, instream flow requirements must first be met.

For this analysis, all flow from the Nacimiento and San Antonio Rivers were subtracted from the Salinas gaged river flow rates at Soledad regardless of how long the water was stored in the reservoirs. Future analysis could differentiate stored water from other reservoir releases, which may increase the estimated flow available for diversion under the Permit.

An important complicating factor that is difficult to assess and is not addressed in this analysis is the degree to which additional reservoir releases would be needed to compensate for any diversion of natural flows under the Permit to meet downstream flow requirements stipulated in MCWRA's water rights for Nacimiento and San Antonio Reservoirs. Separately, Endangered Species Act requirements related to the Permit have not been evaluated and could significantly impact quantities of available excess water. More evaluation of the implications of additional flow obligations will be conducted in Phase 2 of the C&E Canals Study.

## EXCESS FLOW AND PERMIT TERMS AND CONDITIONS

Water can be diverted under the Permit at either diversion location only after both of the following conditions are met:

- Flow recorded at the Soledad gage is greater than the total releases from the Nacimiento and San Antonio Reservoirs. This is designated as natural flow.
- The 3-day running average of natural flow at the Soledad gage is greater than the specified minimum monthly natural flow rate requirement in the Permit, shown in Table 3.

**Excess Flow:** When both conditions are met, the water is considered excess flow**.** This is calculated after reservoir releases are subtracted from Soledad gage flow and the 3-day running average is above specified minimum flows that must be left in the River. Regardless of whether Permit 11043 or a new water right is used, it is assumed that some water would be needed to meet environmental flows.

The required minimum monthly flow rates in the Permit are for unspecified downstream uses, which may not include all flow obligations on the Salinas River. Other obligations could further limit the timeframe and quantity of water that could be diverted using the Permit.

Excess flow can occur at the Chualar gage once the minimum flow requirement is met at the Soledad gage. Excess flow at the Chualar gage is calculated as the difference between the 3-day average of natural flow at the Chualar gage flow and minimum flow requirement at the Soledad gage. This provision potentially enables the diversion of additional watershed flow at the Castroville Canal Intake, including Arroyo Seco flows entering the Salinas River between the Soledad and Chualar gages.

**Additional Key Permit 11043 Terms and Conditions:** Permit 11043 limits the amount of water that can be diverted to a rate of 400 cfs and a cumulative total of 135,000 AF/yr. Excess flow can only be diverted under the Permit within these the maximum diversion rates. These provisions are analyzed after consideration of all excess flows.

Table 3. Minimum Required Natural Flow Requirement at the Soledad Gage

| Month | Minimum Flow Rate (cfs) |
|---|---|
| January | 3.3 |
| February | 6.2 |
| March | 6.41 |
| April | 16.43 |
| May | 17.21 |
| June | 20.62 |
| July | 24.02 |
| August | 18.89 |
| September | 20.97 |
| October | 10.51 |
| November | 4.56 |
| December | 2.64 |

## ANALYSIS RESULTS

The historical river flow and reservoir release data were used to estimate and study the variability of average monthly and annual excess flow rates for the recent period. Despite uncertainty about additional instream flow obligations that could limit the quantity of available water, the excess flow would theoretically be available for diversion under the Permit. The maximum diversion limits specified in the Permit were not considered to evaluate excess flows;

however, they were considered in the evaluation of potential diversion maximums allowable by the Permit.

## Average Monthly Excess Flow Rates

Figure 4 shows the monthly average excess flow rates for the recent period on a 2-axis graph with flow rate in cfs on the left axis and flow rate in AF per month (AF/mo) on the right axis. The latter is helpful for understanding how much water could be available monthly for diversion. This calculation of excess flow is not limited by the maximum diversion allowed under Permit 11043 so would require an additional water right to capture it fully.

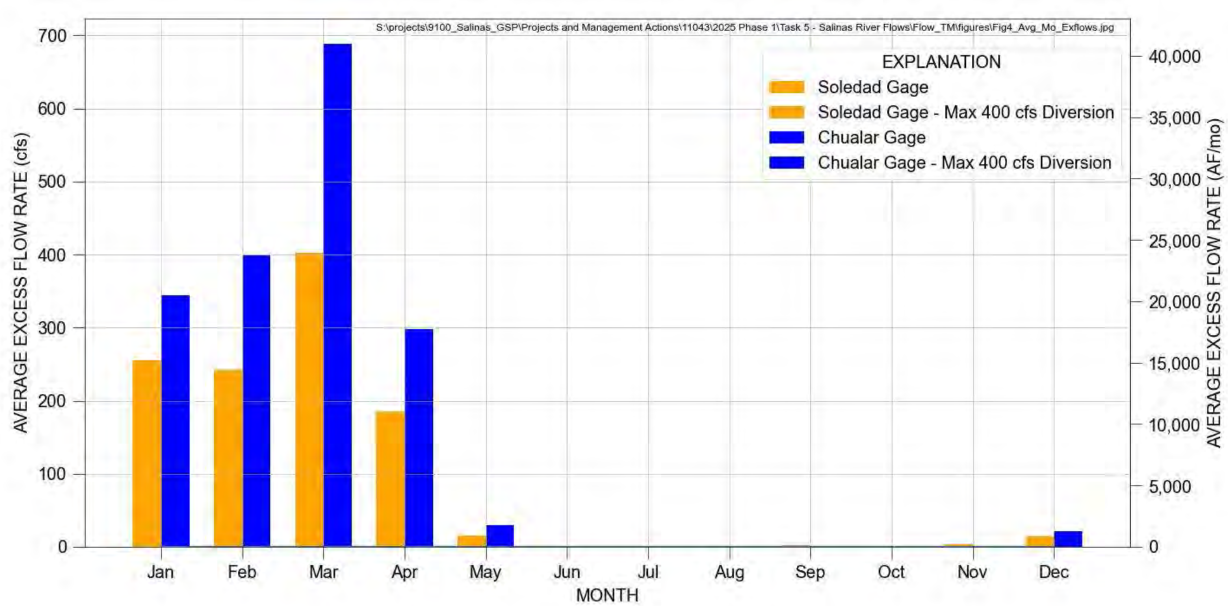


Figure 4. Average Excess Flow Rate for Recent Period

The graph indicates that most of the excess flow occurs from January through April; it is not limited by all of the terms and conditions in Permit 11043. During this time, the average monthly excess flow volumes were between approximately 11,000 and 24,000 AF at the Soledad gage and approximately 18,000 and 41,000 AF at the Chualar gage. The graph also indicates that small amounts of excess water (less than 1,500 AF per month at each gage) occur outside of this time window, mostly within the months of May and December. Excess water in May likely results from recessional flows that follow wet winters. Wet Decembers are common, but runoff response is muted by high percolation rates in seasonally dry channels. On average, the total amount of excess flow from May through December was approximately 2,200 AF at Soledad and 3,200 AF at Chualar.

Flow in the Salinas River is highly variable at daily, monthly, and annual intervals. Variability in potentially divertible excess flow will be an important factor when developing potential diversion projects on the river. Figure 5 is a box and whisker plot of excess flow rates grouped by month at the Soledad gage. Table 4 summarizes the statistical metrics presented on Figure 5.

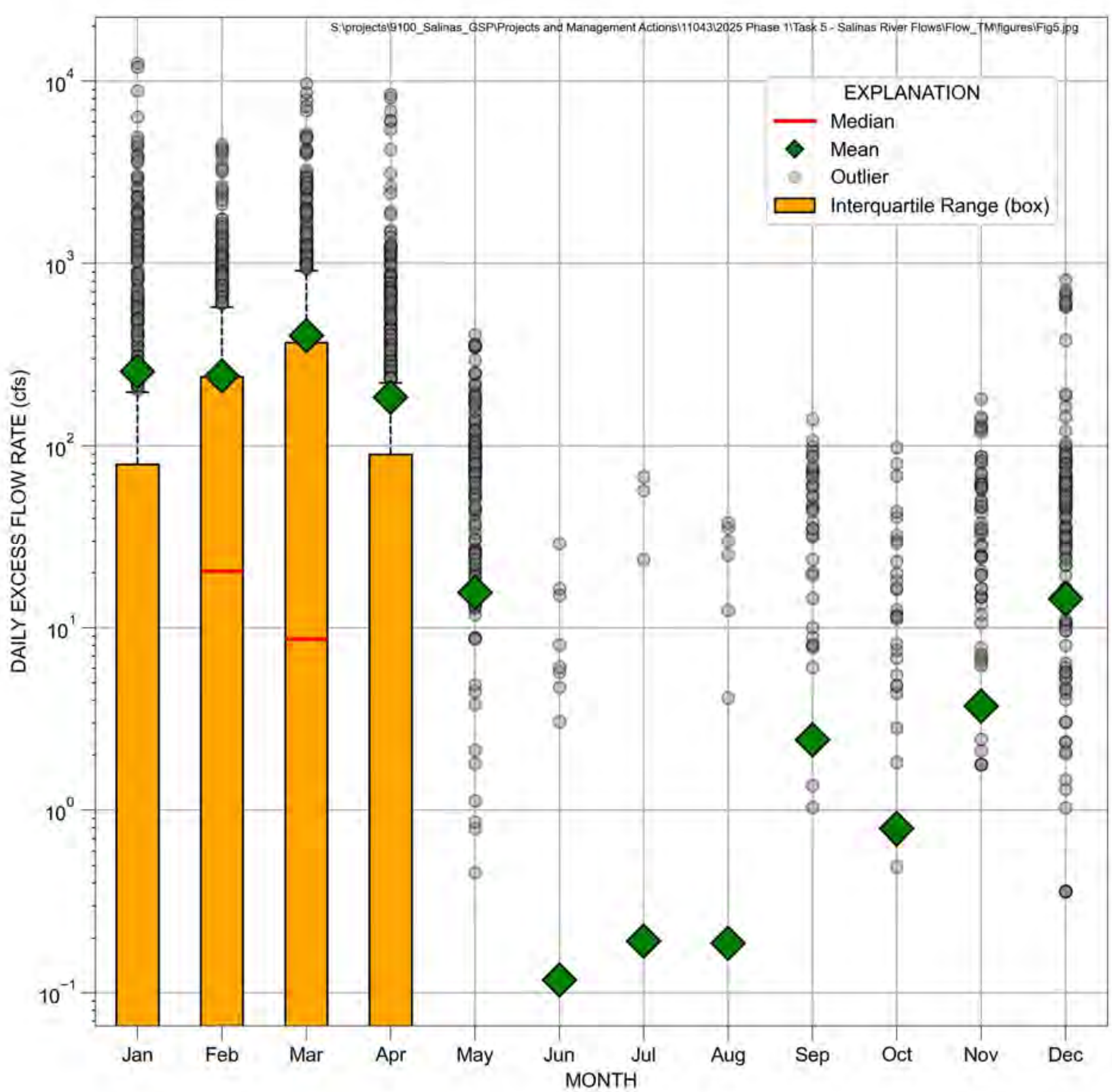


Figure 5: Box and Whisker Plot of Excess Flow Rate Distribution at Soledad for Recent Period

Table 4. Summary Statistics for Flow Rate for the Soledad Gage

| Month | Summary Statistics of Flow Rate at Soledad (cfs) | | | | | |
|---|---|---|---|---|---|---|
| | Minimum | First Quartile | Median | Mean | Third Quartile | Maximum |
| Jan | 0 | 0 | 0 | 255 | 79 | 12,550 |
| Feb | 0 | 0 | 20 | 242 | 238 | 4,471 |
| Mar | 0 | 0 | 9 | 402 | 368 | 9,690 |
| Apr | 0 | 0 | 0 | 185 | 90 | 8,431 |
| May | 0 | 0 | 0 | 16 | 0 | 408 |
| Jun | 0 | 0 | 0 | <1 | 0 | 29 |
| Jul | 0 | 0 | 0 | <1 | 0 | 68 |
| Aug | 0 | 0 | 0 | <1 | 0 | 38 |
| Sep | 0 | 0 | 0 | 2 | 0 | 140 |
| Oct | 0 | 0 | 0 | <1 | 0 | 97 |
| Nov | 0 | 0 | 0 | 4 | 0 | 180 |
| Dec | 0 | 0 | 0 | 14 | 0 | 815 |

Together, Figure 5 and Table 4 provide a comprehensive view of the variability in excess flow rates at the Soledad gage for the recent period. The box and whisker plot on Figure 5 visually demonstrates that most months have a median excess flow rate of zero (i.e., the median line is absent), meaning that on at least half the days in each month, no excess flow was available for potential diversion under the Permit. This is confirmed by the monthly statistics in Table 4, where the median value is zero for most months.

Despite these low medians, the mean flow rates are much higher, which is due to a small number of days with very high flows—large outliers that raise the average but do not reflect typical daily conditions. The interquartile range (the box) on Figure 5 represents the middle 50% of the data, while the whiskers show the spread of values outside this range. The maximum values in Table 4 further illustrate the impact of these rare, high-flow events.

This pattern reveals that excess flow in the Salinas River is highly variable: most days have little or no excess flow, but a few days experience substantial excess flows. Such variability means that averages alone can be misleading, and planning for diversion facilities must account for both typical and extreme conditions. In summary, while excess flows (and therefore diversion opportunities) exist, they are limited and highly dependent on infrequent, high-flow events, making it essential to consider the full distribution of flow rates—not just the averages—when evaluating diversion project feasibility.

Figure 6 is a box and whisker plot of excess flow rates grouped by month at the Chualar gage. Table 5 summarizes the statistical metrics presented on Figure 6.

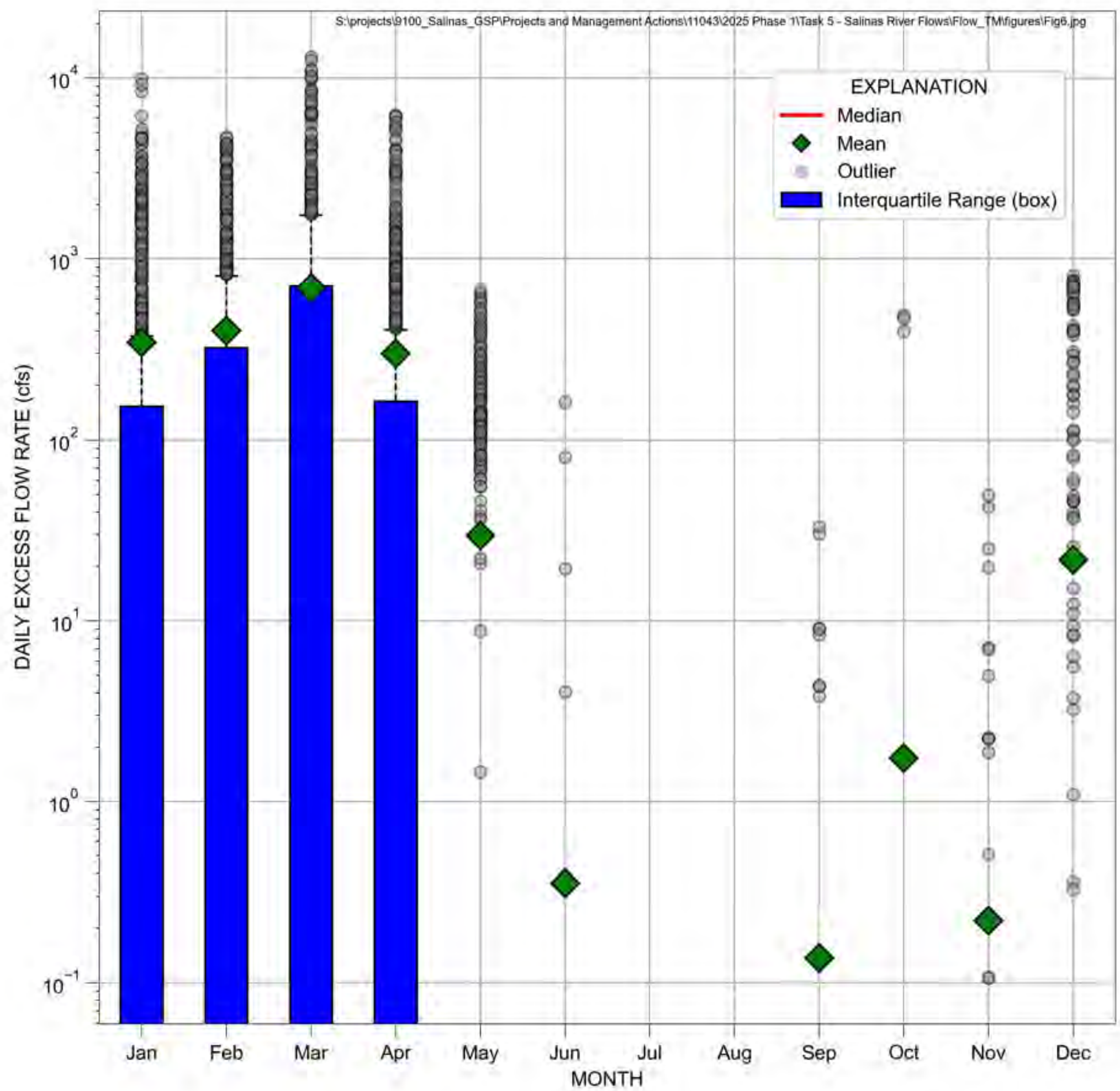


Figure 6. Box and Whisker Plot of Calculated Excess Flow Rate Distribution at Chualar for Recent Period

Table 5. Summary Statistics for Flow Rate at the Chualar Gage

| | | | | | | Maximum |
|---|---|---|---|---|---|---|
| Jan | 0 | 0 | 0 | 344 | 152 | 9,908 |
| Feb | 0 | 0 | 0 | 399 | 321 | 4,707 |
| Mar | 0 | 0 | 0 | 689 | 704 | 13,040 |
| Apr | 0 | 0 | 0 | 299 | 162 | 6,237 |
| May | 0 | 0 | 0 | 30 | 0 | 671 |
| Jun | 0 | 0 | 0 | <1 | 0 | 161 |
| Jul | 0 | 0 | 0 | 0 | 0 | 0 |
| Aug | 0 | 0 | 0 | 0 | 0 | 0 |
| Sep | 0 | 0 | 0 | <1 | 0 | 33 |
| Oct | 0 | 0 | 0 | 2 | 0 | 485 |
| Nov | 0 | 0 | 0 | <1 | 0 | 49 |
| Dec | 0 | 0 | 0 | 22 | 0 | 804 |

Flow conditions in the recent period at the Soledad and Chualar gages have been similar. Like Soledad, the Chualar gage showed highly variable flow rates with most months having a median excess flow rate of zero, and elevated mean flow rates caused by infrequent, high-flow events. The Chualar gage generally recorded higher maximum and mean excess flows compared to Soledad, especially in months with significant watershed contributions. This difference is directly related to the net effect of additional watershed flows downstream of the Soledad gage, notably from the Arroyo Seco River. These flows increase the potential for excess flow at Chualar, particularly during wet periods. The higher potential for excess flow at Chualar may make it a more favorable location for larger diversion facilities.

Table 6 shows the average number of days per month when excess flows occurred over the recent period.

Table 6. Average Number of Days of Excess Flows per Month for the Recent Period

| Month | Soledad | Chualar |
|---|---|---|
| January | 11 | 9 |
| February | 13 | 11 |
| March | 13 | 13 |
| April | 9 | 9 |
| May | 4 | 4 |
| June | 0 | 0 |
| July | 0 | 0 |
| August | 0 | 0 |
| September | 1 | 0 |
| October | 0 | 0 |
| November | 2 | 0 |
| December | 4 | 2 |

As indicated on the table, excess flow only occurred an average of 57 days at the Soledad gage and 48 days at the Chualar gage over an entire year. This indicates that a diversion facility could, at most, have operated less than approximately 15% of the time annually. From January through April during the high precipitation period, excess flow occurred an average of 46 days at the Soledad gage and 42 days at the Chualar gage. While there was a substantial amount of excess flow during winter and early spring, a diversion facility could have operated only 35% to 38% of that 4-month period at the Chualar and Soledad gages, respectively.

### Annual Amount and Variability in Excess Flow

Figure 7 is a graph of annual excess flow over the recent period; this is not limited by the terms and conditions of the Permit. The graph indicates that the amount of excess flow will vary significantly from year to year based on the water year type. Wet years tend to have 100,000 AF or more of excess flow while dry years would have little to no excess flow.

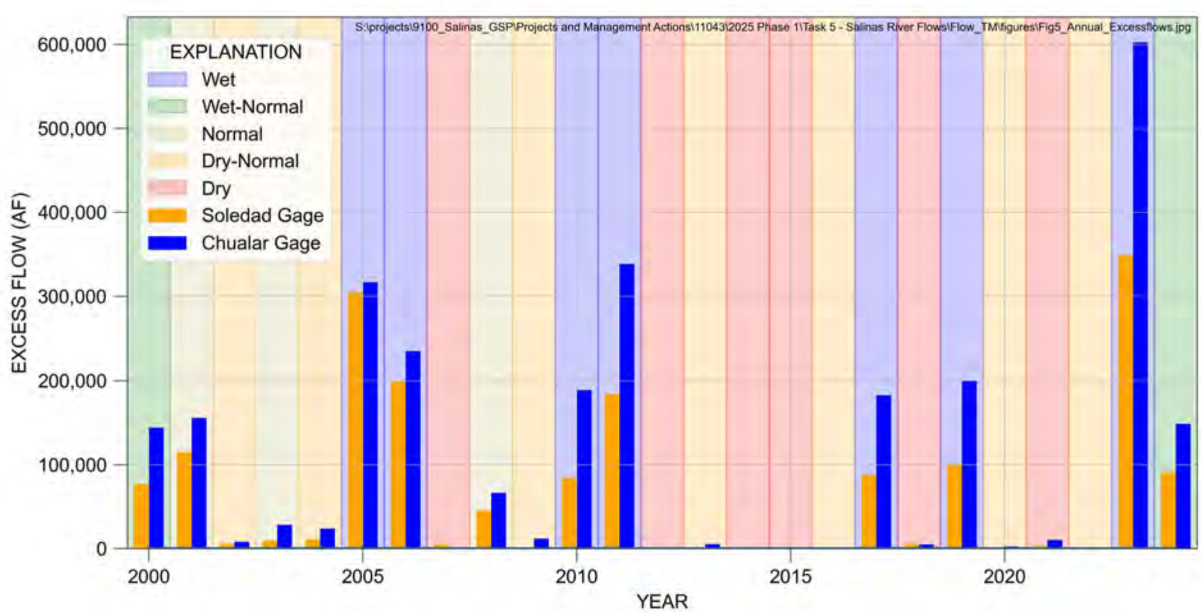


Figure 7. Annual Excess Flow for Recent Period

Table 7 presents annual excess flow volumes and the number of days with excess flow at the Soledad and Chualar gages, along with the difference between the two, for each water year from 2000 to 2024. It also includes summary statistics (mean and standard deviation) for the period.

Table 7. Total Calculated Excess Flow for Recent Period

| Water year | Water Year Type | Soledad | | Chualar | | Difference Between Gage Excess Flow (AF) Soledad minus Chualar |
|---|---|---|---|---|---|---|
| | | Excess Flow (AF) | Days with Excess Flow | Excess Flow (AF) | Days with Excess Flow | |
| 2000 | Wet-Normal | 77,187 | 119 | 143,976 | 99 | -66,790 |
| 2001 | Normal | 114,827 | 127 | 155,803 | 108 | -40,977 |
| 2002 | Dry-Normal | 5,946 | 59 | 8,080 | 30 | -2,134 |
| 2003 | Normal | 9,453 | 108 | 28,197 | 72 | -18,744 |
| 2004 | Dry-Normal | 10,966 | 78 | 23,669 | 56 | -12,702 |
| 2005 | Wet | 304,864 | 139 | 316,824 | 135 | -11,960 |
| 2006 | Wet | 199,062 | 187 | 235,484 | 155 | -36,422 |
| 2007 | Dry | 4,922 | 64 | 871 | 27 | 4,052 |
| 2008 | Normal | 45,525 | 106 | 66,589 | 87 | -21,064 |
| 2009 | Dry-Normal | 349 | 12 | 11,778 | 7 | -11,429 |
| 2010 | Wet | 84,211 | 150 | 188,723 | 120 | -104,512 |
| 2011 | Wet | 184,374 | 160 | 338,521 | 155 | -154,147 |
| 2012 | Dry | 1,321 | 23 | 671 | 11 | 650 |
| 2013 | Dry-Normal | 98 | 17 | 5,270 | 11 | -5,172 |
| 2014 | Dry | 71 | 3 | 0 | 0 | 71 |
| 2015 | Dry | 0 | 0 | 0 | 0 | 0 |
| 2016 | Dry-Normal | 0 | 0 | 0 | 0 | 0 |
| 2017 | Wet | 88,001 | 70 | 182,661 | 67 | -94,660 |
| 2018 | Dry | 5,394 | 17 | 5,008 | 5 | 386 |
| 2019 | Wet | 100,471 | 80 | 199,461 | 75 | -98,990 |
| 2020 | Dry-Normal | 1,461 | 11 | 2,457 | 9 | -995 |
| 2021 | Dry | 3,405 | 22 | 10,088 | 9 | -6,682 |
| 2022 | Dry-Normal | 0 | 0 | 0 | 0 | 0 |
| 2023 | Wet | 348,732 | 138 | 602,336 | 128 | -253,604 |
| 2024 | Wet-Normal | 90,715 | 119 | 148,732 | 97 | -58,017 |
| Mean | | 67,254 | 72 | 107,008 | 59 | -39,754 |
| Standard Deviation | | 95,872 | 58 | 145,467 | 53 | 60,135 |

The information in Table 7 indicates the following:

**Flow Variability**

- Annual excess flow varies significantly depending on the water year type.
- Wet years show very high excess flows—often exceeding 100,000 AF at both gages, and sometimes much more.

- Dry years show minimal or even zero excess flow.
- Over the recent period, there would have been 3 years with no excess flow near Soledad and 4 years with no excess flow near Chualar.

**Flow Differences**

- Chualar gage consistently had higher excess flows than Soledad, especially in wet years. For example, in 2023, Chualar recorded 602,336 AF compared to Soledad's 348,732 AF—a difference of over 250,000 AF. The difference is related to additional watershed flows entering the Salinas River between the 2 gages, notably from the Arroyo Seco River.

**Excess Flow Frequency**

- The number of days with excess flow also varies widely. Wet years can have more than 100 days with excess flow, while dry years may have fewer than 20 days, or none at all.
- Chualar generally has fewer days with excess flow than Soledad, but the volume per event is often higher at Chualar.

**Summary Statistics**

- Mean annual excess flow at the Chualar gage is higher than the Soledad gage, with average flow at the Chualar gage nearly 40,000 AF/yr higher.
- Large standard deviation at both gages indicates substantial flow variability from year to year.

Table 8 shows the average number of days per year that excess flow occurred for the different water year types. Wet years had an average of 132 days of excess flow at Soledad and 110 days at Chualar, whereas dry years had excess flow as few as 22 days per year at Soledad and 9 days per year near Chualar, with 3 years having no excess flow at Soledad and 4 years at Chualar.

Table 8. Average Number of Days with Excess Flows by Water Year Type for the Recent Period

| Water Year Type | Soledad | Chualar |
|---|---|---|
| Dry | 22 | 9 |
| Dry-Normal | 25 | 16 |
| Normal | 114 | 89 |
| Wet-Normal | 119 | 98 |
| Wet | 132 | 119 |

## Average Monthly Excess Flow Rates Under Permit Terms and Conditions

Permit 11043 restricts water diversion to a maximum rate of 400 cfs and a cumulative total of 135,000 AF/yr. Excess flow can only be diverted under the Permit within these the maximum diversion rates. Figure 8 shows the same average monthly excess flow as on Figure 4, calculated by subtracting reservoir releases from the Soledad gage flow. This calculation only includes days when the 3-day running average exceeds the minimum required instream flows.

The darker bands in Figure 8 represent the volume of water that could have been diverted under the Permit's terms and conditions, including the 400 cfs cap. Because the bars reflect monthly averages of daily excess flows – and many days fall below the 400 cfs threshold – the average excess flow remains under the permitted maximum rate.

The analysis illustrates that, historically, significantly less water could have been diverted under the Permit than without the 400 cfs diversion limit. Future analyses can refine these monthly averages by differentiating stored water from other reservoir releases and incorporating downstream flow requirements.

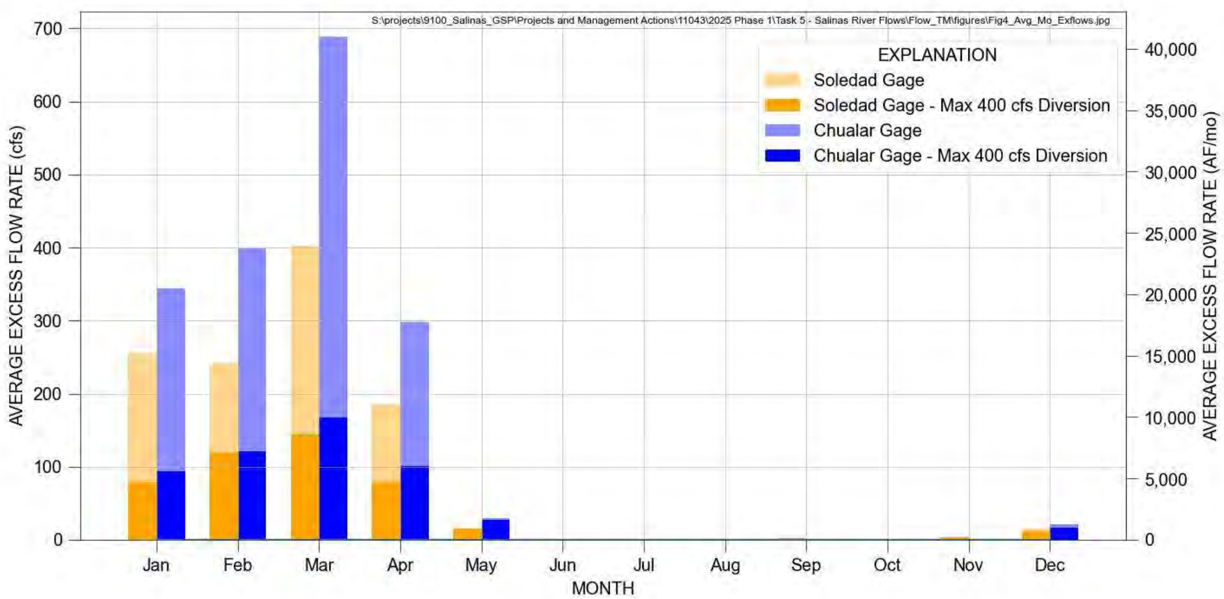


Figure 8. Average Excess Flow Rate Under Permit Conditions for Recent Period

## Implications of Recent Period Excess Flow Condition on Diversion Facility Operation

Potential diversion facility sizes from 10 to 400 cfs were considered to estimate the annual average volume of excess flow that could potentially be diverted. As shown in Table 9, an annual average of 1,400 to 27,300 AF could have been diverted at the Eastside Canal Intake near Soledad for diversion sizes ranging from 10 to 400 cfs, respectively. Similarly, an annual average of 1,100 to 31,700 AF could have been diverted at the Castroville Canal Intake near Chualar for diversion sizes ranging from 10 to 400 cfs, respectively. These volumes were calculated by tallying the calculated diversion amounts for a given diversion facility size over the entire recent period and then dividing by the length of the recent period (25 years). For comparison, a 35 cfs diversion is similar in size to the existing SRDF, which has a maximum diversion capacity of 36 cfs.

Table 9. Annual Average Volume of Potential Diverted Excess Flow by Diversion Size for the Recent Period

| Diversion Size (cfs) | Annual Average Potential Diversion Volume (AF) | |
|---|---|---|
| | Eastside Canal Intake (near Soledad) | Castroville Canal Intake (near Chualar) |
| **10** | 1,400 | 1,100 |
| **20** | 2,700 | 2,200 |
| **35** | 4,400 | 3,800 |
| **50** | 6,100 | 5,300 |
| **75** | 8,500 | 7,700 |
| **200** | 17,500 | 18,200 |
| **400** | 27,300 | 31,700 |

Figure 9 is a graph of diversion rate versus diversion size for the recent period.

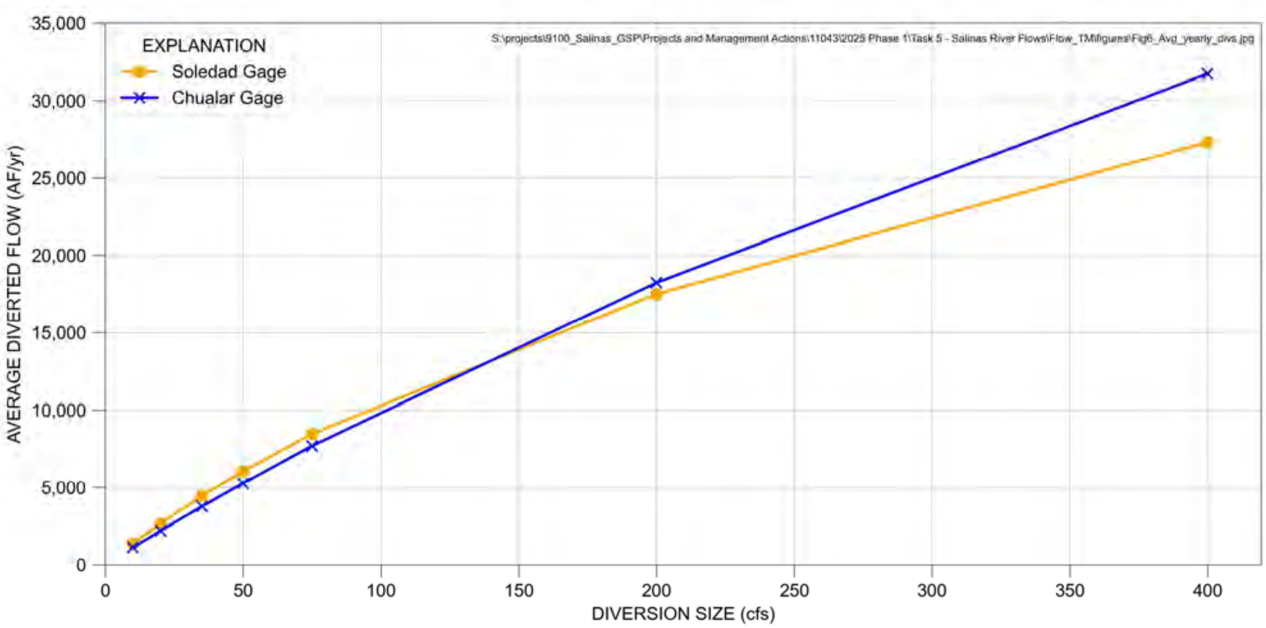


Figure 9. Average Annual Potential Diverted Flow vs Diversion Size for the Recent Period

As indicated on the graph, for diversions smaller than 200 cfs, the annual diverted volumes would be similar at each of the 2 diversion locations. For diversions larger than 200 cfs, more water could be diverted near Chualar than near Soledad due to the influence of Arroyo Seco flows. A 400 cfs diversion near Chualar could divert an average of approximately 4,000 AF/yr more than a diversion near Soledad.

## CONCLUSIONS

The following conclusions were made based on the analysis of historical Salinas River flow:

**1. Long-Term Flow Trends and Hydrologic Shifts**

- **Decline in Average Flows:** The average daily flow rates at both the Soledad and Chualar gages have dropped by about half in the recent period (WY 2000–2024) compared to the historical period (WY 1969–1999 for Soledad, WY 1977–1999 for Chualar). This suggests a substantial long-term reduction in river flows.
- **Fewer Extreme Flow Events:** Before WY 2000, 5 flow events exceeded 30,000 cfs at 1 or both gages; after WY 2000, no such events occurred.

**2. Seasonal Patterns and Monthly Flow Distribution**

- **Wet Season Dominance:** The highest average monthly flows occurred from January through April, when demand is low. Flows drop below 200 cfs after April.
- **Monthly Excess Flow (not limited by Permit terms and conditions):** During January through April, average monthly excess flows for the recent period at Soledad range from approximately 11,000 to 24,000 AF, and at Chualar from approximately 18,000 to 41,000 AF. After April, excess flows are much smaller.

**3. Excess Flow Amount, Variability, and Statistical Insights**

- **Annual Excess Flow:** Wet years show very high excess flows (often exceeding 100,000 AF at both gages), while dry years show minimal or even zero excess flow. Over the recent period, there were 3 years with no available potential diversions at Soledad and 4 years with none at Chualar.
- **Median vs. Mean:** Most months have a median excess flow rate of zero, meaning that on at least half the days, no excess flow is available. However, the mean is much higher due to a few days with very high flows—these outliers skew the average and highlight the importance of considering full data distributions, not just averages.

- **Box and Whisker Analysis:** The interquartile range (middle 50% of data) of excess flow rate is often very low, while maximum values can be extremely high, showing that diversion opportunities are rare but sometimes substantial.

**4. Comparison of Diversion Locations**

- **Chualar vs. Soledad:** The Chualar gage generally records higher maximum and mean excess flows than Soledad, especially in wet months. This is due to additional watershed inflows (notably from Arroyo Seco). Chualar may be more favorable for larger diversion facilities, while Soledad offers more frequent but smaller diversion opportunities.

**5. Operational Windows and Frequency**

- **Limited Days for Potential Diversion:** On average, excess flow occurred only 46 days at Soledad and 42 days at Chualar from January through April, less than 40% of those 4 months. Over a full year, excess flows would have occurred less than 15% of the year.
- **Annual and Water Year Type Variability:** Wet years can have over 100 days with excess flow, while dry years may have fewer than 20 days, or none. Some years would have had no excess flows at either gage.

**6. Permit 11043 Rules and Flow Accounting**

- **Permit Terms and Conditions:** Diversion is only allowed when the flow at Soledad exceeds reservoir releases and the 3-day running average of natural flow is above the monthly minimum specified in the permit. In addition, 400 cfs is the maximum diversion rate. These conditions, along with other downstream obligations, restrict the timing and quantity of water available for diversion.
- **Flow Accounting:** All flow released from the Nacimiento and San Antonio Reservoirs is subtracted from the Soledad flow to determine "natural flow." Only flow conditions meeting Permit conditions are considered available for diversion under Permit 11043. Future analysis could differentiate stored water from other reservoir releases which may increase the estimated flow available for diversion under the Permit. Future analysis could also consider the degree to which additional reservoir releases would be needed to compensate for any diversion of natural flows under the Permit to meet environmental flow requirements, and the Endangered Species Act may decrease the estimated flow available for diversion under the Permit.

**7. Excess Flow Under Permit 11043 and Potential Diversion Yields**

- **Diversion Amount**: On average, diversions on the Salinas River pursuant to Permit 11043 could have diverted approximately 1,100 to 31,700 AF/yr depending on the diversion facility size, ranging from 10 to 400 cfs. The largest permissible diversion rate of 400 cfs would on average have diverted less than 25% of the total annual permitted diversion amount of 135,000 AF.

- **Importance of Diversion Facility Size:** For the Permit diversion sizes less than 200 cfs, annual average volumes diverted are similar at both locations. For larger facilities (up to 400 cfs), more water could have been diverted near Chualar due to additional watershed inflows. For example, a 400 cfs diversion near Chualar could divert an average of approximately 4,400 AF/yr more than near Soledad.
- **Operating Below Capacity:** Most of the time, a Permit 11043 diversion facility would have operated at less than 10 cfs, and a large facility capable of diverting more than 200 cfs would have operated near its capacity less than 5% of the time.

**8. Implications for Project Planning**

- **Infrastructure Sizing:** The variability in flow rates and operational windows means that diversion infrastructure must be sized and managed to accommodate both typical and extreme conditions. Planning should consider not just averages, but the full range of observed and calculated flows.
- **Regulatory and Environmental Constraints:** The analysis does not account for all downstream obligations or environmental requirements, which may further limit diversion opportunities and reduce the quantities of water available for diversion under the subject permit.

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U.S. Geological Survey. 2016. National Water Information System data available on the World Wide Web USGS Water Data for the Nation. accessed June 27, 2025. at USGS 11152300 SALINAS R NR CHUALAR CA

U.S. Geological Survey. 2016. National Water Information System data available on the World Wide Web USGS Water Data for the Nation. accessed June 27, 2025. at USGS 11152050 ARROYO SECO BL RELIZ C NR SOLEDAD CA

# Appendix E

# C&E Projected Flows TM

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# TECHNICAL MEMORANDUM

**DATE:** March 2, 2026 **PROJECT #:** 9100.78

**TO:** Salinas Valley Basin Groundwater Sustainability Agency

**FROM:** Stephen Hundt

**REVIEWED BY:** Abby Ostovar, Ph.D.

**PROJECT:** Castroville & Eastside Canals and Alternatives Preliminary Feasibility Study

**SUBJECT:** Projected Salinas River Flows Analysis

## INTRODUCTION

This appendix documents the methods and assumptions used to develop projected Salinas River flows and associated diversion estimates for project scenarios evaluated as part of the Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study (C&E Study). This analysis builds on the Salinas River Historical Flows Analysis that was completed based on observed historical flows. The analysis supports a comparative, planning-level evaluation of how proposed Salinas River diversion, recharge, and in-lieu use concepts could affect groundwater sustainability in the Eastside, Langley, and 180/400 Subbasins. Project goals, project concepts, and the overall study context are described in the main body of the report.

The sections that follow describe the analytical approach used to estimate future potential diversions under Permit 11043, including preparation and bias correction of modeled streamflow, application of operational constraints, and computation of projected diversion volumes at the Castroville Canal Intake location (or Castroville Intake for short). The analysis is intended to evaluate relative differences in diversion availability across diversion capacities and future conditions, rather than to predict precise daily or annual flows.

## METHODS

### Determining Diversions for Project Scenarios

A multi-step process was undertaken to estimate diversions that could be made in accordance with Permit 11043. These used the Salinas Valley Operational Model (SVOM) future baseline climate sequence (M&A, 2026). This projected analysis followed the analytical approach as the historical Salinas River flows analysis; however, it relied on modeled weekly flows that required a correction for consistency between simulated and observed data. Diversion at the Castroville Intake location was evaluated rather than at the Soledad or Chualar stream gages. Additional flow-past constraints were applied, intended to approximately align with MCWRA's proposed Salinas River Operations Habitat Conservation Plan (HCP) and ensure diversions would not constrain Salinas River Diversion Facility (SRDF) operations.

#### Model outputs and daily series preparation

SVOM future baseline results were extracted for reservoir releases, flow at the Chualar and Soledad gages, flow at SRDF (and required flow at SRDF when available), and flow at the Castroville Intake location. Because SVOM results are provided on a weekly time step, the series were converted to a daily time step to apply the same daily diversion logic used in the historical flows analysis, including running-average conditions and daily diversion-rate limits. For this screening-level evaluation, weekly values were carried through to daily values across the corresponding week to enable daily accounting.

#### Bias correction to align modeled and historical magnitudes

The historical flows analysis was repeated at Chualar using historical (1977–2018) and modeled flows to (1) estimate average annual diversion availability for 50, 100, and 200 cubic feet per second (cfs) diversion capacities and (2) evaluate the degree of bias in the modeled flows relative to the historical record. SVOM was found to overestimate streamflow at this location in these years, so a simple linear transformation was applied, via trial by error, to better align modeled and historical flow magnitudes for the purposes of estimating diversion volume:

$$Q_{corr} = \max(0, 0.36 \cdot Q_{svom} - 70)$$

where Qcorr is corrected flow, and Qsvom is modeled flow from the SVOM.
This correction is not intended to reproduce day-to-day hydrograph behavior or event timing. The correction could increase the number of zero-flow days; however, it was selected to support a reasonable estimate of total annual diversion volume, which is the key quantity used to compare diversion capacities and evaluate potential groundwater benefit in subsequent analyses.

The same transformation was then applied to modeled flows at the Castroville Canal Intake location. Modeled flows at Chualar and the Castroville Intake were nearly identical during the primary diversion season (December–April; regression slope 0.99, intercept 2 cfs, $R^2 = 0.75$), and observed intake flow data were not available to develop an independent bias correction. Given this agreement between modeled locations during the months when diversion would primarily occur, applying the Chualar-based correction at the intake was considered reasonable for this study.

The historical period used to develop the streamflow bias correction (1977–2018) differs from the historical periods summarized in the main body of the report and the historical flows analysis appendix (2010–2024 and 2020–2024). The 1977–2018 period also spans multiple reservoir operation regimes that no longer fully align with current conditions. This choice reflects, in part, modeling decisions made earlier in the study, as well as a deliberate tradeoff between using more recent years that reflect current operational practices and using a longer period that better captures climate variability and is less dominated by the 2012–2016 drought. The appropriate balance between these competing considerations introduces some inherent uncertainty. Nonetheless, the resulting projected diversion estimates align closely with those derived from the historical analysis (Table 1).

Additionally, the bias correction was developed to align historical and modeled diversion volumes for 50, 100, and 200 cfs capacities, but not the 400 cfs capacity. While the linear transformation could closely align historical and modeled average annual diversion volumes for the 50, 100, and 200 cfs capacities, achieving a similar fit for the 400 cfs case would have reduced performance for the other capacities, which were used more extensively in this study. As a result, diversion volume estimates for the 400 cfs scenario are slightly conservative, with the bias-corrected volumes averaging approximately 90% of historical estimates.

Table 1. Projected Average Annual Diversions Compared to Historical Annual Diversions at Chualar

| | 50 cfs capacity | 100 cfs capacity | 200 cfs capacity | 400 cfs capacity |
|---|---|---|---|---|
| Historical Recent Period (WY 2020-2024) | 5,300 | 10,000 | 18,200 | 31,700 |
| Historical (WY 2010-2024) | 4,400 | 8,600 | 16,200 | 29,300 |
| Projected | 5,100 | 9,700 | 17,200 | 26,800 |

Values in acre-feet per year

#### Additional flow-past constraints (HCP and SRDF protection)

After preparing the bias-corrected intake flow series, additional constraints were applied beyond the historical flows analysis diversion bypass approach to better reflect likely future operating requirements. To approximate the proposed HCP, the projected flow at Chualar and the date were used to identify which fish passage release rule(s) could be in effect at each time, and the most restrictive flow-past requirement was enforced. In most cases this resulted in a minimum of 80 cfs flowing past Chualar, while higher requirements were applied during “block flow” periods when indicated by the HCP logic.

A second, intentionally conservative constraint was applied during periods when model results indicated SRDF was operating. During these times, a 200 cfs requirement was enforced to ensure diversion under Permit 11043 would not reduce water availability for SRDF (i.e., would not occur at the expense of CSIP operations). This threshold was derived by identifying the highest simulated streamflow loss between the Castroville intake and SRDF during April operating periods and adding the SRDF diversion rate. While this approach is expected to be conservative in many cases, it provides a protective assumption for this screening-level assessment.

#### Calculate each diversion capacity

Finally, potential diversion amounts were computed at the Castroville Intake using the bias-corrected flows and the flow-past constraints described above, for diversion capacities of 50, 100, 200, and 400 cfs. Diversions were assumed to begin in Water Year (WY) 2036 (after October 2035).

Figure 1 illustrates how these calculations were applied for an example projected diversion season of WY 2053. The total area under the curves represents simulated streamflow in the Salinas River at the Castroville Intake. Each colored band corresponds to a different allocation of flow. The lowest band (light blue) represents the flow required to remain past the diversion point to satisfy the HCP and SRDF constraints described above. The next band (orange) shows the volume that could be diverted with a 50 cfs capacity. The subsequent band (gray) represents the additional flow that could be diverted to reach a total diversion capacity of 100 cfs. Diversion capacities of 200 and 400 cfs are shown similarly by the yellow and blue bands, respectively. The green area represents flow in excess of the 400 cfs diversion capacity.

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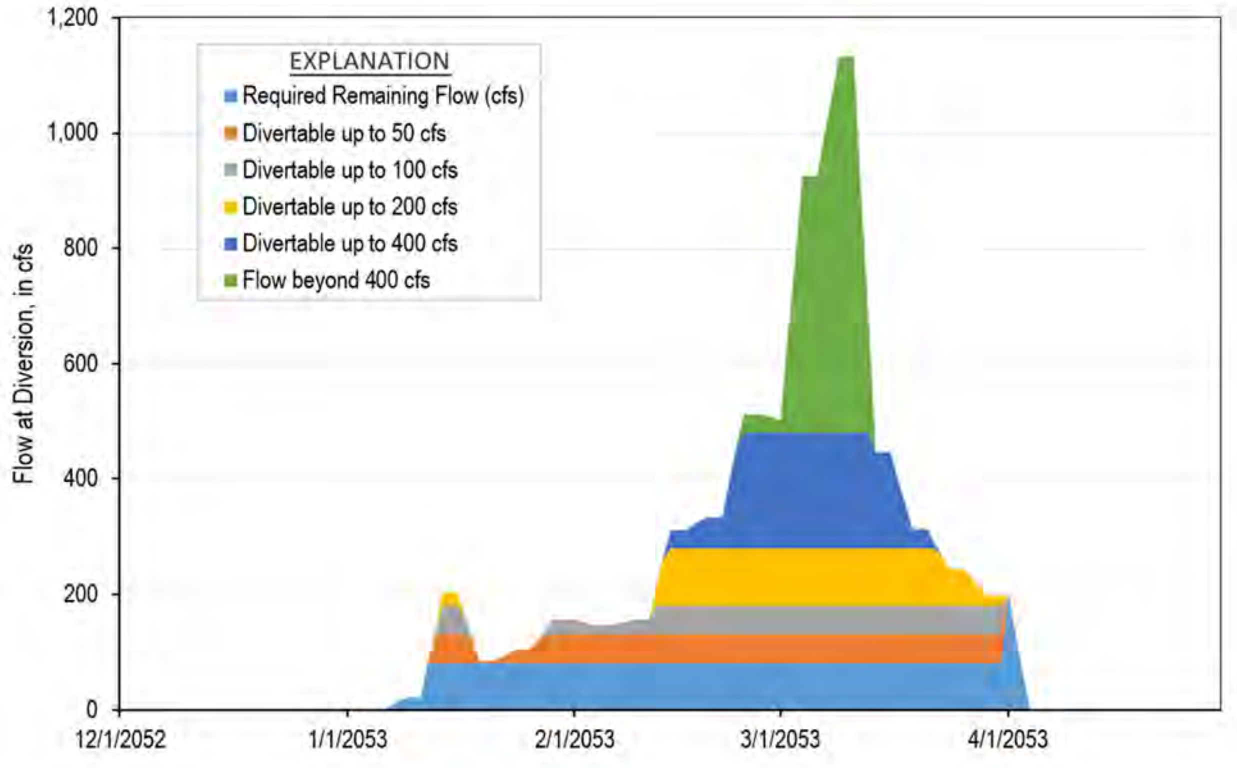


Figure 1. Total Bias Corrected Flow, Required HCP Flows, and Divertable Flows for WY 2053 Diversion Season

## RESULTS

Projected average annual diversion volumes for each diversion capacity are summarized alongside historical estimates in Table 1. For all capacities, projected values fall between the estimates from the 2 historical periods shown. This result reflects, in part, differences in the years represented and the substantial interannual variability in divertible flow, as illustrated on Figure 2. The WY 2010–2024 historical period includes the severe 2012–2016 drought, which likely lowers the associated averages. In addition, the streamflow bias correction was calibrated using a different historical period than those summarized in Table 2. That the projected values remain close to these independent historical summaries validates the correction approach. Projected diversions also reflect additional constraints applied to approximate anticipated HCP requirements and protect SRDF diversions. Given the inherent uncertainty of the projected climate, the results are considered sufficiently representative for the purposes of this study.

Table 1 shows that both projected and historical diversion volumes increase less than proportionally with diversion capacity. This increase occurs during periods when streamflow exceeds required flow-past constraints but remains below 1 or more diversion capacity thresholds, limiting the extent to which higher capacities can be used.

Total projected annual diversion volumes for each capacity are shown on Figure 2 and exhibit substantial year-to-year variability. Only 6 years in the 50-year projection period show no diversion, while a similar number of years yield identical diversion volumes across 2 or more capacities, indicating no benefit from additional capacity in those years. Many years show roughly double the diversion volume for the 100 cfs capacity relative to 50 cfs, whereas this pattern is less common for the 200 cfs capacity and does not occur for the 400 cfs capacity. This pattern reflects the limited frequency of flow conditions capable of fully using the highest diversion capacity.

Average monthly projected diversions for each capacity are summarized in Table 2. Diversions are concentrated in the December–April period, with the highest and most similar monthly averages occurring in February and March, followed by January and December; April contributes relatively little volume. This seasonal pattern is broadly consistent with the historical analysis (Table 3), although differences are evident in the relative contribution of individual months.

These differences likely reflect several factors, including the use of different year sets, limitations of the modeled streamflows in reproducing short-duration high-flow events, the focus of the bias correction on aligning average annual (rather than monthly) diversion volumes, and the application of additional HCP and SRDF protective constraints. For the purposes of this study, these differences are not considered significant. The historical analysis remains more appropriate for evaluating diversion timing and operational considerations, while the bias-corrected projections are well suited for assessing diversion volumes and recharge impacts at seasonal to annual scales, where total volume and interannual variability are the primary drivers of groundwater response.

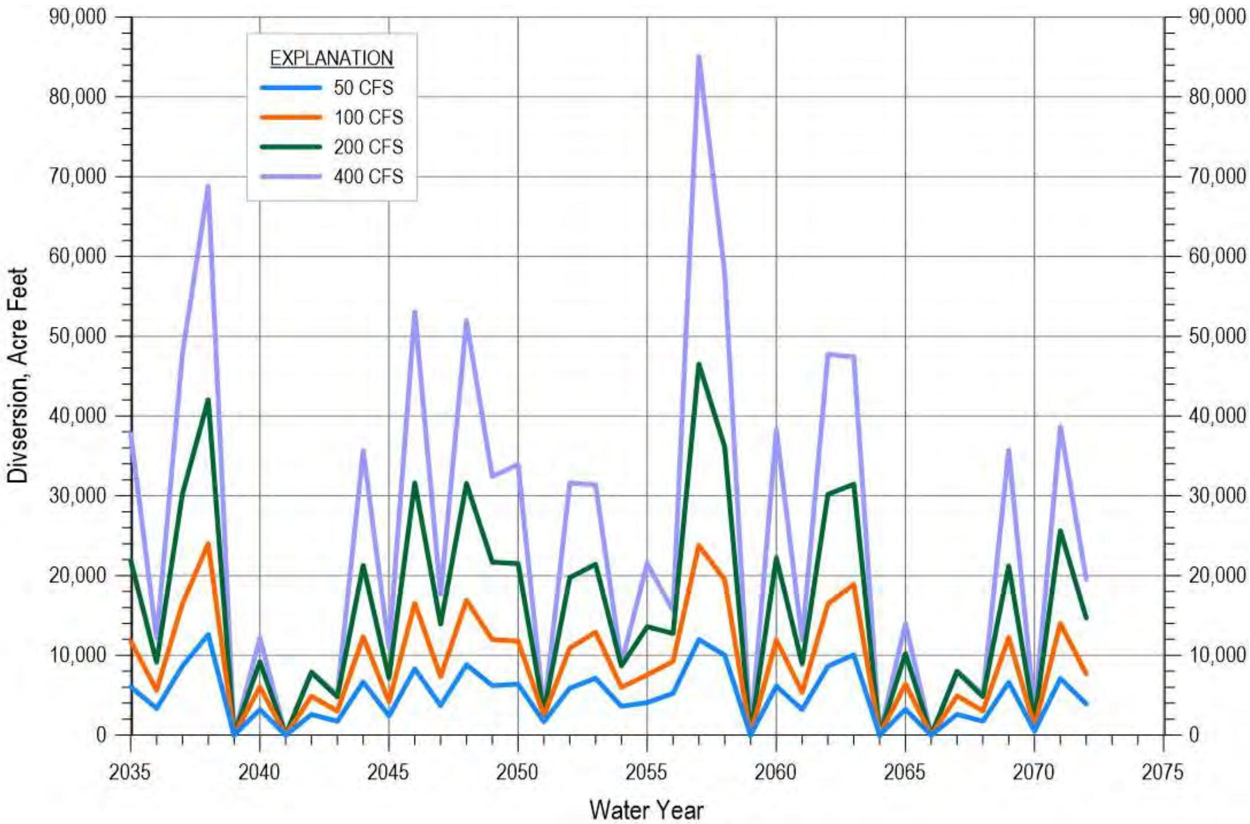


Figure 2. Projected Annual Diversions, in Acre-Feet per Year

Table 2. Average Monthly Projected Diversions, in cfs

| Month | 50 cfs | 100 cfs | 200 cfs | 400 cfs |
|---|---|---|---|---|
| Oct | 0 | 0 | 0 | 0 |
| Nov | 0 | 0 | 0 | 0 |
| Dec | 17 | 31 | 54 | 72 |
| Jan | 19 | 35 | 64 | 105 |
| Feb | 21 | 39 | 70 | 117 |
| Mar | 22 | 41 | 71 | 106 |
| Apr | 3 | 5 | 9 | 14 |
| May | 0 | 0 | 0 | 0 |
| Jun | 0 | 0 | 0 | 0 |
| Jul | 0 | 0 | 0 | 0 |
| Aug | 0 | 0 | 0 | 0 |
| Sep | 0 | 0 | 0 | 0 |

Table 3. Average Monthly and Annual Diversions for Historical Flow Analysis and Flood Control Assessment at Soledad, WY 2010–2024

| Month | Historical Flow Analysis | Flood Control Assessment |
|---|---|---|
| Oct | 74 | 167 |
| Nov | 62 | 91 |
| Dec | 506 | 649 |
| Jan | 3,875 | 3,881 |
| Feb | 6,243 | 6,860 |
| Mar | 8,374 | 7,990 |
| Apr | 4,386 | 4,458 |
| May | 702 | 646 |
| Jun | 2 | 5 |
| Jul | 20 | 43 |
| Aug | 3 | - |
| Sep | 108 | 180 |
| **Total** | **24,353** | **24,971** |

Values in acre-feet

## CONCLUSIONS

This analysis extends the historical diversion assessment by estimating diversion availability under a projected future baseline, using bias-corrected modeled flows and additional operational constraints. Results are intended to support screening-level evaluation of diversion capacity and recharge benefits, rather than detailed operational forecasting.

**Key findings include:**

Diversion timing and variability
As in the historical analysis, diversion opportunities are concentrated in the wet season and vary substantially from year to year. The projected record includes years with no diversion as well as years where higher diversion capacities provide little or no incremental benefit, reflecting the limited frequency of flow conditions that exceed flow-past requirements.

Average annual diversion volumes
Projected average annual diversion volumes fall between estimates from the 2 historical periods evaluated and are considered reasonably consistent given the uncertainty in future hydrology. This agreement provides additional confidence that the bias-correction approach yields plausible estimates of annual divertible volume, even though monthly patterns differ modestly.

Diminishing returns with increasing capacity
Increases in diversion capacity yield less-than-proportional increases in diversion volume. While a 100 cfs capacity often provides a meaningful increase relative to 50 cfs, incremental gains from 200 cfs occur less consistently, and the 400 cfs capacity is constrained by the rarity of conditions that allow full utilization under flow-past requirements.

Implications for groundwater benefits
Interannual variability in projected diversion volumes is an important input to groundwater modeling. Years with limited diversion help identify conditions under which recharge benefits may be minimal, while wetter years illustrate how recharge opportunities can accumulate over time to improve groundwater levels and storage. For this purpose, annual and seasonal diversion volumes are more important than the exact intra-seasonal distribution, making the projected analysis appropriate for evaluating recharge impacts, while the historical analysis remains the preferred reference for diversion operations and facility design.

## REFERENCE

M&A. 2026. Salinas Valley Operational Model Update and Projected Baseline Simulation. Prepared for: Salinas Valley Basin Groundwater Sustainability Agency.

# Appendix F

## Infrastructure Components Analysis

# MEMORANDUM

Salinas Valley Basin Groundwater Sustainability Agency
Castroville & Eastside Canals and Alternatives Study
Wallace Group Project No. 1447-0005

**Date**: March 30, 2026

**To:** Salinas Valley Basin Groundwater Sustainability Agency

**From**: Greg Hulburd, P.E., Travis Vazquez, P.E.
Wallace Group

**Subject**: Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study
**Appendix F: Infrastructure Components Analysis**

This memorandum identifies potential project components and describes technical considerations for development of project concepts under the Salinas Valley Groundwater Sustainability Agency's (GSA) Castroville and Eastside (C&E) Canals and Alternatives Preliminary Feasibility Study (C&E Study). The C&E Study considers use or modification of the Monterey County Water Resources Agency's (MCWRA) Permit 11043 or other river diversion options as a water supply source to advance groundwater sustainability goals for the GSA within the 180/400-Foot Aquifer (180/400), Eastside Aquifer (Eastside), and Langley Area (Langley) Subbasins. Wallace Group's contribution included:

- Historical documents review
- Summarization of potential project components and technical considerations

This work provided the background necessary for project concept definition(s), screening, pre-feasibility evaluation of project options, and feasibility evaluation(s) of the highest ranked project alternatives.

This memorandum focuses on a summary of findings resulting from Wallace Group's review of historical documents and information regarding availability of flow and water rights through the analyses performed by Montgomery & Associates (M&A) and MBK Engineers, respectively. In addition, it summarizes technical considerations for each of the main components of a project.

The list of potential projects has been compiled from previous concepts identified in historical documents and studies of the Salinas Valley groundwater basin. Wallace Group has reviewed the following documents (ordered chronologically):

1. DWR (California Department of Water Resources). 1946. *Salinas Basin Investigation Summary Report*, Bulletin No. 52-B.
2. SWRCB (State Water Resources Control Board). 1956. *Salinas River Basin Investigation, Bulletin No. 19*. February 1956.

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16. Salinas Basin Water Alliance. 2025. *Salinas River Pipeline Alternatives.*

## Background

Beginning with the 1946 Bulletin 52 from the California Department of Water Resources (DWR), there have been numerous studies and projects proposed for alleviating the dropping groundwater levels and mitigating seawater intrusion in the Eastside and 180/400 Subbasins of the Salinas Valley.

The scope of projects being considered in the C&E Study focuses on projects that utilize the existing water right permit held by MCWRA, Permit 11043. This permit authorizes diversions on the Salinas River at two locations, referred to as the Castroville and Eastside Canal intake locations. In addition, the study also considers other project concepts that would divert excess flow from the Salinas River that has not previously been stored in the Nacimiento or San Antonio Reservoir.[1]

Projects proposed in the historical documents reviewed, which focus on surface water diversions from the Salinas River, are summarized in a table provided in Attachment 1. The table excludes Phase 1 of the Salinas Valley Water Project (Salinas River Diversion Facility) as that project has been constructed and relies upon re-diversion of stored water from MCWRA's Nacimiento and San Antonio reservoirs. Similarly, other projects including previously proposed dam sites on tributaries to the Salinas River and water conservation programs are not evaluated as part of this study. Attachment 1 provides information from the documents for the following components for each project:

- Estimated Annual Yield, Acre-Feet
- Diversion Location
- Diversion Method
- Diversion Capacity
- Conveyance Method
- Storage
- Storage Capacity
- Treatment Requirements

Attachment 2 provides a visual overview of the previous project concepts as well as the permitted points of diversion and other points of interest.

## Permit 11043 Utilization

Permit 11043 authorizes a maximum diversion rate of 400 cubic feet per second (cfs) and a total annual diversion volume of 135,000 acre-feet per year (afy) at two defined diversion locations for irrigation and municipal beneficial uses. The permit constrains diversions through establishment of minimum flow thresholds set for each month that must be met at the Eastside Canal intake on the Salinas River (near the USGS Soledad gage station) whereby diversions are only allowable when natural flows (i.e., total river flow less reservoir release

[1]Non-stored water includes water from upstream reservoirs that has been stored for less than 30 days.

flows) exceed these minimum thresholds. In-depth discussion of the existing Permit 11043 history and constraints are provided in separate reports by MBK Engineers.[2,3]

Under the existing permit constraints, any project will be limited in scale due to the following:

1. Generally, water is available to be diverted between January – April based on M&A's historical flow analysis (Appendix D)[4].
2. Storage of diverted water for more than 30-days is not allowed under the existing permit.

Generally, there is little to no agricultural irrigation during the winter months with demand dependent on availability of seasonal precipitation to satisfy crop demand. Intuitively, there would be an inverse relationship between days when water is available to be diverted, and days that require irrigation, as the river will have its highest flows following storm events when growers will not be irrigating.

## Key Conclusions

Review of historical documents and preliminary flow availability analysis revealed the following significant findings related to infrastructure requirements:

1. **Without storage, the project will be limited by end user demand.** The historical flow analysis showed flows are available for diversion under Permit 11043 primarily from January – April, and on average less than 40% of the days within this period. This average availability represents less than 15% of the time throughout the year (the average number of days with flows available for diversion were 46 days at Soledad and 42 days at Chualar). Note that excess flows have large year-to-year variation; the statistics are outlined in detail in the historical flow analysis. In addition, it is expected that there will be little to no agricultural irrigation demand during the January to April period, leaving municipal demand as the primary potential on-demand end use. Municipal use would trigger the need for treatment to drinking water standards, adding expense and complexity to the project. Although the agricultural growing season remains active during winter in the Salinas Valley, these months experience the highest rainfall and lowest crop evapotranspiration rates. Irrigation needs, if any, will be minimal and highly sporadic as the timing will be dependent on unpredictable storm patterns. Lastly, Permit 11043 does not allow for water to be stored for more than 30 days, which limits the ability to use this water after April when irrigation water demands increase.
2. **A consistent theme in the previously proposed projects is diverting water from the Salinas River and conveying it to the subbasins in overdraft**, the Eastside and

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[2]MBK Engineers, 2025. *History of Water Rights – A013225 (Permit 11043), A032263C, A032263D, and A032263E*.
[3] MBK Engineers, 2025. *Evaluation of Salinas River Water Rights and Alternatives.*
[4] M&A, 2025. *Historical Salinas River Flow Analysis*, Technical Memorandum. Prepared for Salinas Valley Basin Groundwater Sustainability Agency. October 16, 2025.

180/400 Subbasins, either for in-lieu use or direct recharge to alleviate overdraft and mitigate seawater intrusion.

3. **Diversion Facility:** Multiple methods of diversion have been proposed in the historical documents. It is anticipated that the following three factors will be the biggest drivers in selecting a diversion method:
    a. Diversion Flow rate
    b. Environmental constraints
    c. Cost
4. The unpredictability and seasonality of the flows available for diversion under Permit 11043 creates operational and planning difficulties, such as scheduling water deliveries, developing agreements with end users, and supplying a stable flow needed for efficient treatment operations.
5. Several of the historical projects are near duplicates; evaluating each separately would be redundant. Therefore, this memorandum drew upon the historical projects to identify various options for key components of a conceptual Salinas River diversion project. Considerations and constraints are provided for each component.

## Conceptual Project Development Approach

There are several potential project components and factors to consider as part of the project evaluation. Figure 1 organizes these options into a component consideration framework. The intent of this graphic is not to provide a comprehensive list of all factors related to this project evaluation, but rather to organize the key project alternatives in a logical way to understand the options and how various project components are inter-connected. Each option will have unique considerations; these considerations are summarized in tables in the following sections. Additionally, a discussion section is included following the table, where needed, to elaborate on some key considerations.

The potential project components are split into three primary categories:

1. Diversion
2. Conveyance
3. End Uses

Each category includes a dedicated section to provide basic background and context for each option, followed by the outline of considerations. These considerations are based on Wallace Group's review of the historical documents, discussions with the project team, and engineering experience. The intent is to provide high-level, preliminary engineering guidance in preparation for project concept development.

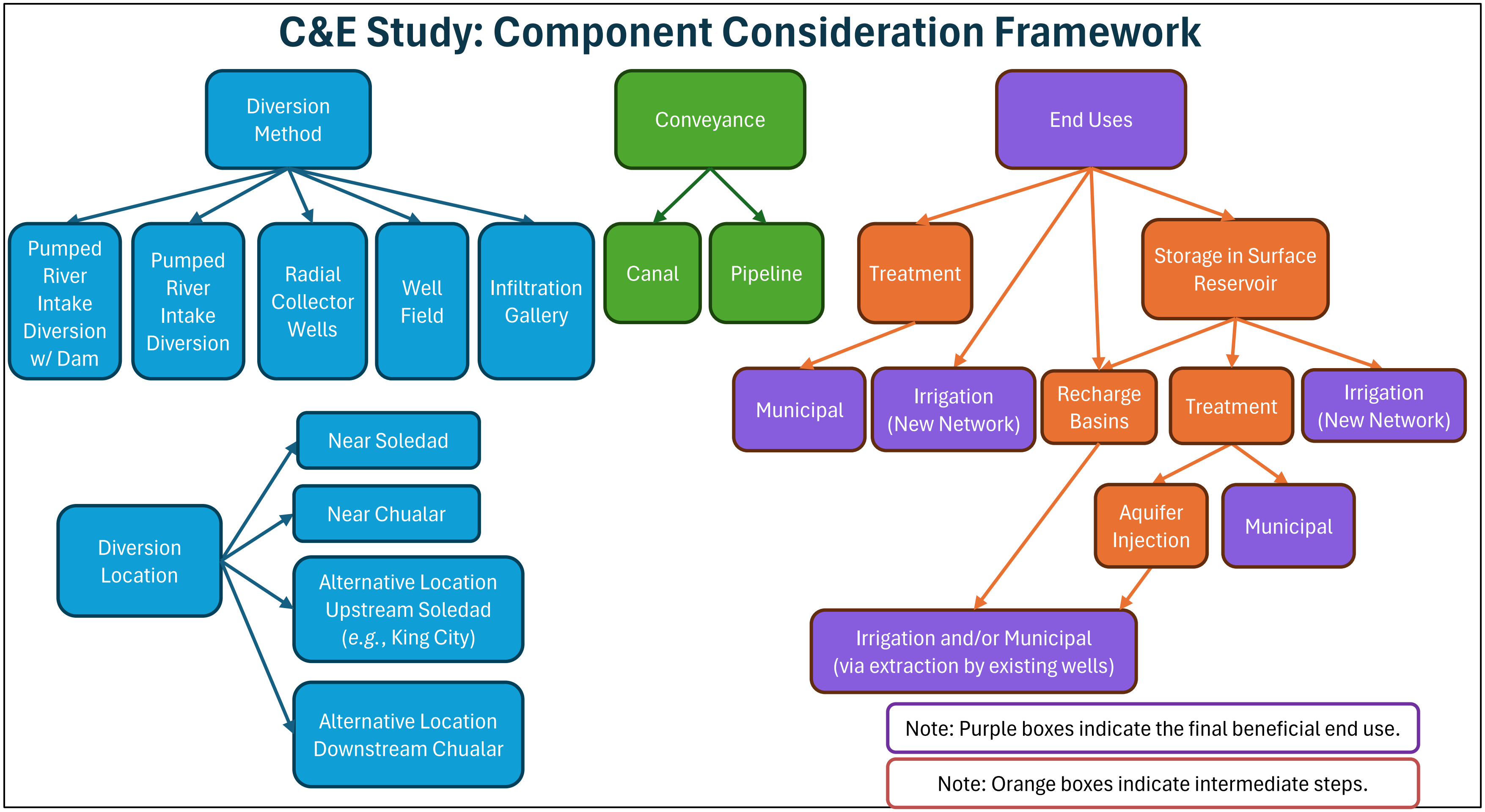


Figure 1. Infrastructure Component Consideration Framework.

## Diversion

Four primary diversion methods have been proposed in the historical conceptual projects, and a fifth method has been added for evaluation (pumped river intake diversion). All diversion concepts will require pumping, as there were no suitable gravity diversion sites identified in the studies. The list includes two surface diversion methods (pumped river intake diversion and pumped river intake diversion with dam) and three sub-surface methods.

- **Pumped River Intake Diversion with Dam** – A pumped river intake diversion with dam is a surface diversion method utilizing a screened pump intake and pump station on the bank of the river, combined with the use of a diversion dam or control structure across the river channel to manipulate water levels or create an impoundment. Typical diversion dams are hydraulic structures built across a river or stream to raise the water level and redirect all or part of the flow into another conveyance system, such as a canal, pipeline, tunnel, or another watercourse. Instead of creating a large storage reservoir, diversion dams typically create moderate impoundments upstream to balance flows and/or generate just enough upstream head to allow for gravity diversions. In the proposed configuration, a diversion dam would be used in combination with a screened pump intake on the riverbank to improve low flow conditions. One example of this concept is the existing Salinas River Diversion Facility (SRDF), completed in 2010. The facility consists of:
  - An adjustable spillway gate operated via an inflatable bladder (i.e., Obermeyer Gate also known as rubber dam/inflatable dam)
  - A screened intake to the diversion pump station
  - A bypass fishway for fish passage during migration periods which coincide with stream diversions

- **Pumped River Intake Diversion –** A pumped river intake diversion is a surface diversion method utilizing a screened pump intake and pump station on the bank of the river, without the use of a diversion dam or control structure across the river channel to manipulate water levels or create an impoundment. Although this was not considered in previous studies, it is a common river diversion method and is being considered for evaluation.

- **Radial Collector Wells** – also known as Ranney collector wells. A radial collector well consists of a central concrete caisson, typically 16 feet in diameter, installed adjacent to the river. The caisson is excavated to a target depth (previous studies have identified 40 feet), from which well screens are projected out laterally in a radial pattern beneath the riverbed to convey flow into the caisson. The wells are designed to maximize the yield per well by maximizing the screened length with multiple laterals as well as leverage the natural filtration provided via the riverbank. High-capacity vertical turbine pumps housed in the concrete caissons are designed to lift large volumes of water from the well.

- **Well Field** – This diversion method includes the installation of multiple shallow wells installed adjacent to the river. Shallow wells are positioned within the alluvial deposits or near-stream aquifer where groundwater and surface water are hydraulically connected. By pumping from these wells, a localized gradient is created that induces surface flow away from the river and toward the well field. This type of diversion is particularly useful in settings where direct surface water diversion is constrained by regulatory, environmental, or physical limitations. Design considerations include the hydraulic connectivity between groundwater and surface water, aquifer permeability, well spacing and depth, pumping rates, and seasonal variations in flow.

- **Infiltration Gallery –** This diversion method consists of screened pipes installed beneath and perpendicular to the river channel using traditional open-trench construction methods. The trenches for the perforated pipes would be backfilled with coarse granular material to improve permeability and induce surface water flow into the system. The perforated pipes from several infiltration galleries would be connected to a common manifold for collection and gravity conveyance to a pumping station located at the downstream end of the infiltration galleries.

Additionally, several diversion locations have been proposed in the previous studies.

- **Permit Location Near Soledad** – for purposes of this memorandum, this is the name assigned for the location consistent with the point of diversion for the “Eastside Canal Intake” defined in Permit 11043. It is located approximately three miles southeast of Soledad, at a point where the Salinas River changes direction from the east side of the valley toward the west. This location is consistent with the following historical documents reviewed:
    - 1946 Bulletin 52, DWR
    - 1968 Investigation of an Eastside Canal Project, MCFC&WCD
- **Permit Location Near Chualar** – for purposes of this memorandum, this is the name assigned for the location consistent with the point of diversion for the “Castroville Canal Intake” defined in Permit 11043. It is located approximately halfway between the town of Spreckels and Spence Road.
    - It is noted that the coordinates defined in the water right permit indicate a location approximately 1,200 feet north of the riverbank.
    - Three conceptual projects from the historical documents were found to have diversions in this vicinity, within a few miles of the location defined in Permit 11043. These locations were not considered separate options for this analysis; the primary considerations will be the same as for the “Chualar” location. The following historical documents include diversion locations near this point:
        - 1991 Water Capital Facilities Plan, Boyle Engineering – Project #31 East Side Irrigation Water Supply Project. The diversion location identified in this report is about 2.4 miles upstream from the 11043 Permit location.
        - 1998 SVWP Draft Master EIR, MCWRA. Located about 3.5 miles downstream from the 11043 permit location.

        - 2022 Eastside Subbasin GSP, SVBGSA– Project C1 Eastside Irrigation Water Supply Project. Same location as Project #31 from the 1991 Water Capital Facilities Plan, but with a smaller scale diversion utilizing shallow wells rather than a surface diversion.
- **Alternative Location Upstream of Soledad (e.g., King City).** This category includes several of the alternative locations identified which are not consistent with the two diversion locations defined in Permit 11043 and located upstream of Soledad. Previous locations identified include:
    - 1956 Bulletin 19, SWRCB – envisioned a diversion approximately three miles downstream of San Lucas. Included two alternatives – the first designed on the assumption that San Lucas Reservoir was constructed, a dam envisioned on the Salinas River to create a new 225,000 acre-feet reservoir. The second alternative assumed a diversion in the same location without construction of the San Lucas Reservoir.
- **Alternative Location Downstream of Chualar**. This category includes any potential diversion location downstream of the Chualar location. Although Wallace Group's review of historical project concepts did not identify any locations in this category, it is retained in this memorandum for the sake of completeness.

Figure 2 shows the component consideration framework associated with the diversion along with summarized versions of Tables A.1 and A.2. Tables A.1 and A.2 summarize the detailed considerations of each component shown in Figure 2, with variations of the component along the top row, and their respective considerations along the left column of the table.

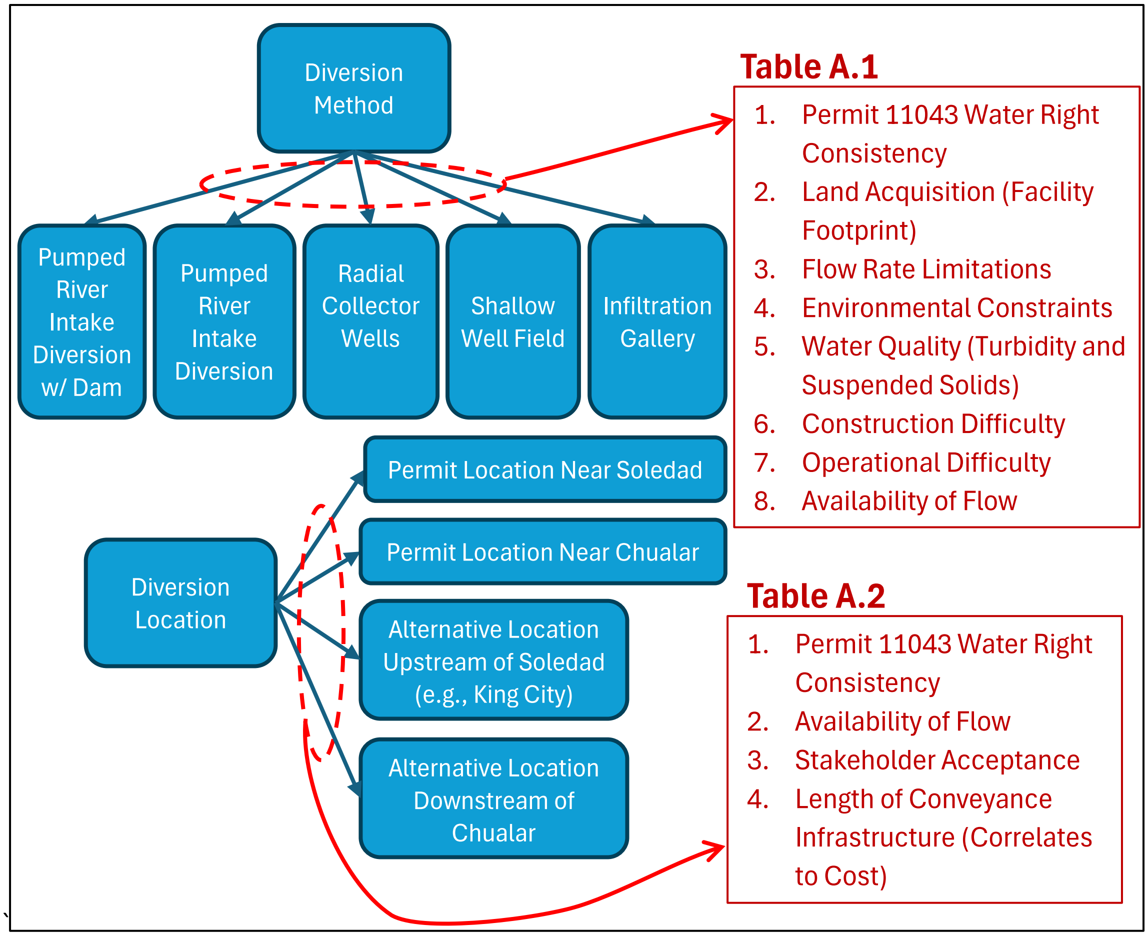


*Figure 2. Diversion Component Consideration Framework*

*Table A.1. Considerations for diversions.*

| Table A.1 Diversion Methods | | | | | |
|---|---|---|---|---|---|
| | **Pumped River Intake Diversion w/ Dam** | **Pumped River Intake Diversion *** | **Radial Collector Wells** | **Well Field** | **Infiltration Gallery** |
| **Permit 11043 Water Right Consistency** | Common diversion method that is compatible with the permit. | Common diversion method that is compatible with the permit. | It is assumed that the radial collector wells are a surface water diversion method, and thus compatible with the permit. | It is assumed that the shallow wells are a surface water diversion method, and thus compatible with the permit. | Common diversion method that is compatible with the permit. |
| **Land Acquisition (Facility Footprint)** | Footprint for the diversion dam and pump facility itself is significantly smaller than the subsurface options. Additional riparian land will be impacted due to the river water impoundment; the size of this area will be site specific depending on dam elevation and upstream terrain. | Footprint for the pumped diversion structure is likely the smallest of all options. | Per the 2001 SVWP EIR, assumed 3.3 cfs per collector well. For 80 cfs, 24 wells spaced over 4.3 mi (3.3 cfs per well, spaced 1,000' apart).[5] As the diversion size increases, the land required increases. | Historical documents with the Forebay well field diversion concept (1946 Bulletin 52, 1968 East Side Canal) did not include drawdown tests or estimations of area needed for well fields. Spacing not specified. | Considerations are similar to those of the radial collector wells. |
| **Flow Rate Limitations** | Well suited for high diversion flow rates. Less space required compared to other | Well suited for high diversion flows. The diversion structure/pump | Highly dependent on the site-specific subsurface conditions which will determine | Highly dependent on the site-specific subsurface conditions which will determine | Considerations are similar to those of radial collector wells. |

[5] The 1998 preliminary draft EIR references a study, *Draft Project Plan, Salinas Valley Water Project* (MW & RMC, 1998) which developed borings to investigate the feasibility and hydrologic parameters associated with the proposed location. Wallace Group has not obtained a copy of this report.

| Table A.1 Diversion Methods | | | | | |
|---|---|---|---|---|---|
| | **Pumped River Intake Diversion w/ Dam** | **Pumped River Intake Diversion *** | **Radial Collector Wells** | **Well Field** | **Infiltration Gallery** |
| | options. The dam footprint will largely remain the same regardless of diversion flow. The size of the pump station and associated facilities can scale up or down. There are many examples of diversion dams capable of diverting 400+ cfs in California. | station and associated facilities can scale up or down. There are many examples of pumped river intake diversions capable of diverting 400+ cfs in California. | yield per well. Better suited for low diversion flows, assuming 3.3 cfs per well as identified in a 1998 study. Projects at other locations (not on the Salinas River) have indicated much higher flow rates per well (e.g., 6 to > 20 cfs per well). | yield per well. Shallow well fields explored during the 1998 SVWP study were estimated to yield only 50-65 gpm per well. In the Forebay well field described in the 1946 DWR Bulletin 52 and 1968 East Side Canal reports, yields per well were stated to range from 1,800 to 4,000 gpm. | |

**Table A.1 Diversion Methods**

| | Pumped River Intake Diversion w/ Dam | Pumped River Intake Diversion * | Radial Collector Wells | Well Field | Infiltration Gallery |
|---|---|---|---|---|---|
| **Environmental Constraints** | Most difficult. Construction will be invasive to the riverbed and require a temporary river diversion. During operation, a water impoundment area will be created upstream with potential for flood risk and a fish screen meeting all regulatory requirements will be required. Diversion dams reduce recreational opportunities on the river. | Construction will be less invasive to the riverbed than the diversion dam or infiltration gallery, but more invasive than the shallow well field or radial collector wells. During operation, a fish screen meeting all regulatory requirements will be required. | Minimal impact in the riverbed – temporary river diversion not needed during construction. | Minimal impact in the riverbed – temporary river diversion not needed during construction. | Construction will be invasive to the riverbed due to trenching and requires temporary river diversions. During operation, river will be undisturbed. |
| **Water Quality (Turbidity and Suspended Solids)*** | Worst, raw river water does not receive any natural filtration. | Water quality will be similar to the pumped river intake diversion with dam configuration. | Good, river water is naturally filtered through the riverbank filtration. | Best, assuming proper screening and well development. | Receives less filtration than radial collector wells, more than diversion dam. |
| **Construction Difficulty** | Highly specialized | Fairly specialized, but less difficult than constructing a diversion dam. | Highly specialized | Less specialized; conventional well construction methods | Less specialized; conventional construction methods |

| Table A.1 Diversion Methods | | | | | |
|---|---|---|---|---|---|
| | **Pumped River Intake Diversion w/ Dam** | **Pumped River Intake Diversion *** | **Radial Collector Wells** | **Well Field** | **Infiltration Gallery** |
| **Operational Difficulty** | Due to diversions occurring over winter, this facility type involves the most complexity. Further study is needed on the practicality of dam operation during winter without increasing upstream flood levels. It may not be feasible to operate a diversion dam at any point during the winter. Will require sediment management in the forebay via flushing and jetting, as well as ensuring proper operation of the fish screen. | Less complex than the pumped river intake diversion with dam but will require management of sediment in the forebay via flushing and jetting, as well as ensuring proper operation of the fish screen. | Backwashing needed every 1 to 5 years per the 1998 SVWP Draft EIR. This period is highly dependent on water quality. | Least complex. | Considerations are similar to those of radial collector wells. |
| **Availability of Flow*** | More flow will be available for diversion during high river flows due to the buffer capacity/regulation from the water impoundment created by the dam.* | Neutral – facility would capture excess flows on days when bypass requirements are met. | Neutral – facility would capture excess flows on days when bypass requirements are met. | Neutral – facility would capture excess flows on days when bypass requirements are met. | Neutral – facility would capture excess flows on days when bypass requirements are met. |

*See discussion section for more information.

***Discussion – Diversion Method***

Additional discussion is included related to cost, pumped river intake diversions, water quality, and availability of flow.

**Cost:** While cost is a key consideration, Table A.1 does not include a row for cost; the cost will be highly variable depending on the factors outlined in the technical considerations. Relative cost for the four methods cannot be directly compared without defining the project further. Diversion size will be a key factor; for example, relatively small diversions may favor the radial collector wells for cost. However, larger flow rates may require an unreasonable number of radial collector wells, increasing the facility footprint/land acquisition, which then could cause the pumped river intake diversion with dam to be a more cost-effective option. Additionally, the water yield for the sub-surface diversion methods, and thus the quantity of facilities needed, will be dependent on local site conditions which are unknown at this time.

**Pumped River Intake Diversion:** Conceptual projects in previous studies, as well as the existing SRDF, have all included the combination of a diversion dam along with an intake pump station. It is presumed that a diversion dam has been necessary due to the shallow and even periodically dry nature of the Salinas River driving the need to build up the water level and create a consistent pool from which the intake pumps can pull, which also provides buffer capacity (discussed in the following section). However, it is worth investigating a screened intake and pump station without the use of a diversion dam, referred to as a "pumped river intake diversion" in this report. This idea stems from the fact that the permit constraints and historical flow analysis showed that diversion will only be available primarily from January-April, when flows in the river are high enough to satisfy the permit bypass requirements. Because this period coincides with higher river flows (and river water levels), it may be feasible to build a river diversion pump station that does not need a diversion dam to raise the river water level. Additionally, there may be additional bypass flow requirements above what is required by Permit 11043 to satisfy environmental concerns regarding fish passage; therefore, flows in the river under these conditions would correspond to higher river stages increasing the feasibility of using a pumped river intake diversion without use of a dam.

**Water Quality:** Water quality as referred to in Table A.1 refers to turbidity and suspended solids of the diverted water. Essentially, this compares how much natural filtration is received from the underlying sediments. The subsurface collection methods benefit from this natural filtration while the surface diversions do not. Turbidity will be a factor when considering the need for downstream treatment processes (e.g., coagulation, flocculation, sedimentation, and filtration). Water with high turbidity is more likely to cause issues with clogging injection wells, reducing the infiltration rate of recharge basins, reducing capacity in surface reservoirs (silting), and requiring pre-treatment for direct use. This consideration does not address any potential dissolved constituents that exist in the aquifer (e.g., nitrate). Site specific water quality investigations are required to evaluate potential contaminants.

**Diversion dam, availability of flow**: The diversion dam configuration provides a unique benefit in that it creates a small regulating reservoir/impoundment upstream of the dam. During high flows which are above the capacity of the diversion pump station, this regulating reservoir provides an opportunity to capture some of these peak flows that would have otherwise passed by. As an example, if there was a 48-hour period during which the river flow rate was 20 cfs higher than what could be captured from the diversion pumps, an 80 acre-foot regulating reservoir would be able to capture this water during the peak, allowing for diversion of this regulated water after the peak passes. The magnitude of this additional water captured would depend on:

- The scale and timing of these fluctuations in the river flow rate, and how this compares with the diversion pump station capacity.
- Volume of buffer storage offered by the water impoundment.

In practice, the actual operations of an inflatable dam are complicated due to the fact that it will be operating during the winter, the high flow period when diversion dams, such as the SRDF, are retracted to prevent damage. Typically, an inflatable river diversion dam would be in operation during lower flow periods. Further investigation is needed into how the dam would operate while maintaining flood capacity. It may not be practical to operate a diversion dam at any point during the winter due to the need for maintaining flood capacity in the river**.**

**Availability of Flow (all diversion methods)**: The potential project and its associated benefits/yield are dependent on other projects in the basin. This factor is not specific to any particular diversion method but rather applies to all options under consideration. The historical flow analysis conservatively did not include the winter flood releases when estimating the diversion flow available; however this could be a significant volume. Any future analyses that may account for the winter flood releases should also consider potential changes to those flows due to other proposed projects currently being developed as well as modeled future climate change projections.

### Diversion Location

Table A.2. outlines the considerations for diversion location.

*Table A.2. Considerations for diversion location*

<table>
<tr><th colspan="5">Table A.2 Diversion Location</th></tr>
<tr><th></th><th>Permit Location Near Soledad</th><th>Permit Location Near Chualar</th><th>Alternative Location Upstream of Soledad (e.g., King City)</th><th>Alternative Location Downstream of Chualar</th></tr>
<tr><td>Permit 11043 Water Right Consistency</td><td>Consistent with Permit 11043 point of diversion location.</td><td>Consistent with Permit 11043 point of diversion location.</td><td>Requires a Petition for Change, which allows for a protest process.</td><td>Requires a Petition for Change, which allows for a protest process.</td></tr>
<tr><td>Availability of Flow</td><td colspan="2">The M&A historical flow analysis showed that approximately the same amount of flow is available at Soledad and Chualar for diversions rated less than 200 cfs. For larger diversions, there is slightly more flow available at Chualar due to Arroyo Seco River inflows.</td><td>Uncertain, the Petition for Change process would likely include review and possible re-evaluation of the bypass flow requirements.</td><td>Uncertain, the Petition for Change process would likely include review and possible re-evaluation of the bypass flow requirements.</td></tr>
<tr><td>Stakeholder Acceptance</td><td>Unknown</td><td>Unknown</td><td>Moving the diversion point upstream is likely to be a contentious issue as more water users are potentially impacted.</td><td>Moving the diversion point downstream is expected to be less contentious than moving it upstream, as it is not increasing the number of impacted water users.</td></tr>
<tr><td>Length of Conveyance Infrastructure (Correlates to Cost)</td><td>Approximately 2.5 times longer than the Chualar diversion, assuming termination point east of Salinas.</td><td>Shortest length. Conveyance lengths for the other diversion locations are compared to this one.</td><td>Approximately 10 times longer than the Chualar diversion, assuming termination point east of Salinas.</td><td>A specific location is not identified, but conveyance length for this option is expected to be similar to the Chualar diversion, assuming termination point east of Salinas.</td></tr>
</table>

## Conveyance

Any conceptual project is likely to include large conveyance facilities in the form of either an open-channel canal or buried pipeline from the point of diversion to the place of use. Previous studies which include a canal as the means for conveyance include:

- 1946 Bulletin 19, DWR
- 1956 Bulletin 52, SWRCB
- 1968 Investigation of an Eastside Canal Project, MCFC&WCD

Previous studies which proposed a pipeline for conveyance include:

- 1991 Water Capital Facilities Plan, Boyle Engineering: Project #31 East Side Irrigation Water Supply Project
- 1998 SVWP Draft Master EIR, EDAW
- 2022 Eastside Subbasin GSP, Project C1 31 East Side Irrigation Water Supply Project

Options and considerations for conveyance methods are illustrated in Figure 3 and summarized in Table B.1.

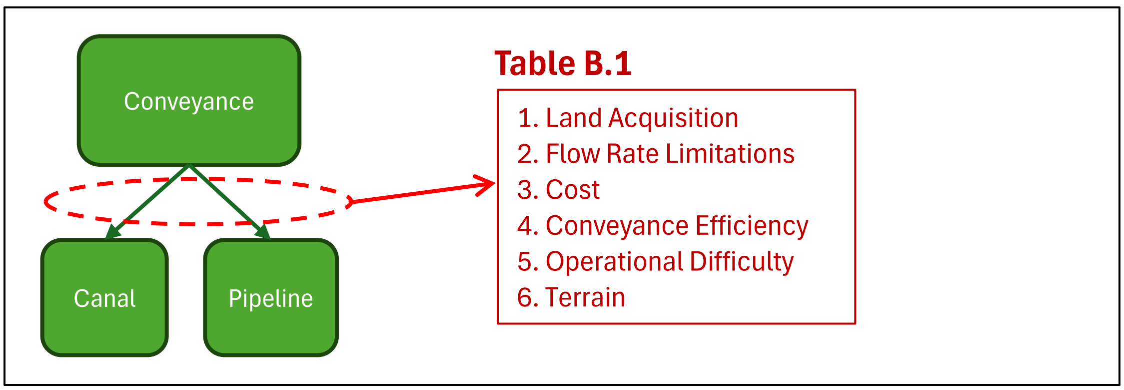


*Figure 3. Conveyance Component Consideration Framework.*

*Table B.1 Considerations for pipelines vs. canals*

| **Table B.1 Conveyance** | | |
|---|---|---|
| | **Pipeline** | **Canal** |
| **Land Acquisition** | More feasible. Portions of the pipeline could be constructed within county/city roads (i.e., public right of way). In other areas, land rights would be easier to obtain than for a canal; an easement for buried pipe would prevent agricultural land from being taken out of production. However, easement negotiations would potentially involve dozens of landowners. A pressurized pipeline would allow more flexibility for the alignment | Expected level of difficulty, duration, and cost of land acquisition process anticipated to be more than that for a pipeline. Acquiring land and constructing a canal will cause prime farmland to be taken out of production. This process would involve negotiations with dozens of landowners with potential to add time and complexity. |

| Table B.1 Conveyance | | |
|---|---|---|
| | **Pipeline** | **Canal** |
| | routing; the pipeline would not need to strictly follow the terrain to achieve a steady downhill slope, as a canal or gravity pipeline would. | |
| **Flow Rate Limitations** | Will likely be cost prohibitive at higher flow rates. Economic analysis is needed. | Scalable up to any flow rate. |
| **Cost** | Higher capital cost, lower operations and maintenance (O&M) costs (maintaining pipeline appurtenances such as air release and air/vacuum valves, blow-off facilities, cathodic protection facilities, and valves in addition to pressure and flow monitoring devices, SCADA telemetry devices, and access vaults). | Lower capital cost, higher O&M costs (operating canal control structures, vegetation, debris, and sediment control, lining and embankment repair, rodent and vector management, etc.) |
| **Conveyance Efficiency** | Minor losses associated with breaks or leakage. | Will experience seepage and evaporation loss (although seepage loss may provide benefit as a mechanism for groundwater recharge in areas without the Salinas Valley Aquitard). |
| **Operational difficulty** | Potential for on-demand water delivery with a pressurized pipeline system, adding flexibility for water users and potential energy savings. | Less flexibility for water deliveries and higher level of effort operationally for scheduling deliveries and operating the canal to match demand. |
| **Terrain** | Pipelines will be required if water is to be conveyed uphill. | Canals can only be used where water is not being conveyed uphill. |

## End Uses

The third category of the component consideration framework is end use. This section addresses what happens to the water after it is conveyed (i.e., how the water will be used whether for immediate direct use for irrigation or municipal purposes or indirect use requiring storage and later extraction). The ultimate end uses of diverted water considered in the C&E Study include municipal and irrigation “Purpose of Use” as allowed under Permit 11043. The end use category is the most complex component of the framework as there are many sub-options and decision levels. Additionally, for simplification the framework does not capture the final extraction and end use under each option.

Under the indirect use branch, it is assumed that the end use follows storage and extraction; for clarity the extraction and end use following storage is not displayed under “Indirect Use” on the end use component consideration framework summarized in Figure 4. For considerations of final end use which would occur after extraction of the stored water, refer to the municipal versus irrigation uses presented in Table C.2.

Most of the historical projects featured a mix of direct agricultural irrigation use along with some form of groundwater storage/recharge. Unlike the current constraints regarding the seasonality of available diversion flows, most of the previous conceptual projects were focused on diversion during the irrigation season, to be used for irrigation purposes.

Options for **direct use** are split into municipal and agricultural irrigation. Direct use is considered in-lieu groundwater recharge, as the surface water provides an alternative source of water to users who would otherwise be extracting groundwater.

Options for **indirect use** are split into intermediate steps for underground (aquifer recharge) and aboveground (surface reservoir).

**Aboveground storage/surface reservoirs** in this context refer to large reservoirs for long-term and seasonal water storage. Smaller regulating reservoirs (buffer reservoirs, balancing reservoirs, or operational storage) will likely be needed for nearly all end use options to absorb the daily differences in diversion flow versus end use demands, but do not constitute storage as long as residence time is 30 days or less.

**Injection wells** include direct injection of the diverted water for aquifer recharge. An injection well which also serves as an extraction well is considered an aquifer storge and recovery (ASR) well. For more information, refer to the preliminary feasibility study on ASR wells to address seawater intrusion, published in January 2025.[6]

Injection wells typically require treatment to drinking water standards consistent with the requirements for ASR wells in SWRCB’s Water Quality Order 2012-0010 (General Waste Discharge Requirements for Aquifer Storage and Recovery Projects That Inject Drinking Water Into Groundwater). This requirement drives the need for a water treatment plant. However, one program in the state, known as the Ag-ASR program implemented in the Westlands Water District, injects surface water through several Ag-ASR wells where treatment is limited to sand media filtration and chlorination at each wellhead. This program presents a more cost-effective solution than constructing a new water treatment plant that treats to drinking water standards. The Ag-ASR program is approved by the Central Valley Regional Water Quality Control Board (CVRWQB) and is subject to strict monitoring and reporting requirements to ensure it is not degrading water quality and affecting nearby municipal and industrial wells.

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[6] SVBGSA (Salinas Valley Basin Groundwater Sustainability Agency) and M&A (Montgomery & Associates), 2025. *Preliminary Feasibility Study Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion*. January 2025.

**Recharge basins** are basins which receive diverted surface water dedicated to percolation into the underlying aquifer. The area needed for a recharge basin may require taking farmland out of production. One option to consider, which would avoid the need for dedicated land for recharge basins, is direct spreading onto working agricultural fields (active farms). This practice requires coordination with participating landowners and would only be suitable for certain crops and growing practices. Although the Salinas Valley has nearly a year-round growing season, this may be a favorable option for growers who could modify practices for certain years to accommodate this recharge method (such as fallowing or forgoing double-cropping) rather than permanently taking farmland out of production. Crop compatibility for the prolonged saturated conditions during the wet season must be further investigated.

**Creek bed percolation** refers to releasing diverted water directly into natural stream channels to percolate and provide groundwater recharge. This concept would likely be used in conjunction with other end uses/facilities; it could be achieved by providing turnouts from the pipeline/canal at creek crossings to take advantage of natural creek beds for use as recharge facilities. As Permit 11043 diversion flows are likely only available during the winter, the diversion timing may be problematic as the creeks will likely be flowing over this period. Several of the historical studies include this concept.

The component consideration framework and technical considerations for end uses are shown in Figure 4. Note that this graphic is structured differently than the end use framework introduced in Figure 1. The end use category in Figure 1 presents the intermediate steps or processes required to serve various end use scenarios in a flow chart type format, whereas Figure 4 presents a decision tree for end uses structured such that each arrow split represents a decision point that comes with various considerations. To illustrate, when considering end use there is a decision as to whether direct end uses or indirect end uses will be pursued. If direct end uses are contemplated, then the next decision level is focused on serving municipal (requiring treatment) or irrigation end users. Under indirect use, an intermediate storage step is introduced before delivery to end users. Therefore, the decision level under indirect use concerns the choice between underground and aboveground storage. The selection of aboveground storage would be followed by a reservoir withdrawal and delivery step to either municipal (requiring treatment) and/or irrigation end uses; this decision point is not shown in Figure 4 for clarity as the applicable considerations are already represented on the figure and described in Table C.2. Selecting underground storage requires an intermediate step to deliver water to the storage aquifer using injection wells (which necessitate treatment), recharge basins, or creek-bed percolation. Similar to aboveground storage, underground storage would be followed by an extraction and delivery step to either municipal (requiring treatment) and/or irrigation end uses which is not shown in Figure 4 for clarity but the same considerations presented in Table C.2 would apply.

Note that each decision level would not necessarily be limited to the selection of one option only (e.g., aboveground or underground storage, municipal or irrigation end use, etc.); options could be combined as needed, or feasible, to meet a project's objectives and fit within project constraints.

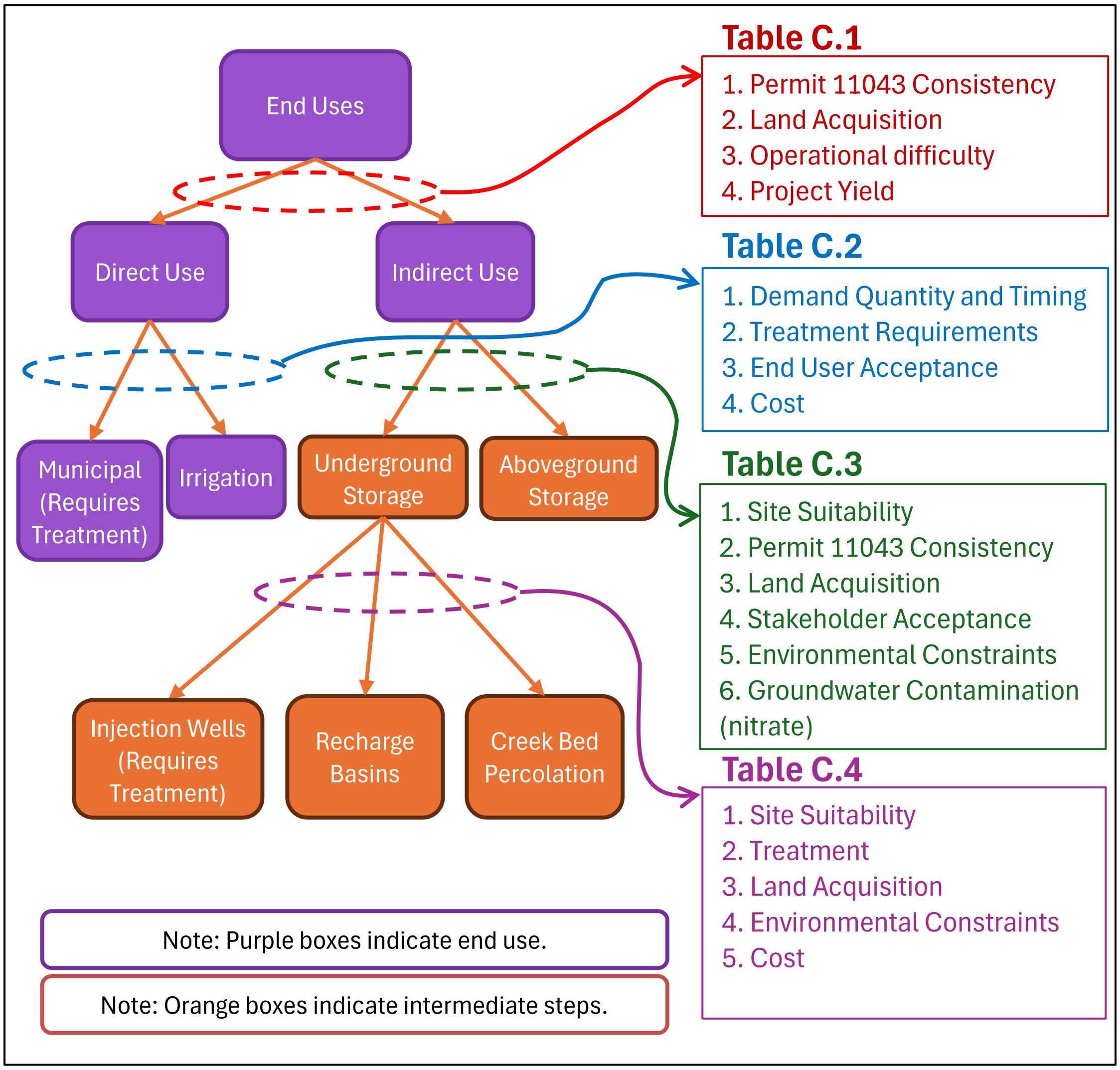



*Figure 4. Component Consideration Framework for end uses along with their considerations.*

Table C.1 summarizes the technical considerations for direct use versus indirect use.

*Table C.1 End Uses*

| Table C.1 End Uses | | |
|---|---|---|
| | **Direct Use** | **Indirect Use** |
| **Permit 11043 Water Right Consistency** | Consistent with the purposes of use defined in the water right. | Requires storage – this triggers a permit change to the type of right/method. |
| **Land Acquisition** | Less land is needed than most storage options in the indirect use category. Will likely need smaller buffer reservoirs to handle daily supply fluctuations (not for seasonal storage). | Highly dependent on sub-category choices (see Table C.3 and C.4). A surface reservoir for seasonal storage will require the most land, followed by recharge basins. Recharge basins can consist of multiple smaller basins, making land acquisition more feasible. |
| **Operational Difficulty** | Coordination needed for the fluctuating diversion flows and matching with demand. | Operationally simpler to divert to storage. |
| **Project Yield*** | Very limited without seasonal storage due to low demand during the wet season. | Higher yields available with seasonal storage to make up for low demand during the wet season. |

*See discussion section for more information.

***Discussion – End Uses***

**Project Yield:** To achieve significant yield during winter when diversion flows are available, additional storage is needed to seasonally hold water until demand increases; demand under direct use only will be limited. This storage can be either in the form of surface reservoirs or groundwater storage.

### Direct Use

Table C.2 summarizes the technical considerations for the direct use options.

*Table C.2 Direct Use*

| Table C.2. Direct Use | | |
|---|---|---|
| | **Municipal + Treatment** | **Irrigation** |
| **Demand Quantity and Timing*** | Without seasonal storage, it is assumed that municipal use is the only option for direct use. Municipal/urban water use makes up less than 10% of groundwater extractions in the Salinas Valley. | Diversion flows are available during the winter when there will be little to no irrigation occurring. Without seasonal storage, it is assumed that agricultural use of the diversion water will be impractical. |
| **Treatment Requirements*** | New treatment plant required to meet drinking water standards. The complexity/level of treatment may differ depending on diversion type and corresponding water quality. | No additional treatment is required from a regulatory standpoint. Each grower will have different needs dependent on irrigation methods and practices as well as water quality from the river (filtration, fertigation, etc.). The diversion method will affect the water quality as described in Table A.1. Additionally, disinfection requirements for irrigating leafy greens is another consideration which will be addressed in future phases. |
| **End User Acceptance*** | Due to the unpredictability and variability of diversion flows, it may be difficult to partner with municipalities. | No issues foreseen for use as agricultural supply; acceptance driven by cost of this source. |
| **Cost** | The need for water treatment will make this option more expensive. | Lower cost. |

*See discussion section for more information.

### *Discussion – Direct Use*

Additional discussion is provided below regarding demand quantity and timing, treatment requirements, and end user acceptance.

**Demand Quantity and Timing:**

According to the 2024 Groundwater Extraction Summary Report,[7] which captures data from wells with discharge pipes over 3-inches in diameter, agricultural pumping makes up 90.8% of groundwater extractions in the Salinas Valley, with municipal pumping making up the remaining

[7] MCWRA (Monterey County Water Resources Agency), 2025. *Groundwater Extraction Summary Report.* June 2025.

9.2%. The urban extractions by City or Area are presented below in Table 1 and Figure 5. Note that the seasonality of the demand must be kept in mind; the urban pumping volume is summarized in annual acre-feet per year; only a fraction of this demand will occur when diversion flows are available January-April. The average flow for diversion (cfs) column is useful for a direct comparison to diversion flow rates being contemplated.

Depending on the number of municipal end users and their demand, it is likely that the total municipal delivery demand would be less than the target diversion flow rates (i.e., there may not be sufficient municipal demand to justify diversions of 30 cfs or higher – unless a long-term storage facility is possible).

Additionally, the distance between the urban areas is significant and will be a factor driving the cost to supply more than one of the urban areas listed. For instance, Soledad is 25 miles southeast of Salinas. Other cities such as Greenfield and King City are further upstream than the two Permit 11043 diversion points, as well as outside the target sub basins. Although more demand could theoretically be collected by supplying diverted water to several of the urban areas, the most cost effective option would likely be targeting Salinas (highest urban water use area) and adjacent surrounding areas.

*Table 1. 2024 Urban groundwater extractions by city/area.*

| 2024 Urban Groundwater Extractions | | | |
|---|---|---|---|
| City or Area | Urban Pumping (AF/year) | Percentage of Total Urban Groundwater Extractions | Average Flow for Diversion (cfs)[8] |
| Salinas | 18,249 | 48.9% | 25.2 |
| Marina | 3,404 | 9.1% | 4.7 |
| OA[9] – Pressure | 2,567 | 6.9% | 3.5 |
| Soledad | 2,176 | 5.8% | 3.0 |
| Greenfield | 1,993 | 5.3% | 2.8 |
| Gonzales | 1,921 | 5.1% | 2.7 |
| King City | 1,873 | 5.0% | 2.6 |
| Soledad Prisons | 1,380 | 3.7% | 1.9 |
| OA – East Side | 1,159 | 3.1% | 1.6 |
| OA - Forebay | 1,073 | 2.9% | 1.5 |
| Castroville | 811 | 2.2% | 1.1 |
| OA - Upper Valley | 564 | 1.5% | 0.8 |
| Chualar | 102 | 0.3% | 0.1 |
| San Lucas | 41 | 0.1% | 0.1 |
| San Ardo | No Data | | |
| **Total** | 37,313 | | 51.5 |

[8] Average cfs was not included in MCWRA's report table; these flow rates were added by Wallace Group for comparison to potential diversion flow rates and are equivalent to the annual urban pumping rates converted to an instantaneous rate in cfs. Note that urban water use is typically lower than the annual average during winter months.

[9] OA – Other Areas

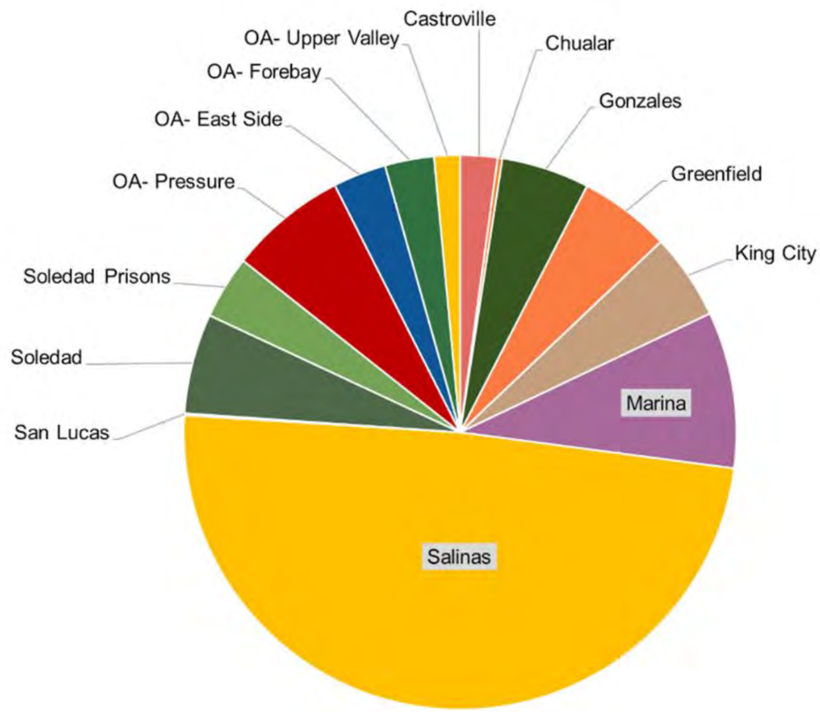



*Figure 5. Pie chart summarizing 2024 urban groundwater extractions. Source: MCWRA, 2024 Groundwater Extraction Summary Report.*

**Treatment Requirements:** Municipal water providers in the lower Salinas Valley are supplied via groundwater; there are no large-scale existing surface water treatment plants. Therefore, municipal water use will require a new water treatment plant to produce water meeting Title 22 drinking water standards. Note, there may be some potential to reduce the level of treatment required based on diverted water quality where riverbank filtration yields high quality raw water; however, at this stage we assume surface water treatment will be required. This need for treatment is highlighted in the component consideration framework (Figure 4), as it is a major factor in infrastructure required and, therefore, cost.

Given the proposed flow rates contemplated for the potential projects (e.g., 50 cfs or higher), the need for treatment greatly increases the cost compared to direct irrigation use or most indirect uses. The unpredictability and seasonality of the water availability creates operational and planning difficulties such as scheduling water deliveries and developing agreements with end users concerned with reliability. Additionally, treatment operations benefit from stable influent flow rates requiring upstream buffering storage capacity for stable delivery to the treatment facility.

**End User Acceptance:** Municipal use would require agreements with the participating water providers to take water diverted from the conceptual project when available, rather than rely on existing wells. Therefore, delivered costs to municipal water suppliers would need to be competitive with the costs of their extracted groundwater sources. Water suppliers will also be concerned with supply reliability to facilitate predictability in their operations.

**Indirect Use**

Technical considerations for options for indirect use are summarized in Table C.3.

*Table C.3 Indirect Use*

| **Table C.3. Indirect Use** | | |
|---|---|---|
| | **Underground Storage** | **Aboveground Storage** |
| **Site Suitability** | Sites must be identified by characterizing near-surface and subsurface properties to assess whether a site would be appropriate for a storage project (e.g., infiltration capacity, permeability of the vadose zone, the presence of extensive fine-grained zones, and aquifer transmissivity, etc.). Suitable sites may be limited. | Several sites have been identified in previous studies, but most were not advanced for further consideration; more investigation is needed for the few remaining proposed sites. |
| **Permit 11043 Consistency** | Requires modification to include storage, or potentially a modification to add groundwater recharge for a beneficial use to combat seawater intrusion or raise groundwater levels. | Requires modification to include storage. |
| **Land Acquisition** | Varies depending on option (see Table C.4), but all options require less land than aboveground storage. | Requires the most land out of all options. Will likely be very difficult/expensive to obtain the land needed for a reservoir large enough to store seasonal water. For context, the historical flow analysis showed the annual average volume that could have been diverted was 31,700 acre-feet,[10] assuming the maximum diversion size of 400 cfs. There is large year-to-year variability, and this could be significantly larger during wet years. To store this water seasonally until the irrigation season, a reservoir with capacity greater than this volume is needed. |

[10] For comparison, Santa Margarita Lake (Salinas Reservoir) at the head of the Salinas River in San Luis Obispo County has a capacity of approximately 22,300 acre-feet with a surface area of 730 acres.

| Table C.3. Indirect Use | | |
|---|---|---|
| | **Underground Storage** | **Aboveground Storage** |
| **Stakeholder Acceptance** | Stakeholders may voice concerns about land use, water quality, contaminant mobilization, or how the water may travel in the subsurface. Until a project is presented, it is difficult to anticipate all concerns at this time. | Selection of potential reservoir sites will likely be controversial. In-stream reservoirs on tributaries in the foothills will be difficult from an environmental and public acceptance standpoint. Off stream reservoirs in the valley (e.g., Merritt Lake) will be limited in capacity and require taking agricultural land out of production. Further investigation would be needed into the feasibility of using sites for seasonal water storage that are currently used for drainage/flood control purposes. |
| **Environmental Constraints** | Generally, fewer environmental constraints. | As noted above, in-stream reservoirs will likely be very difficult to implement for environmental reasons. Off stream reservoirs may have less environmental impact, but due to the large footprint required, would still likely raise environmental concerns. |
| **Groundwater Contamination** | Groundwater recharge risks contaminant mobilization, further investigation is needed. | Potentially reduced risk of groundwater contaminant mobilization. |

## Underground Storage

Table C.4 summarizes the technical considerations for the underground storage options.

*Table C.4 Underground Storage*

| Table C.4 Underground Storage | | | |
|---|---|---|---|
| | **Injection Wells + Treatment** | **Recharge Basins** | **Creek Bed Percolation** |
| **Site Suitability** | At a minimum, siting an injection location requires suitable subsurface hydraulic properties, and an assessment of injected and native compatibility. | Land availability and favorable subsurface sediment properties and hydraulic connection to underlying aquifers requires investigation. | Due to the seasonality of diversion flow only being available during the winter, utilizing creek beds for recharge may not be practical due to existing flow in the creeks. |
| **Treatment** | Typically, treatment to drinking water standards is required. The Ag-ASR program in the Westlands Water District allowed injection of surface water with lower treatment requirements.[11] | Treatment typically not required for diverted surface water. | Treatment typically not required for diverted surface water. |
| **Land Acquisition** | Less land required. Will be dependent on if a water treatment plant is required prior to distributing to injection wells, or if local treatment can occur at each injection wellhead site. | Most land physically required if utilizing dedicated recharge basins. Alternatively, options for partnering with landowners to implement periodic flooding on farmland could be investigated; this route would not require land acquisition but would require land owner agreements. | Land acquisition would be minimal as deliveries are made to existing creek beds. Footprint would be limited to canal or pipeline and turnout facility. |
| **Environmental Constraints** | Environmental constraints would be driven by need for a centralized water treatment plant which will increase the project footprint. | With largest footprint, recharge basins are anticipated to have the greatest potential for environmental impact. | Environmental impacts will largely include temporary construction impacts when constructing facilities. Due to reduced facility footprint, this option would have lower long-term environmental constraints. |
| **Cost** | The need for a water treatment plant will greatly increase the cost. | Diversion and site suitability will dictate the area required. This will drive the cost. | Minimal. |

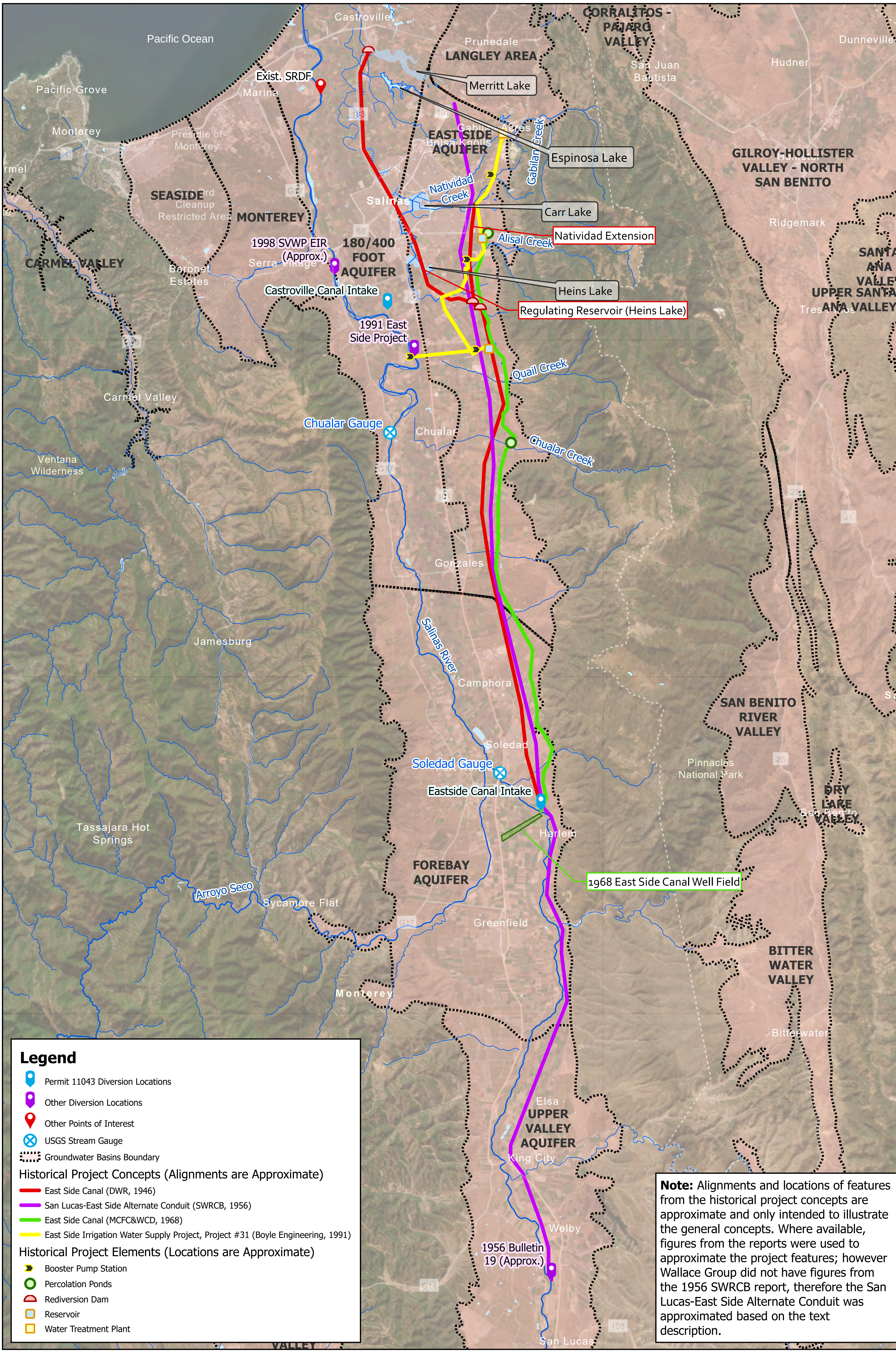
[11] Westlands Water District Ag-ASR program began operation in 2020.

## Attachments

Attachment 1. Table Summarizing River Diversion Projects from Previous Studies
Attachment 2. Overview Of Previous Project Concepts and Points of Interest (Figure)

**Attachment 1. River Diversion Projects from Previous Studies**

| Castroville and Eastside Canals Study - List of River Diversion Related Projects from Prior Studies | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Report | Date | Project Title | Estimated annual yield, AF | Diversion Location (Approximate) | Method of diversion | Diversion Capacity, cfs | Conveyance | Storage | Storage capacity | Treatment Required | Infrastructure Notes | Additional Notes |
| Bulletin 52 - DWR | 1946 | Proposed Diversion System | 45,000 | Soledad | Shallow well field | 250 cfs | Concrete canal to East Side and Pressure units | Regulating Reservoir | Heins Lake - 300 AF | None | - 36 diversion wells, 16" casings, 200' deep<br>- Conveyed to regulating reservoir , where concrete pipe used for tie in to distribution systems. Also utilize Espinosa Slough to the Salinas-Castroville Hwy crossing | For direct use in overdaft areas in lieu of local groundwater pumping |
| Bulletin 19 - SWRCB | 1956 | San Lucas-East Side Alternate Conduit | 86,000 | San Lucas | Surface River Diversion | 250 cfs | Concrete canal 63 mi to East Side and Pressure units | Several Reservoir sites identified, majority in upper basin | Varies by site | None | - This is an alternative to exclude the San Lucas Dam, which would be an in-stream Salinas River reservoir<br>- Location is much further south than Bulletin 52 diversion (San Lucas)<br>- Appears to be gravity diversion | This report also notes that Forebay well field not desirable |
| East Side Canal - Monterey County Flood Control & Water Conservation District | 1968 | East Side Canal | Not Quantified | Soledad | Surface River Diversion and well field | 220-400 cfs | 37 mi long canal, concrete lined for first 19.5 mi, earth lined through the Chualar-Qual and Alisal fans to help aquifer, distribution system for direct use | Utilizes underground storage | Not quantified | None | - Low diversion dam 3 mi SE of Soledad, pumping plant to lift water to head of canal<br>- 50' long concrete lined intake channel off side of river<br>- Direct use via pipes to fields<br>- 3 plans varying on direct delivery, percolation ponds and natural stream channels to replenish aquifers<br>- Well field used when river is low, pumps into the reservoir behind the diversion dam | - Groundwater levels in pressure unit would be improved<br>- In lieu surface delivery in the Chualar-Quail and Alisal fan areas could be percolated to replenish the underground water supply |
| Capital Facilities Plan - Boyle Engineering | 1991 | #29 Salinas Valley M&I Water Delivery Project | 33,227 | Chualar | Surface River Diversion | 85 cfs | Looped pressure pipeline system | x3 storage tanks | 3 MG each (28 AF combined) | Potable water treatment plant, 54.7 mgd, near diversion site | - Four booster pump stations (x4)<br>- Backup wells for years of prolonged drought | The estimated annual yield may include construction of other projects, such as the Jerrett Site Resrvoir (unclear). |
| Capital Facilities Plan - Boyle Engineering | 1991 | #31 East Side Irrigation Water Supply Project - Alt A | 21,000 | Chualar | Surface River Diversion | 128.9 CFS intake pumping plant | 15" to 60" pipelines | x2 Regulating Reservoirs | 90 AF combined | None | Intermediate booster stations (x3) | Assumes water for project purposes is released from the upstream reservoirs on a continuous 24 hour/day basis.<br>Assumes operational storage in the Salinas River upstream of dam to buffer daily demand |
| Capital Facilities Plan - Boyle Engineering | 1991 | #31 East Side Irrigation Water Supply Project - Alt B | 34,000 | Chualar | Surface River Diversion | 200 CFS intake pump station | 15" to 72" pipelines | x2 Regulating Reservoirs and groundwater recharge | 90 AF combined | None | Intermediate booster stations (x3)<br>Turnouts for groundwater recharge at Gabilan Creek, Natividad Creek, Alisal Creek, and Quail Creek | Larger diversion and service area than Alt A. |
| Capital Facilities Plan - Boyle Engineering | 1991 | #32 North County M&I Water Supply Project | 6,500 | Assumes joint use with Project #31 diversion and conveyance | | | Looped pressure pipeline system | x2 storage tanks | 3 MG each (18 AF combined) | Potable water treatment plant, 9 mgd, near Gabilan acres | -Two booster pump stations<br>- Backup wells for years of prolonged drought | This project assumes joint use with Project #31 facilities. |
| SVWP Draft Master EIR - MCWRA | 1998 | Salinas River Conveyance & Diversion | Up to 22,000 | Chualar | Radial Collectors Wells and/or Infiltration Galleries | 80 cfs | Pipeline | Balancing reservoir up to 3,000 AF | Merritt Lake ~3,000 AF to 9,600 AF, dam-location dependent | End-use dependent, but likely | -Ranney Collector proposal estimated at $36 million (1998)<br>-Infiltration Gallery proposal estimated at $58 million (1998)<br>-Total construction timeline ~2-3yr | -Subsurface collector types selected to accommodate for endangered fish species in River<br>- Assumes diversion of reservoir releases |
| Project C1 Eastside Irrigation Water Supply Project | 2022 | Eastside Aquifer Subbasin GSP | 3,000 | Chualar | 3 Wells up to 350' deep, 1,000 gpm each | 7 cfs | Pipelines | Regulating Reservoirs or Steel Tanks | Not quantified | Although primarily intended for direct agricultural use, injection wells are also mentioned as a possibility which would require treatment | - Extracting during typical 6-month irrigation season.<br>- Concept is that the extracted water will create space in the aquifer for additional storage during winter flows | This is a modified version of Project #31 from the 1991 Capital Facilities Plan (Boyle Engineering). Key differences include:<br>1. Well field instead of surface diversion<br>2. Much smaller scale (7 cfs compared to 130 or 200 cfs) |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study | 12,900 | Exist. SRDF | Surface River Diversion | Utilize exist SRDF, about 36 cfs | Pipelines from SRDF to storage and treatment, to ASR wells, and to to CSIP system | Utilizes underground storage | N/A | Potable Water Treatment Plant Required | 16 ASR wells, 8 in each aquifer<br>Initially proposed shifting reservoir releases to winter/spring. Divert to treatment plant to be conveyed to ASR wells in both 180/400 aquifers, and direct municipal use. | Addn'l groundwater pumping would be needed to meet CSIP demands since SRDF would no longer be used for CSIP supply. |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study - Alt 1 | 6,700 | Diversion site was not evaluated | Radial Collector wells | Up to 45 cfs | Pipelines from radial well to storage and treatment, to ASR wells, and to to CSIP system | Utilizes underground storage | N/A | Potable Water Treatment Plant Required | Diversion site and radial well capacities requires further evaluation. | New diversion facility instead of changing SRDF and reservoir operations |
| ASR Feasibility Study - M&A | 2025 | ASR Feasibility Study - Alt 1A | 6,700 | Diversion site was not evaluated | Radial Collector wells | Up to 45 cfs | Pipelines from radial well to storage and treatment, to ASR wells, and to to CSIP system | Utilizes underground storage | N/A | Potable Water Treatment Plant Required | Diversion site and radial well capacities requires further evaluation. | Same as above, except 1A only injects into 400 ft aquifer as seawater intrusion has slowed in the 180 ft aquifer |

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**ATTACHMENT 2**

**DIVERSION PONTS AND HISTORICAL PROJECT CONCEPTS**

CASTROVILLE AND EASTSIDE CANAL STUDY

JOB NO: 1447-0005
MAP DOC: Castroville and Eastside Canal Study
CREATED BY: TBV
DATE: 9/24/2025

**EXHIBIT NOTES:**
WALLACE GROUP DID NOT PERFORM SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.

# Appendix G

## Hydrogeologic Context for Recharge Basins and Injection Wells in the Eastside Subbasin

MONTGOMERY
& ASSOCIATES
Water Resource Consultants



# TECHNICAL MEMORANDUM

**DATE:** March 2, 2026 **PROJECT #:** 9100.78

**TO:** Salinas Valley Basin Groundwater Sustainability Agency

**FROM:** Victoria Hermosilla, P.G.

**REVIEWED BY:** Staffan Schorr and Abby Ostovar, Ph.D.

**PROJECT:** Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study

**SUBJECT:** Hydrogeologic Context for Recharge Basins and Injection Wells in the Eastside Subbasin

## INTRODUCTION AND PURPOSE

Groundwater elevations in the Eastside Subbasin have experienced long-term declines across the Subbasin, with the northern areas experiencing chronically depressed groundwater elevations that have resulted in a groundwater depression. Raising groundwater elevations requires either reducing groundwater extractions, increasing recharge, or some combination of both. The Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study (C&E Study) evaluates 4 project concepts, each targeting specific groundwater conditions in various parts of the Salinas Valley. Two of these scenarios focus specifically on the Eastside Subbasin: one aimed at raising groundwater levels in the central and southern portions of the Subbasin, and another targeting the northern Eastside and southern Langley Subbasins.

Recharge methods under consideration include surface water infiltration through constructed basins and direct recharge through injection wells. Because the alluvial fan deposits that form the Eastside Subbasin are clay-rich and heterogeneous, additional analysis is required to determine which recharge approach is most suitable in different locations.

The purpose of this assessment is to inform the C&E Study recharge approach for the 2 Eastside-focused project concepts. This assessment reviews existing data, provides hydrogeologic context for recharge methods, and identifies potential locations for recharge. Finally, it outlines next steps to advance the analysis should a C&E Eastside project concept move forward.

## DATA AND ASSESSMENT APPROACH

This assessment synthesizes available data and previous analyses to improve understanding of the potential for infiltration, recharge, and injection in the sediments that define the Eastside Subbasin. The primary data sources are lithologic and geophysical datasets, which provide insights into the sediment characteristics that control the movement of water from the surface to the subsurface.

Key sediment characteristics influencing water flow include porosity and permeability. Porosity refers to the void spaces between grains or within rock matrices. Coarser materials–such as gravels and sands–typically have high porosity and more interconnected pores, allowing water to flow more freely. Permeability is a measure of a rock's or soil's ability to transmit fluids. While these 2 characteristics are intrinsically linked, they are distinct in how they describe the hydrogeology of a rock or soil where water is found. For example, clays typically have high porosity but low permeability; they can hold a lot of water but do not transmit it well because their pore spaces are poorly connected and water adheres strongly to fine-grained surfaces. Conversely, saturated sands that contain significant secondary mineral deposits or cementation may have much lower permeability than expected, despite high porosity. Therefore, both characteristics need to be considered when evaluating available lithologic data typically derived from well completion reports, scientific studies, and geophysical surveys.

Additional available data include hydraulic parameters of the subsurface, such as hydraulic conductivity and transmissivity. Hydraulic conductivity describes the ease with which flow takes place through a porous medium. Transmissivity represents the ability of an aquifer of a given thickness to transmit water (hydraulic conductivity multiplied by saturated thickness). A well completion report may include multiple varying descriptions of sediments such as sand, clay, sandy clay, and gravel, each with their own hydraulic conductivities. However, a well installed with a long screen interval that spans several sediment layers will average the hydraulic conductivity across all layers, since the total volume of water entering the well reflects the combined contribution of all screened materials. These hydraulic parameters are typically derived from aquifer tests and pump tests within the Subbasin and are usually summarized through groundwater flow model development and analysis.

The main data used in this assessment are:

- SAGBI data: The UC Davis Soil Agricultural Groundwater Banking Index (SAGBI) is a suitability index for groundwater recharge on agricultural land. It is determined by analyzing 5 factors: Deep Percolation, Root Zone Residence Time, Topography, Chemical Limitations, and Soil Surface Conditions (O'Geen *et al.*, 2015). The index uses

USDA SSURGO (Soil Survey Geographic Database) soil survey data, which typically represent depths of about 3 to 6 feet.

- AEM data: An Airborne Electromagnetic (AEM) survey is a non-invasive geophysical technique that can quickly collect information about the subsurface over large areas (Dlubac *et al.*, 2024). This technique involves generating and receiving electrical resistivity data in the subsurface and then processing that data. Electrical resistivity describes the ability of a material to resist or conduct an electric current, which can be interpreted with other data as sediment characteristics.
- Well completion report data: Well completion reports (WCRs) include lithologic information to the total drilled depth of the well. This information includes descriptions of sediment types such as sand or clay from which coarseness and inferences about permeability can be derived. WCR data offer valuable site-specific detail in key locations to support project-level assessments.
- Other data: Additional supporting data include specific capacity data and nitrate concentrations. These data support the primary sediment data detailed above. Specific capacity is a measure of well performance found by dividing the pumping rate by the associated drawdown. It can also offer insight into local aquifer characteristics. These data are available in WCRs and can correlate to aquifer information. Nitrate is a common component of fertilizers and is soluble in water, which makes its transport in the subsurface easier.

This assessment involved reviewing available surficial and subsurface sediment data to determine the locations of the coarsest sediments in the Eastside Subbasin in anticipation of either managed recharge or injection of water. Surface and near-surface sediment data were more important for assessing managed recharge basin locations, and deeper subsurface sediment data were more important for assessing injection well locations. Key to all of these assessments is the understanding that many wells in the Eastside Subbasin are pumping groundwater from approximately 300 to 700 feet below land surface.

This assessment reviewed the hydrogeologic setting for basin or injection methods for the Eastside Subbasin and compiled a table of pros and cons. This assessment does not make a recommendation, but rather, it provides water resource managers in the Salinas Valley Basin with more context for decision making.

## FINDINGS

The findings generally reveal coarser sediments at the surface and shallow subsurface atop finer sediments through most of the Eastside Subbasin. The Subbasin is defined by the presence of clay-rich alluvial fans emanating from the Gabilan Range, as observed in AEM data. Further, historical reports of the Eastside Subbasin note higher clay content throughout the subsurface than in the adjacent 180/400-Foot Aquifer (180/400) Subbasin. Many wells in the Eastside Subbasin have long screen intervals to increase transmissivity through this more clay-rich environment. Any selected recharge method will require site-specific investigations prior to installation.

## Context for Recharge Basins

Quail and Alisal Creek Fans are the preferred locations for managed recharge basins because they have the coarsest surficial and shallow subsurface sediments, which would allow for higher rates of infiltration and recharge.

The potential for recharge from the surface is shown on the mapped SAGBI index on Figure 1. The green areas indicate the highest rating for recharge capacity, and the red areas indicate the lowest. Alisal Creek and Quail Creek alluvial fans have the largest amount of green area, indicating the areas of highest recharge capacity on Figure 1.

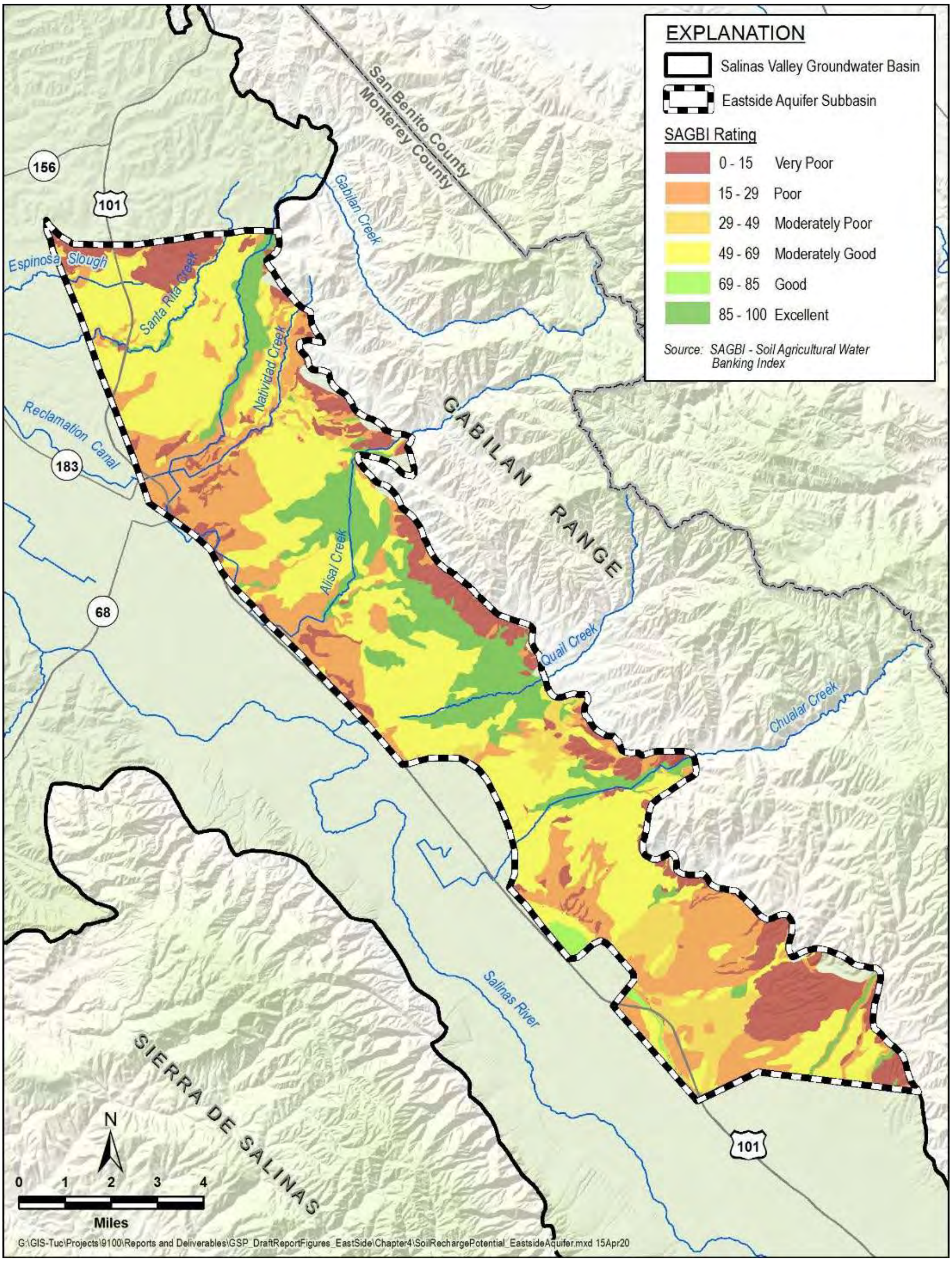


Figure 1. Eastside Subbasin SAGBI Map with Alisal Creek and Quail Creek Fans Showing Highest Recharge Capacity

Geophysical data and geologic cross sections help understand the shallow subsurface and deeper sediments. AEM data across the Alisal and Quail Creeks fans from 2 surveys are shown on Figure 2 through Figure 4, and cover an area of approximately 8 miles by 2 miles (41,600 feet by 10,500 feet). The cooler colors (blues and greens) represent low resistivity sediments, correlating with clays and silts. The hotter, shallower colors (oranges and reds), represent high resistivity sediments, correlating with course sediments such as sands and gravels. The hottest colors (reds and purples) at depth in the Eastside Subbasin represent the granite bedrock, which is a highly resistive rock. Figure 2 through Figure 4 show the top 200 feet of the groundwater basin and are represented by hotter colors, indicating courser sediments. These data affirm the Alisal Creek and Quail Creek alluvial fans are likely suitable sites for recharge basins. Other areas of the Eastside Subbasin have clays closer to the surface or more clays mixed in the shallow sediments, and therefore are not likely to be conducive to surficial recharge.

The average pumping well in the Eastside Subbasin is screened deeper than 200 feet from the surface. Further, the materials where wells are screened have more interbedded clay layers, as shown on the following figures with the cooler greens below the noted coarse regions in the subsurface. Managed recharge basins will help facilitate the downward movement of water into the aquifer and slowly help raise groundwater levels over time. Because the rate of recharge is typically lower than the rate of pumping, the impact of recharge basins may not be immediate. These differential rates do not necessarily eliminate Alisal Creek and Quail Creek fans as locations for managed recharge basins, but rather are a point of consideration.

Another important aspect of the hydrogeologic setting is the presence of shallow clay intervals that span large areas of the Salinas Basin, including in the Eastside Subbasin. The shallow clays, which are similar to the Salinas Valley Aquitard (SVA) in depth and hydraulic character, generally function as a barrier to the downward migration of water in the subsurface. An updated map of the SVA and shallow clays is shown on Figure 5. In the Eastside Subbasin, these shallow clays are generally encountered at depths of 20 to 50 feet below land surface, which is below the representative depth of the SAGBI data (3 to 6 feet). Therefore, managed recharge basins should be situated in locations that are within the higher SAGBI rated areas and outside of the extent of the shallow clays. In this way, the water added to the managed recharge basins could have a higher probability of infiltrating into the subsurface.

Another hydrogeologic consideration for siting managed recharge basins is the risk of mobilizing nitrate with the application of water at the surface. Nitrate already occurs in groundwater in the Eastside Subbasin, with high concentrations in the Alisal Creek and Quail Creek alluvial fan areas where infiltration and recharge appear to be easier, as shown on Figure 6. Projects and management actions implemented by the SVBGSA should not further degrade the groundwater conditions, so managed recharge basins should be sited carefully and with water quality mitigation features included to prevent additional nitrate migration.

MONTGOMERY & ASSOCIATES

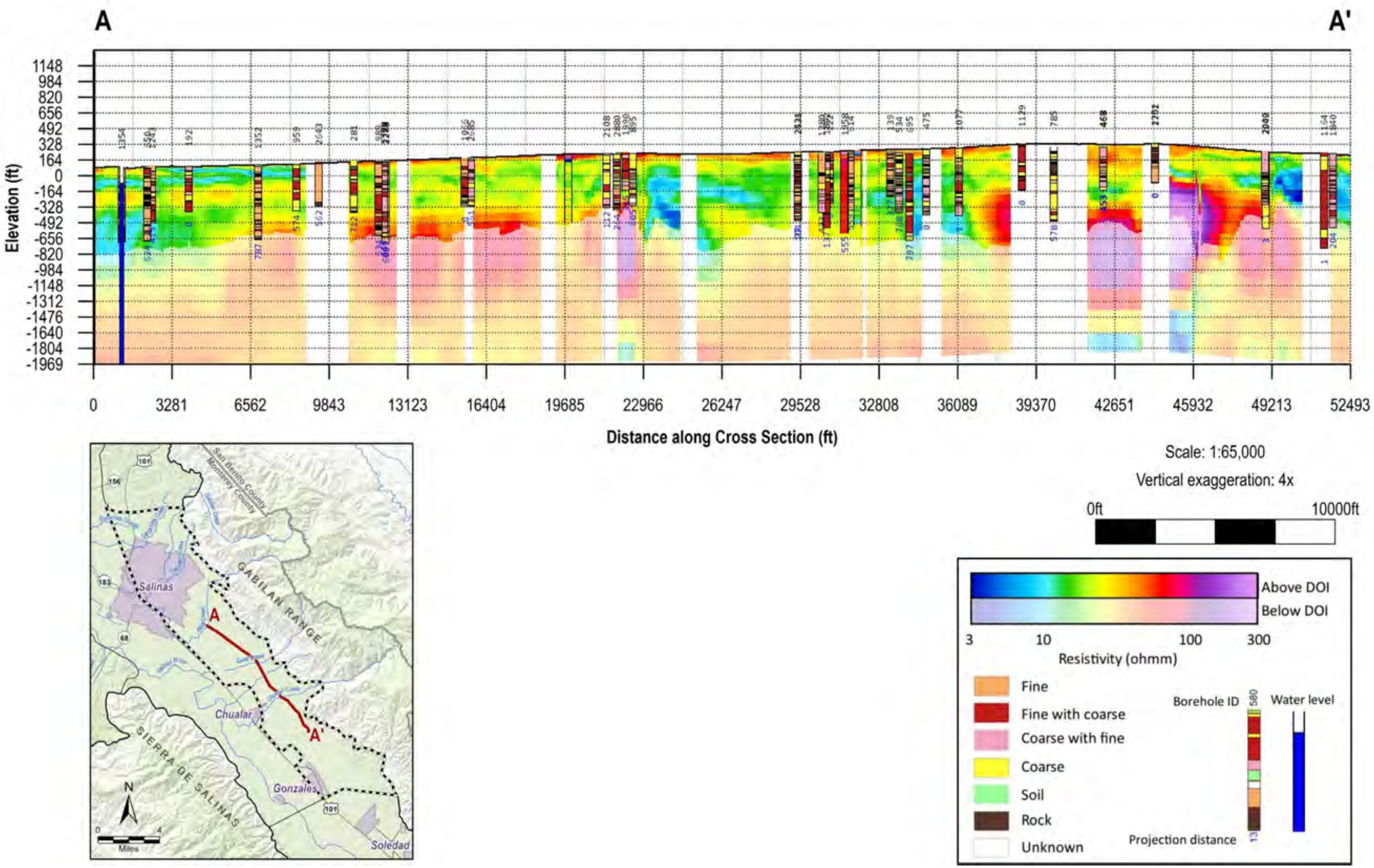


Figure 2. Selected AEM Cross Section A-A' across Upper Alisal Creek and Quail Creek Fans in Eastside Subbasin

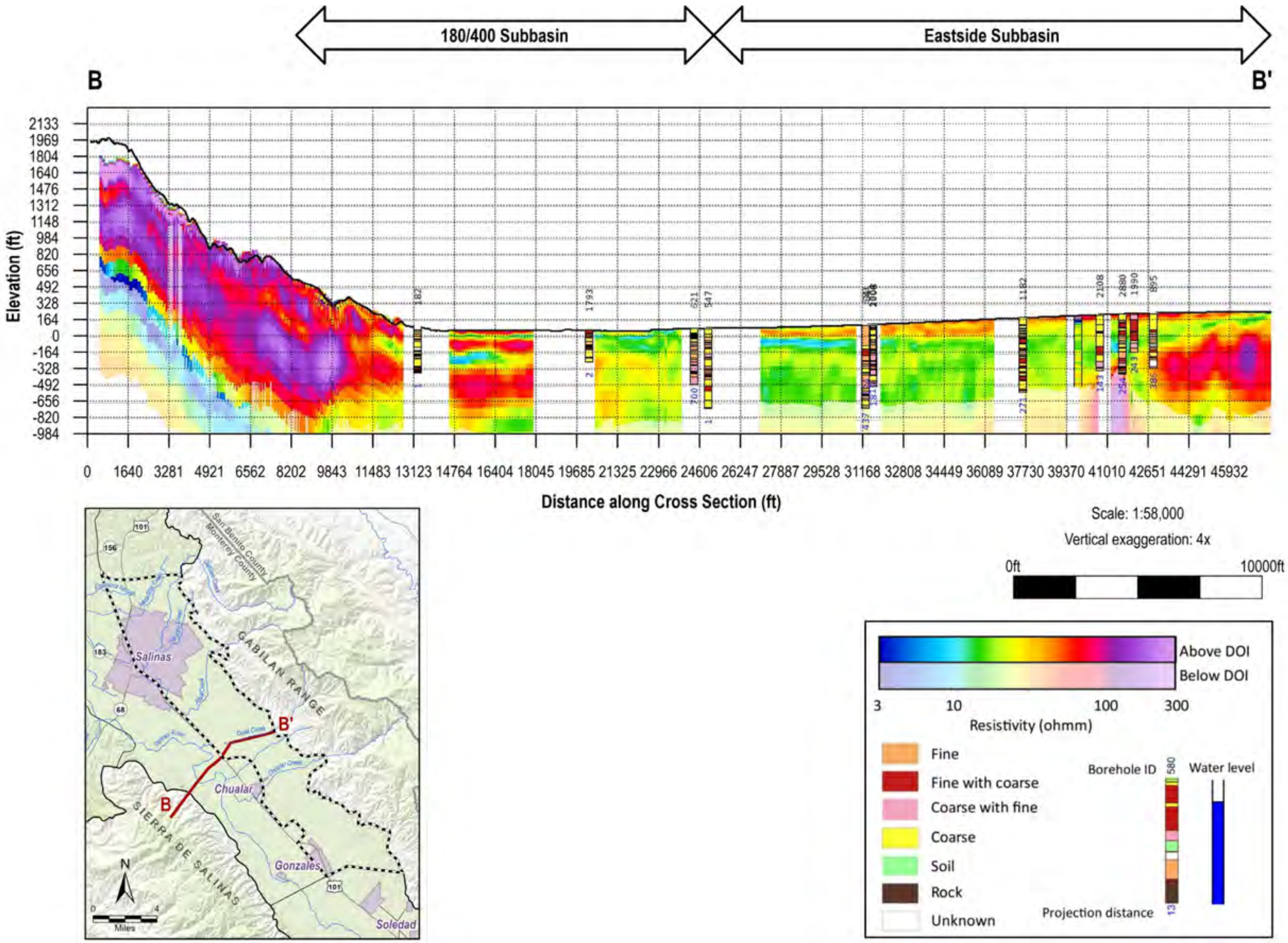


Figure 3. Selected AEM Cross Section B-B' across Quail Creek Fan: North

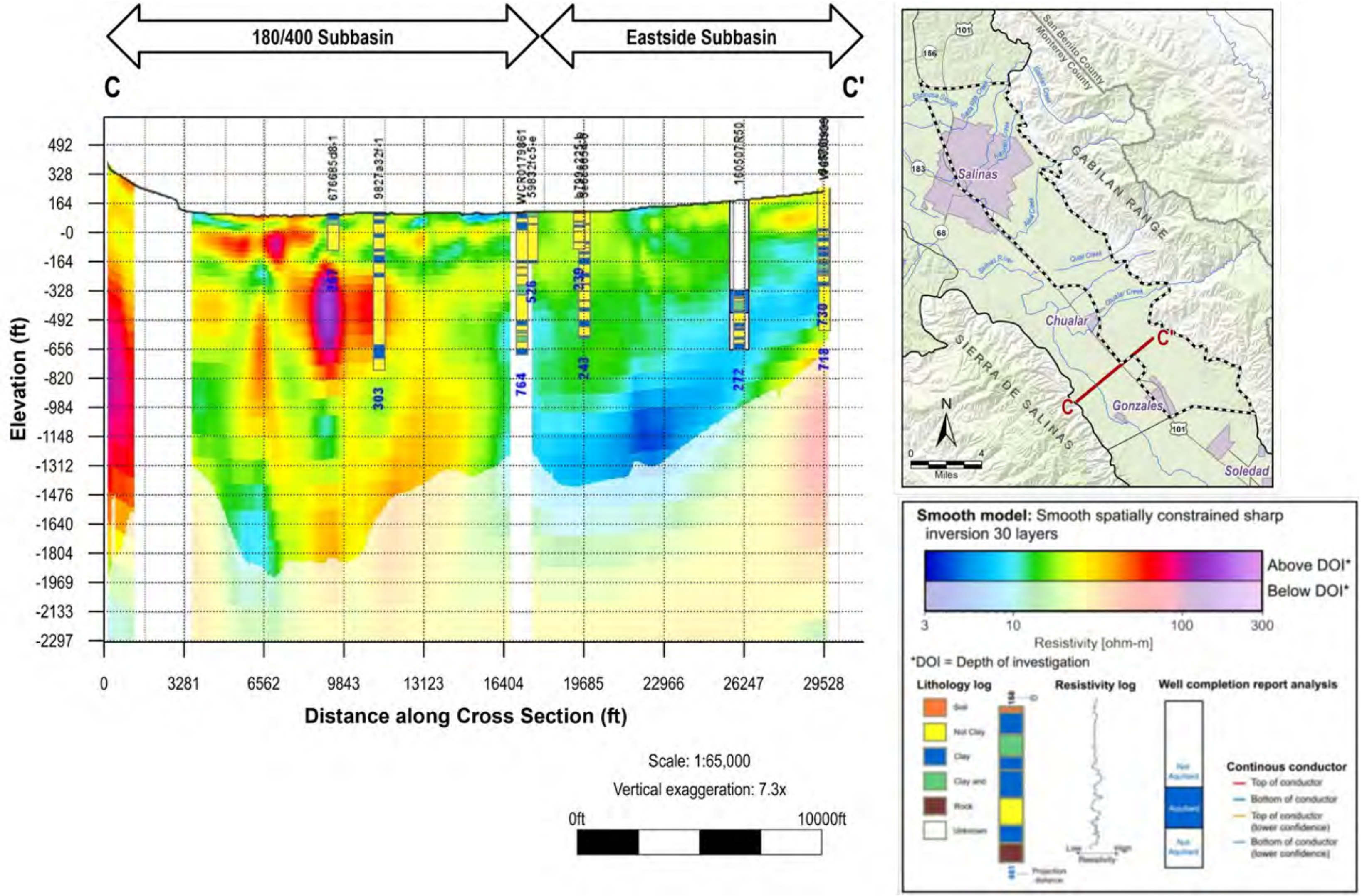


Figure 4. Selected AEM Cross Section C-C' across Quail Creek Fan: South

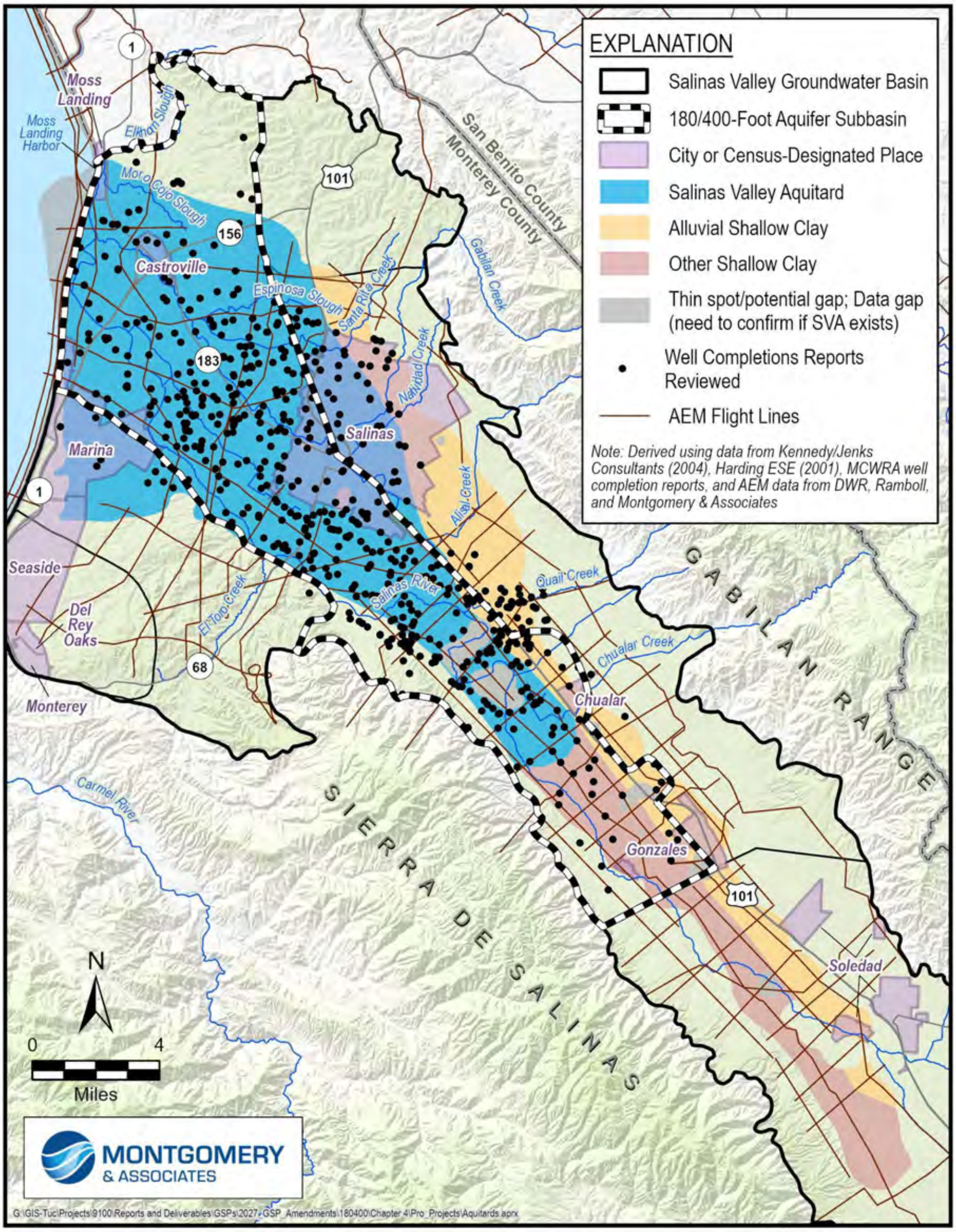


Figure 5. Salinas Valley Aquitard and Other Shallow Clays

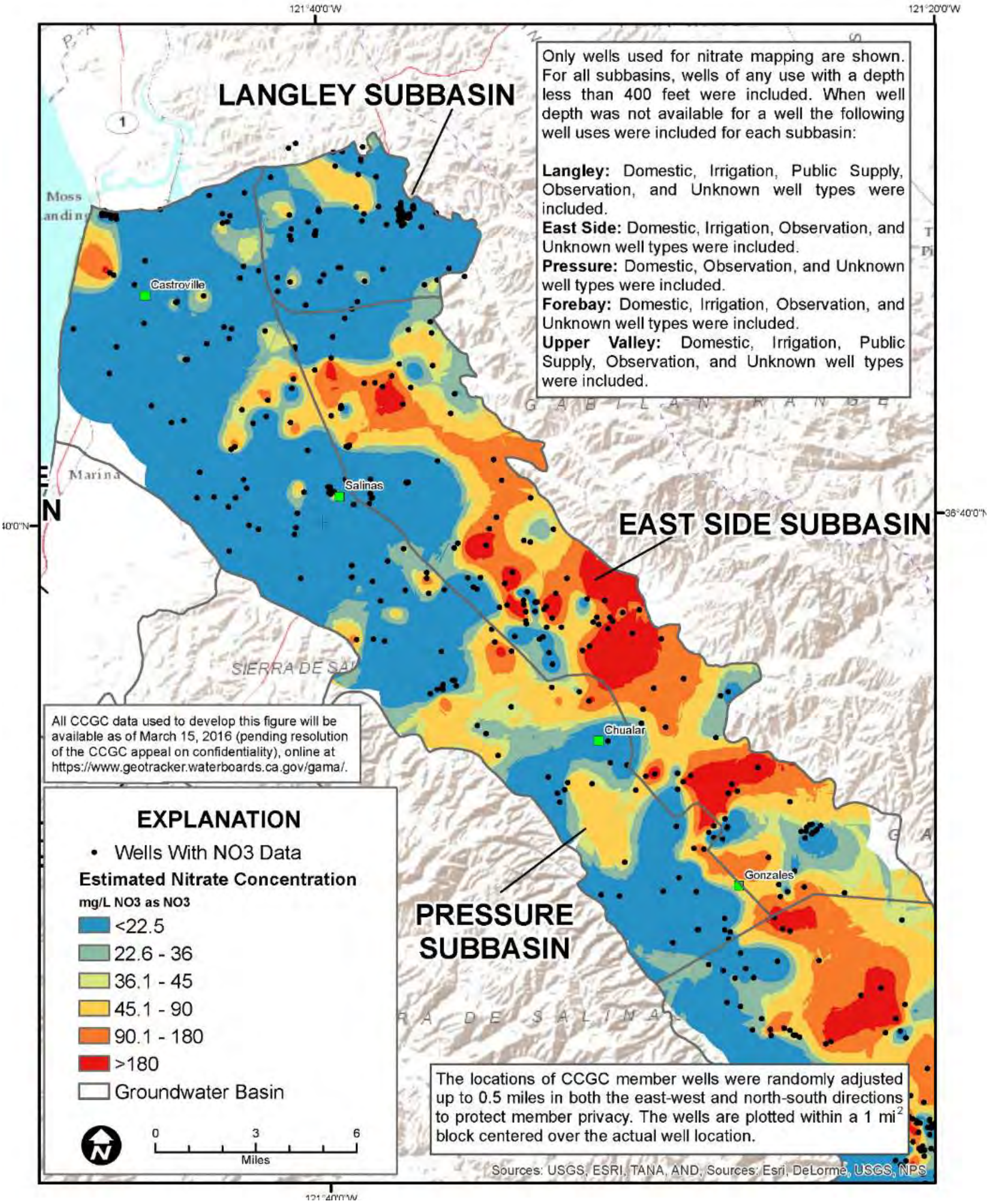


Figure 6. Estimated Nitrate Concentrations (from CCGC, 2015)

## Context for Injection Wells

The best data to review for injection wells are the deeper AEM data and WCRs. As described in the previous section, the subsurface sediments are more clay rich than the upper 200 feet of the Eastside Subbasin. These data are represented by the green and blue hues below the shallow oranges and reds (Figure 2 through Figure 4). Also shown on these sections are the interspersed character of the sediments. The AEM cross sections show variable cooler colors at depth, ranging from blue to light yellow, which indicates the lenses of clays and sands that characterize alluvial fan deposition. Additionally, the high clay content is widespread based on the overall cooler colors at depth. These variable hues in the AEM data also illustrate the lack of continuity of sediment types in the subsurface in the Eastside Subbasin, which might translate into a more localized effect of recharge rather than raising groundwater levels over a larger area.

The well completion reports in the Eastside Subbasin confirm this pattern of both high clay occurrence and interspersed lenses of sediments. Geologic cross section A-A' from the 2022 Eastside Subbasin Groundwater Sustainability Plan was compiled using 17 well completion reports from wells that had high quality lithologic descriptions and were drilled to at least 500 feet below land surface, as shown on Figure 7 (SVBGSA, 2022). This cross section spans the length of the Eastside Subbasin, with the left third of the cross section going through the City of Salinas. The lithologic descriptions from the selected wells include at least 9 separate notations of clay, out of 18 sediment descriptions. The wells show multiple lithologic descriptions, which illustrates the variability of sediments in the subsurface and the interspersed nature of the alluvial fan deposition. The cross section highlights areas in the subsurface that appear to be more clay rich, following the example of Kennedy/Jenks, 2004, and demonstrating the prevalence of the fine sediments, which in turn impact groundwater movement in the subsurface.

Another way to evaluate the Eastside subsurface is through hydraulic data. Most wells will be pumped at a maximum rate to determine their capacity and to size a pump. The resulting data are specific capacity, which focuses on the rate of pumping over the drop in water level and is a measure of well performance. Specific capacity data are readily available in WCRs because they are a part of constructing a well, and while they can correlate to aquifer information, they are not aquifer tests, which are conducted over a longer period of time and have more reliable results. Higher specific capacities indicate better performance because more water can be drawn from a well while maintaining small drops in pumping water levels. Lower specific capacities indicate lower performance because the drop in pumping water levels likely impacts how much water can be drawn from the well. A map of specific capacities, expressed as gallons per minute per foot (gpm/ft), in the Eastside Subbasin is shown on Figure 8, with higher specific capacities in blues and lower specific capacities in yellows and reds. Nine wells have specific capacities of 0-20 gpm/ft, 4 wells have specific capacities of 21-40 gpm/ft, 5 wells have specific capacities of

41-60 gpm/ft, 2 wells have specific capacities of 61-80 gpm/ft, and 2 wells have specific capacities of 80 gpm/ft or greater. This distribution of values indicates that more than half of the wells with this hydraulic data are lower performance wells, likely reflecting poor aquifer transmission ability. Additionally, based on a limited number of data points, no pattern of specific capacity value distribution is discernable; the observed values are scattered, which likely reflects the variable depositional pattern of alluvial fan sediments. Not all wells with specific capacity data have screen interval information available, and the vertical distribution of these data are unknown at this point.

Injection wells are more costly than recharge basins due to their increased engineering, installation, and permitting requirements. Further, injection wells are more susceptible to diminished performance due to factors such as biofouling, chemical precipitation, and physical clogging of pore spaces. Therefore, injection wells are an option that would require more site characterization including detailed lithology descriptions, high-quality aquifer tests, and careful water chemistry planning to ensure long-lasting and high-performance injection wells. This option might include choosing rotosonic drilling methods for pilot holes to preserve in-situ sediment characteristics, implementing the Unified Soil Classification System (USCS) soil descriptions for smaller intervals, conducting careful water chemistry and mixing analyses, and conducting thorough model runs to determine injected water flow paths.

One benefit of injection wells for the Eastside Subbasin is that they could specifically target the aquifer zones where the lowering of groundwater levels and depletion of groundwater storage is occurring. Additionally, injection wells would circumvent both shallow clays and the nitrate contamination prevalent in the shallow subsurface in the Eastside Subbasin. Injection wells are worth considering but would require intensive pre-implementation investigation and analysis.

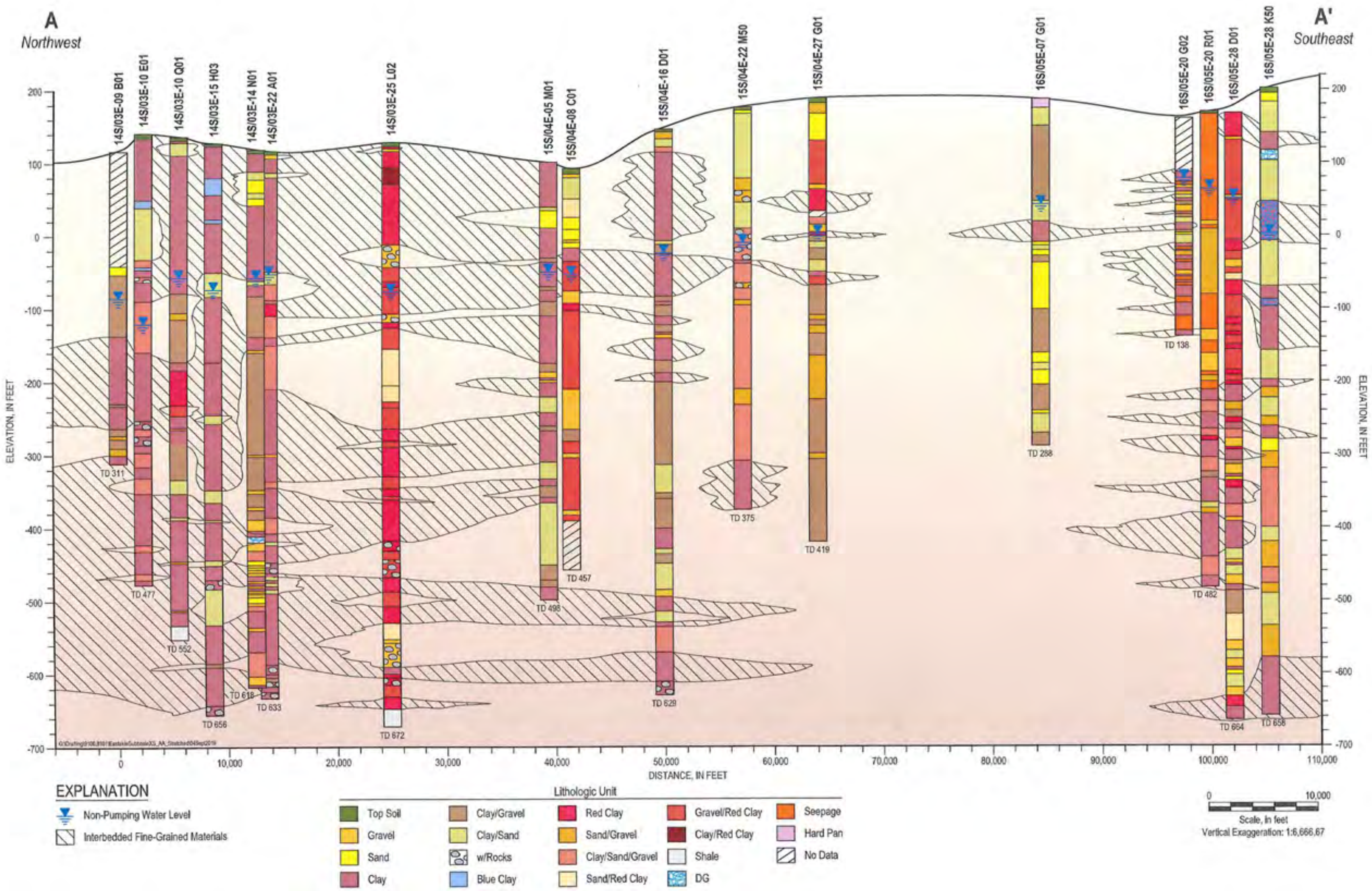


Figure 7. Cross Section A-A' from the 2022 Eastside Subbasin GSP

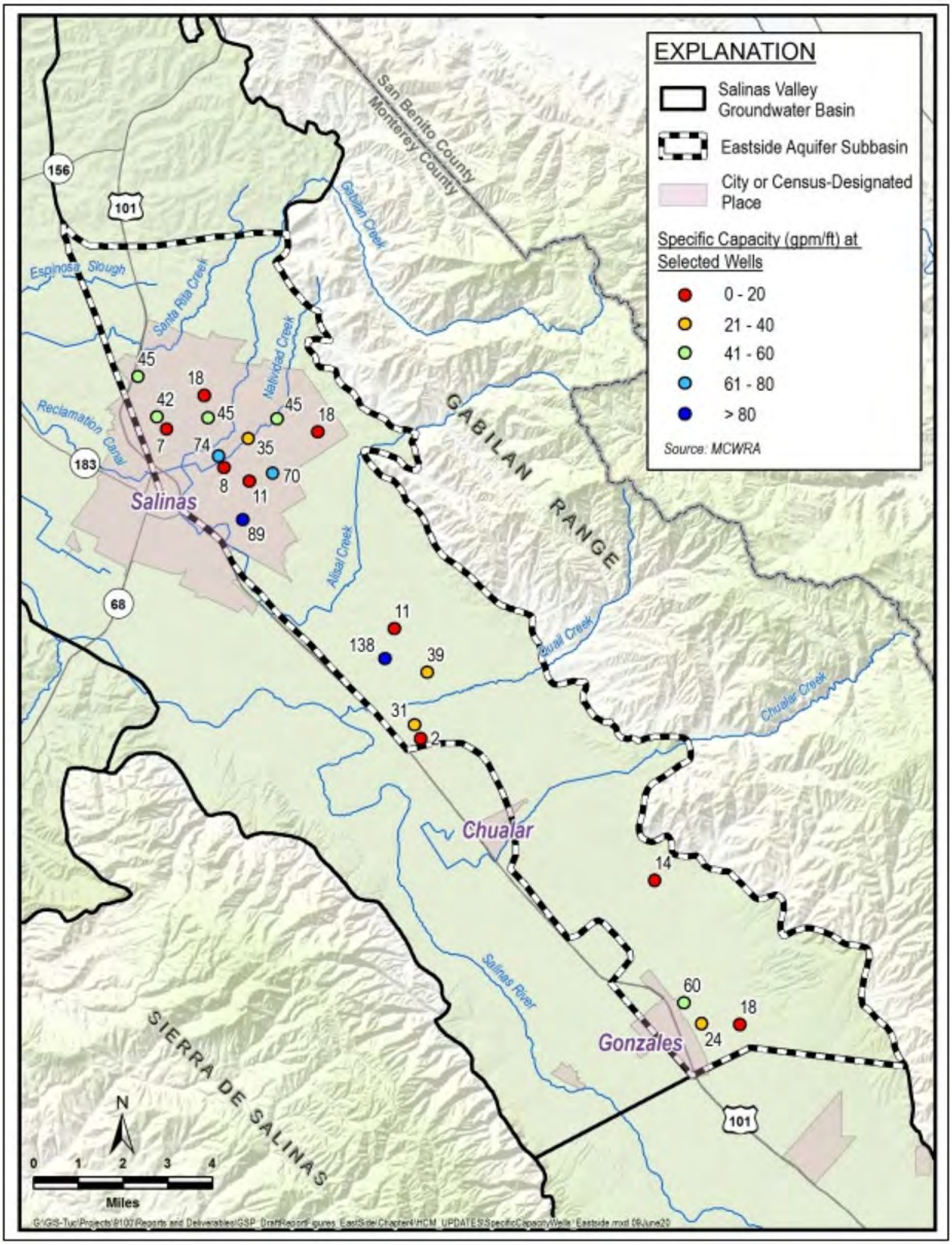


Figure 8. Specific Capacities in Eastside Subbasin Wells

### Pros and Cons of Recharge Methods

The suitability of recharge basins versus injection wells depends heavily on site-specific conditions. The summary below reflects the conditions of the Eastside Subbasin. Table 1 highlights key advantages and limitations of each method, drawing primarily from the hydrogeologic considerations discussed above.

Table 1. Pros and Cons of Recharge Methods

| Method | Pros | Cons |
|---|---|---|
| Recharge Basins | • Can take advantage of coarse sediments at the surface in the subsurface sediments where present<br>• Passive infiltration<br>• Lower costs<br>• Lower maintenance | • Little recharge potential in areas with shallow clays, which cover most of the Subbasin<br>• Potentially limited depth of effective recharge and distance (vertical and horizontal) from recharge basins<br>• Potential nitrate mobilization<br>• Requires more land |
| Injection Wells | • Can target recharge to particular depths and recharge below shallow clays and aquitards<br>• Requires less land<br>• Avoids nitrate and shallow clays (i.e. more available locations) | • More pre-installation investigation required than recharge basins<br>• Risk of ineffective wells<br>• Potentially limited geographic impact on groundwater levels based on subsurface sediment distribution<br>• Water treatment required<br>• Greater power demand<br>• Higher costs<br>• Higher maintenance |

## CONCLUSIONS

The C&E Study evaluated 2 potential recharge methods for raising groundwater levels in the Eastside Subbasin: recharge basins and injection wells. Due to the alluvial fan depositional environment, additional hydrogeologic assessment was needed to understand where each method could be effective. Based on existing information, this preliminary assessment identifies where recharge basins or injection wells might be the appropriate method. Further data collection and analysis would be necessary to refine these findings should an Eastside C&E project concept move forward.

### Recharge Basins

The SAGBI map, updated shallow clay and aquitard mapping, and available AEM data indicate the Alisal Creek and Quail Creek alluvial fans offer the most favorable conditions for recharge basins in the Subbasin. These areas contain coarse sediments at the surface and in the shallow subsurface (to ~200 feet), supporting higher infiltration rates and near-surface storage. However, the following must be considered:

- Most pumping in the Subbasin occurs below 200 feet, so benefits from basin recharge may take time to propagate downward.
- Basins must be sited away from shallow clay layers that restrict vertical movement.
- Elevated nitrate concentrations—especially near the Alisal Creek and Quail Creek fans—suggest that rapid infiltration has already contributed to nitrate migration into the aquifer. Any recharge basin program will need to incorporate strategies to limit further nitrate mobilization.

#### Injection Wells

Injection wells can bypass shallow clays, avoid nitrate-rich zones, and deliver water directly to deeper intervals where pumping occurs. Yet subsurface data from AEM, well completion reports, and well-screen information show that clay is widespread at depth, limiting lateral groundwater movement and contributing to low and variable specific capacities. Effective use of injection wells would require substantial up front investigation, including the following:

- Multiple exploration boreholes
- Rotosonic drilling of pilot holes
- Water quality testing
- Numerical modeling to evaluate injection behavior and predict flow paths

#### Overall Assessment

Current data are sufficient to identify initial locations for recharge basins and injection wells and to proceed with site-specific investigations. Additional characterization will be essential to refine siting, design, and operational expectations for either recharge method.

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# Appendix H

# Surface Storage

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# MEMORANDUM

Salinas Valley Basin Groundwater Sustainability Agency
Castroville & Eastside Canals and Alternatives Study
Wallace Group Project No. 1447-0005

**Date**: March 30, 2026

**To:** Salinas Valley Basin Groundwater Sustainability Agency

**From**: Greg Hulburd, P.E., Travis Vazquez, P.E.
Wallace Group

**Subject**: Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study
**Appendix G: Surface Storage Locations Considered**

This technical memorandum summarizes the investigation into potential surface storage sites in support of the Castroville and Eastside (C&E) Canals Study.

## Background

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and Monterey County Water Resources Agency (MCWRA) have initiated a multi-phase study to evaluate potential project concepts to utilize the existing water right Permit 11043 held by MCWRA. Since Permit 11043 was first issued in 1957, numerous project configurations have been proposed and studied.

The existing Permit 11043 currently allows for direct diversion only, which generally means that water must be used immediately after diversion; storage is not allowed for longer than 30 days. According to the current C&E study, the seasonal mismatch between winter diversion flows under Permit 11043 and low irrigation demand necessitates the inclusion of storage to fully realize the permit's potential yield. This will require modification to Permit 11043 to allow storage, as described in the report "Evaluation of Salinas River Water Rights and Alternatives" (MBK Engineers, 2025).

## Storage Need

The storage requirement is driven by the difference in timing and flow rate from the eligible Salinas River diversions compared to end use demand (i.e., irrigation or municipal use). The reservoir is designed to accommodate the seasonality of the diversion flows as well as provide carry-over storage from year to year. To estimate the amount of storage needed, a water balance was conducted based on the projected Salinas River flow from 2023-2072. The flow projections were obtained from modeling using the Salinas Valley Operational Model (SVOM) future baseline climate sequence (Montgomery & Associates, 2026). The water balance calculates the daily accumulation of storage by subtracting the daily treatment/injection volume from the diversion volume. The treatment plant and injection wells are assumed to operate continuously year-round and sized for a capacity of

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approximately 150% of the long-term average annual yield based on the water balance. This sizing was chosen to balance the volume of storage needed with the required capacity of the water treatment plant and injection well facilities. Storage also allows for a steady, year-round reservoir draw, which is necessary because water treatment plants are unable to manage the substantial variations in flow that would otherwise occur. Figure 1 and Figure 2 display graphs of the theoretical cumulative storage requirement based on the water balance.

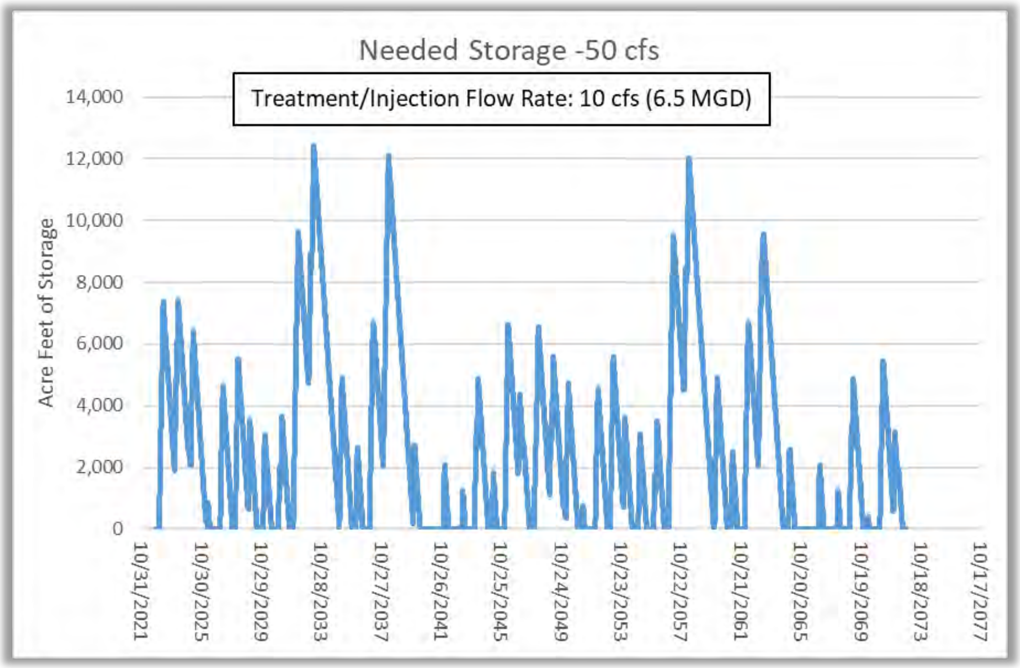


*Figure 1. Storage accumulation for a 50 cfs diversion based on the projected water balance.*

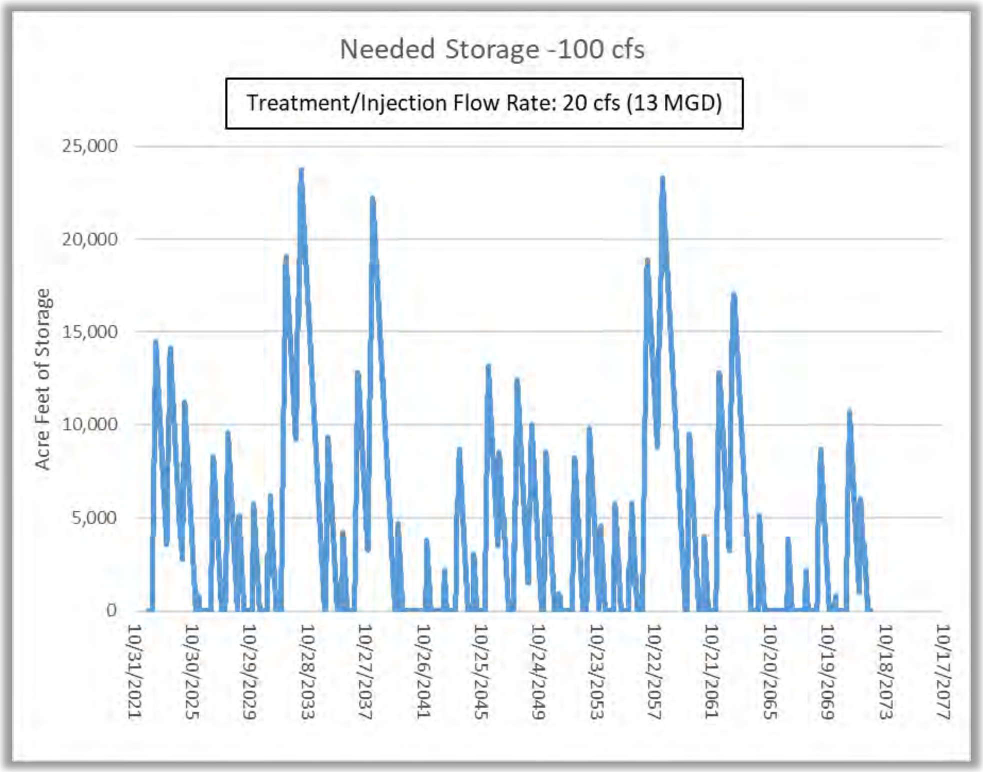


*Figure 2. Storage accumulation for a 100 cfs diversion based on the projected water balance.*

Table 1 summarizes the maximum storage requirement for the 50 cfs and 100 cfs diversions.

*Table 1. Maximum Required Storage*

| Diversion Size | Treatment/ Injection Flow Rate | Maximum Storage Needed, Acre-Feet |
|---|---|---|
| 50 cfs | 10 cfs | 12,500 |
| 100 cfs | 20 cfs | 24,000 |

## Historically Proposed Reservoir Sites

Phase 1 of the C&E study involved a historical document review to review previously proposed projects related to a Salinas River diversion. Several of the projects included storage components, many of which were designed as in-stream reservoirs to capture and store natural inflow from the watershed. The use of in-stream reservoirs and the watershed sources used to fill them distinguish these previous concepts from the C&E project concepts. Under the C&E project scenarios, Permit 11043 diverted Salinas River water would be used to fill an off-stream reservoir. Different considerations are given to siting an off-stream reservoir for storage of imported waters compared to an in-stream reservoir designed to be filled by the natural watershed. Table 2 provides a summary of historical proposed reservoir concepts and notes whether the primary water source was designed as natural inflow or from diverted/imported water.

*Table 2. Potential reservoir sites studied in historical documents.*

| Name | Primary Water Source | | Maximum Capacity, Acre-Feet |
|---|---|---|---|
| | Natural Inflow | Diverted water | |
| ***1946 Bulletin 52 – Department of Water Resources (DWR)*** | | | |
| Heins Lake - Regulating Reservoir | | X | 300 |
| ***1956 Bulletin 19 – State Water Resources Control Board (SWRCB)*** | | | |
| Rinconada | X | | Not Listed |
| Cantera | X | | Not Listed |
| Lower Atascadero | X | | Not Listed |
| Santa Rita | X | | Not Listed |
| Dover | X | | Not Listed |
| Lower Jack | X | | 25,000 |
| San Miguelito | X | | Not Listed |
| Jarrett Shut-in | X | | 110,000 |
| Pebblestone Shut-in | X | | Not Listed |
| Winchester Ranch | X | | 500,000 |
| El Nacimiento | X | | 500,000 |
| Milpitas 'C' | X | | Not Listed |
| Milpitas 'B' | X | | 175,000 |
| Pletyo 'B' | X | | 400,000 |
| Upper Foster | X | | Not Listed |
| Greenfield | X | | 250,000 |
| San Lucas | X | | 375,000 |
| ***1991 Capital Facilities Plan - Boyle Engineering*** | | | |
| Jerrett | X | | 145,000 |
| Arroyo Seco Pools | X | | 100,000 |
| Arroyo Seco - Woodtick | X | | 112,000 |
| Arroyo Seco - Greenfield, High | X | | 220,000 |
| Arroyo Seco - Greenfield, Low | X | | 120,000 |
| Gabilan Dam - Sugarloaf | X | | 6,000 |
| Gabilan Creek - Mud Creek | X | | 6,000 |
| Los Padres Dam | X | | 24,600 |
| Canada Reservoir | X | | 18,000 |
| ***1998 SVWP Report - Montgomery Watson and Raines, Melton & Carella, Inc.*** | | | |
| Armstrong Ranch | | X | 9,700/13,000 |
| Barloy Canyon | | X | 30,000 |
| Espinosa Lake | | X | 20,000 |
| Merritt lake | | X | 12,600 (up to 40,000) |
| Pilarcitos Canyon | | X | 20,000 |
| ***Sites that were not advanced to secondary screening:*** | | | |
| Airport | | X | Not listed |
| Bull Canyon | | X | Not listed |
| Carr Lake | | X | Not listed |
| Corral de Tierra Valley | | X | Not listed |
| Dunn Canyon | | X | Not listed |
| Gabilan Creek | | X | Not listed |
| Guidotti | | X | Not listed |
| Los Gatos | | X | Not listed |
| Reliez Canyon | | X | Not listed |

Although dozens of sites have been proposed in previous studies, only the off-stream reservoir sites designed to store diverted water have the highest potential for meeting the C&E storage needs. Under current regulatory requirements, it is unlikely that any of the previously proposed in-stream dams on the Salinas or Arroyo Seco Rivers or perennial creeks would get through environmental review, permitting, and public acceptance. The 1998 Salinas Valley Water Project (SVWP) Project Plan Report (Montgomery Watson, 1998) is the most relevant of the historical studies as this project also required storage of diverted Salinas River water. For details, refer to the 1998 SVWP Project Plan Report and associated Appendix C, Task 4 – North Valley Storage Technical Memorandum. Key points from this study are summarized below:

- 14 sites were identified for initial screening
- 5 sites advanced to secondary screening, including:
    - Armstrong Ranch
    - Barloy Canyon
    - Espinosa Lake
    - Merritt Lake
    - Pilarcitos Canyon
- From these, 2 sites advanced past secondary screening:
    - Armstrong Ranch
    - Merritt Lake

The Armstrong Ranch Site is not a natural reservoir site; rather, the reservoir would be created by excavating millions of cubic yards of material and constructing a dike or dam around the perimeter of the reservoir. Additionally, the soil at this site is permeable and would require installation of a liner. For the same storage capacities, the budget-level cost estimates showed that the Armstrong Ranch site was approximately 5 times more expensive than the Merritt Lake reservoir. For these reasons, Armstrong Ranch was considered infeasible and was eliminated from consideration in the 1998 study. This left Merritt Lake as the preferred site for the storage reservoir.

**Merritt Lake**

The Merritt Lake site, as identified in the 1998 SVWP Project Plan Report, was retained for inclusion in several of the current C&E project scenarios.

Merritt Lake is a natural low-lying area east of Castroville that is currently active farmland. The area periodically floods during large storm events. Details regarding the conversion of the area into a storage reservoir were obtained from the 1998 SVWP Project Plan Report. The proposed Merritt Lake concept included the following elements:

- Two reservoirs
    - Agricultural Reservoir – 9,600 acre-feet (AF) at water surface elevation (WS EL.) 36’
    - Urban Reservoir – 3,000 AF at WS EL. 33’
- Maximum design water surface at elevation 36’ based on the 1998 SVWP storage needs, although elevations of up to 50’ are possible based on the topography, which

would provide a maximum combined capacity of 22,000 AF based on the selected dam configuration.

- Main Dam (likely integrated for both reservoirs) on the west side of the reservoir.
- Back dam approximately 3,000 feet west of Highway 101 to prevent inundation further east, including Highway 101.
- Perimeter levee along a section on the southwest perimeter near Espinosa Road.
- Spillway sized to pass the probable maximum flood (PMF).
- Inlet/outlet works.
- Flood control infrastructure including a pumping plant and/or pipeline to route runoff from the upstream watershed around the reservoir to the downstream drainage channel.

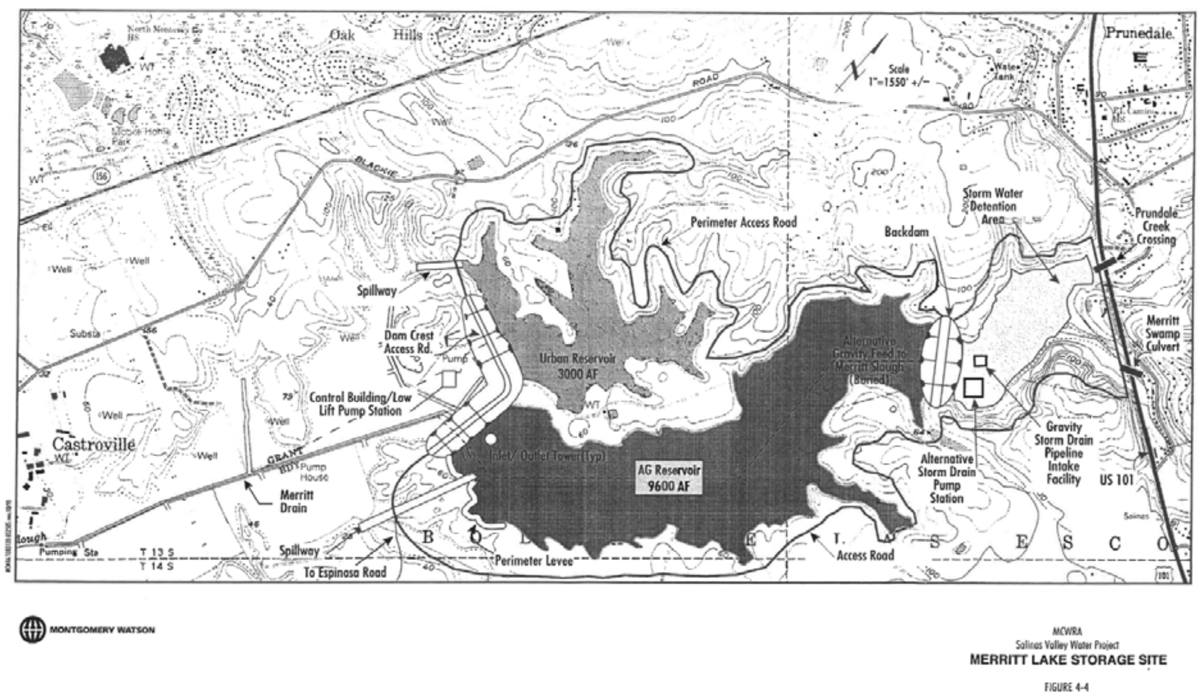


*Figure 3. Merritt Lake Storage Site, figure from the 1998 SVWP Project Plan Report (Montgomery Watson, 1998).*

The cost estimate from the 1998 SVWP report was escalated to 2025 costs based on index data from the United States Bureau of Reclamation (USBR) Construction Cost Trends[2] for earth dams:

- 1998 earth dam index: 179
- 2025 earth dam index: 496
- Escalation factor = 496/179 = 2.77

Table 3 summarizes the information from the 1998 SVWP report regarding Merritt Lake storage, dam fill quantities, and cost estimates, as well as the estimates escalated to 2025.

*Table 3. Original Merritt Lake cost estimates and escalation to 2025 dollars.*

| Reservoir | Storage, AF | Dam Fill, CY | 1998 Subtotal | Escalated to 2025 |
|---|---|---|---|---|
| Merritt Ag | 9,700 | 848,600 | $31,800,000 | $88,116,201 |
| Merritt Urban | 3,000 | 252,000 | $10,200,000 | $28,263,687 |
| Combined | 12,700 | 1,100,600 | $42,000,000 | **$116,379,888** |

## Additional Reservoir Site – Gabilan Range Reservoir

To investigate other potential reservoir sites, publicly available LIDAR elevation data was analyzed, and one additional potential reservoir site was identified. GIS spatial analyst tools were utilized with the LIDAR data to develop a stage-storage relationship for the potential reservoir. The identified site is located east of Salinas in the Gabilan Range, approximately 1.5 miles southeast of the intersection of Old Stage Road and Williams Road, in the Alisal Creek watershed.

The Gabilan Range Reservoir site was identified strictly based on topography. Further investigation is needed to address site suitability regarding geology (foundation, faults, seepage), suitable soils and borrow areas for the dam fill, hydrology (flood flows, watershed capture), constructability, safety, environmental constraints, and other factors.

The proposed reservoir concept involves a new earthen dam in an unnamed valley in the Alisal Creek watershed. Although further study is needed to determine whether the site is feasible, preliminary characteristics of the proposed dam include the following assumptions:

- Approximate dam crest elevation – 570 feet
- Approximate dam maximum height – 260 feet
- Approximate dam crest length – 2,300 feet
- Approximate volume of dam fill, assuming 2.5:1 embankments – 8,000,000 cubic yards
- Estimated storage at maximum WS EL. 560’ – 25,000 AF

[2] USBR construction cost trends available at: https://www.usbr.gov/tsc/techreferences/mands/cct.html

Figure 4 shows the stage-storage relationship for the conceptual Gabilan Range Reservoir.

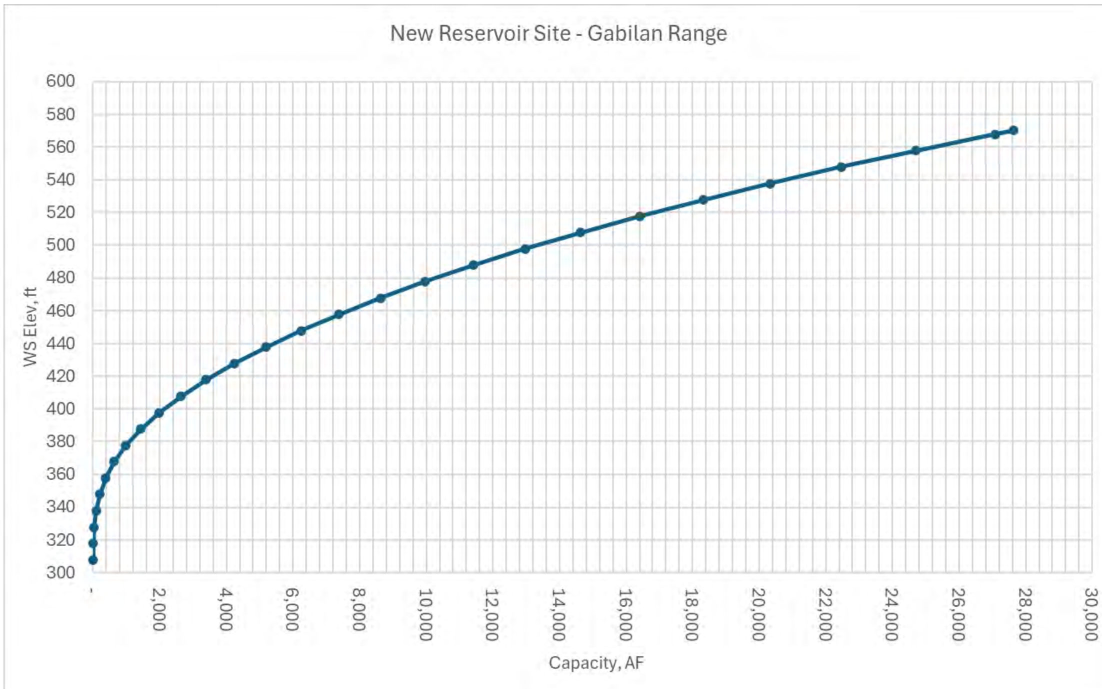


*Figure 4. Stage-storage relationship for the conceptual Gabilan Range Reservoir.*

The exhibit below shows the conceptual Gabilan Range Reservoir, and the earthen dam configuration used for estimating earthwork quantities.

FILE NAME: 1447-0005-DAM.DWG Plot Date: 3/9/202

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES

**Cut/Fill Summary**

| Name | Cut Factor | Fill Factor | 2d Area | Cut | Fill | Net |
|---|---|---|---|---|---|---|
| EG vs Dam 2 | 1.000 | 1.000 | 2144248.88 Sq. Ft. | 2906.33 Cu. Yd. | 7839613.48 Cu. Yd. | 7836707.15 Cu. Yd.<Fill> |
| Totals | | | 2144248.88 Sq. Ft. | 2906.33 Cu. Yd. | 7839613.48 Cu. Yd. | 7836707.15 Cu. Yd.<Fill> |

NOTE: DRAWING HAS BEEN PLOTTED AT HALF SCALE.


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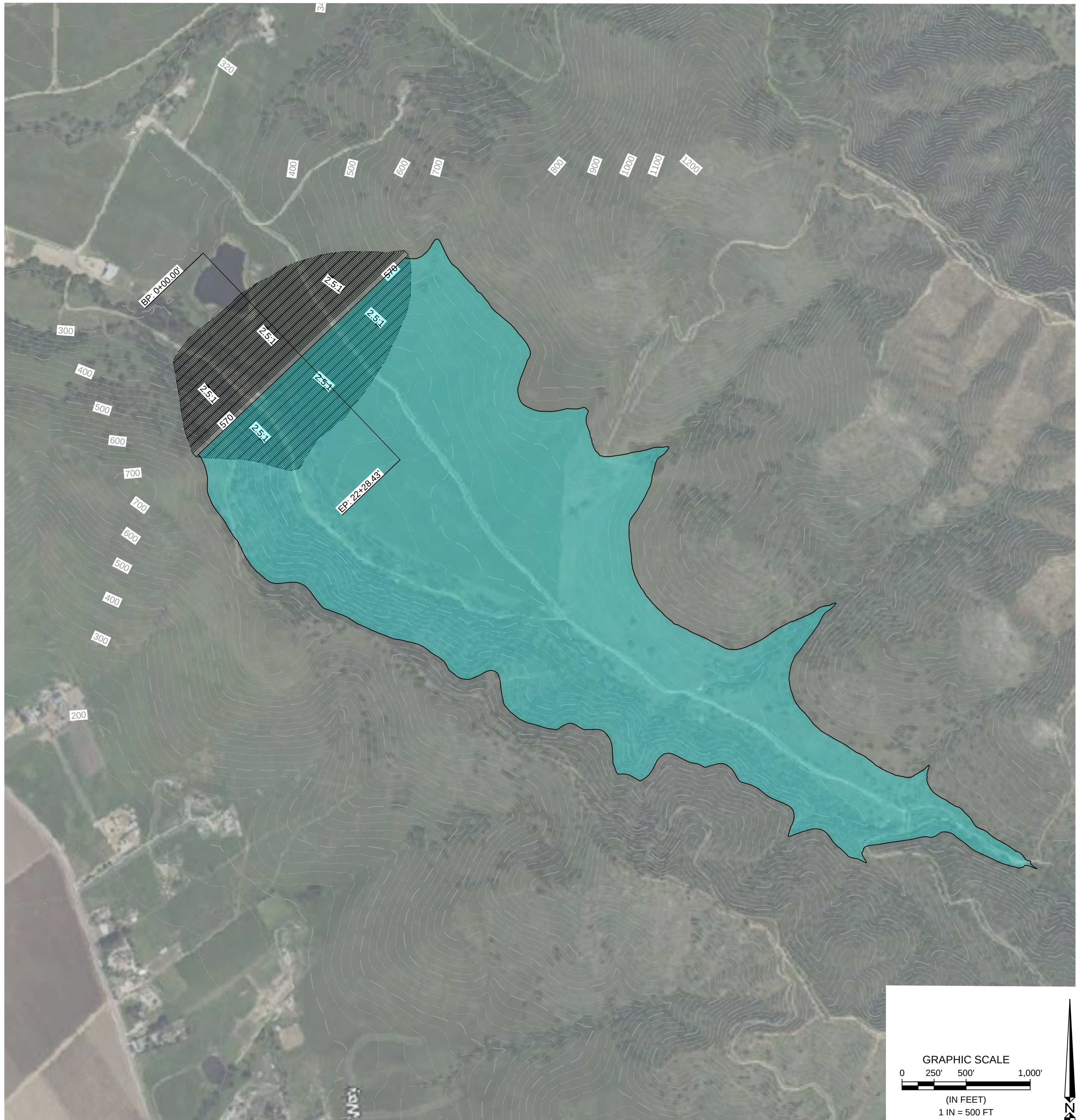
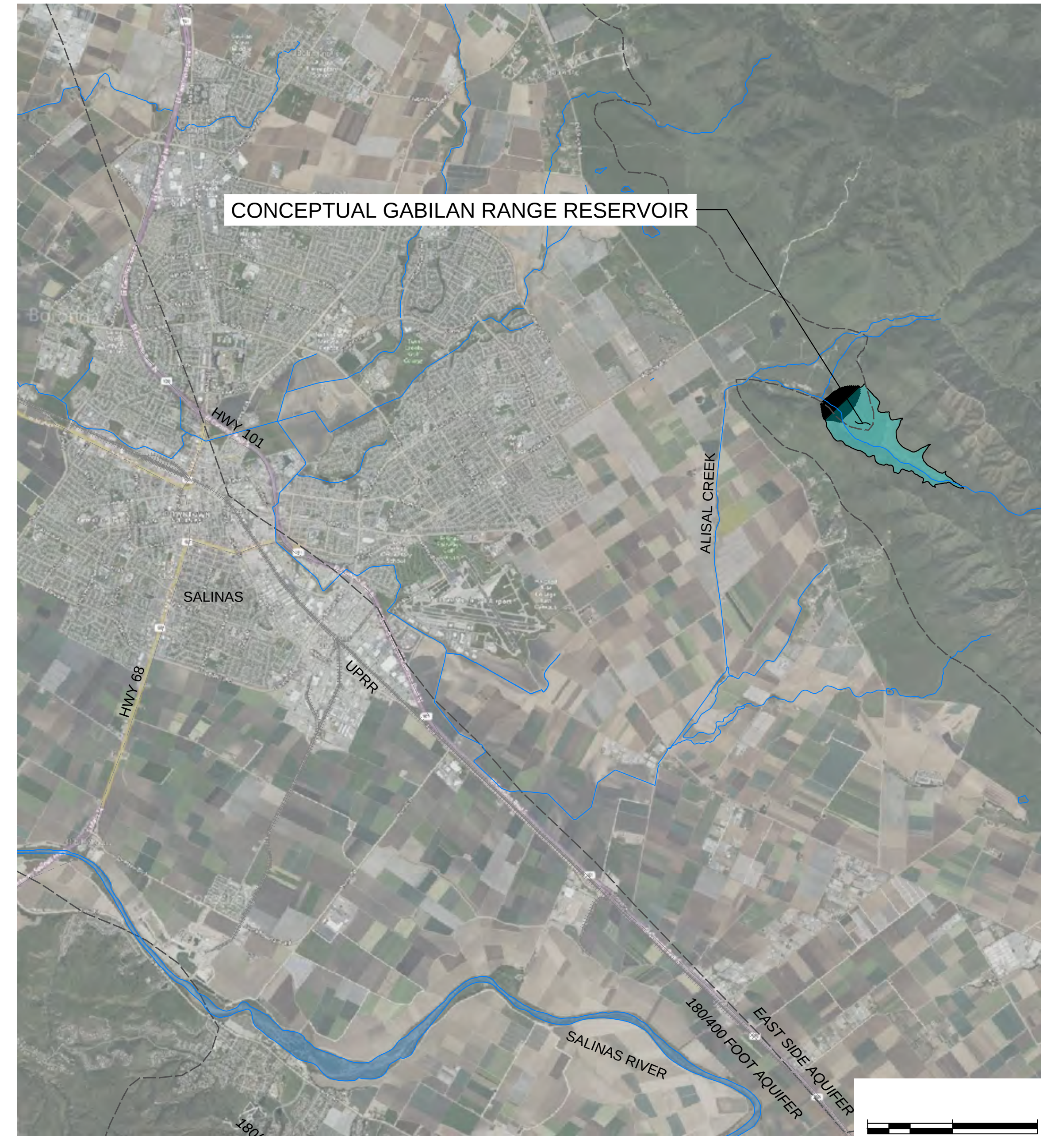
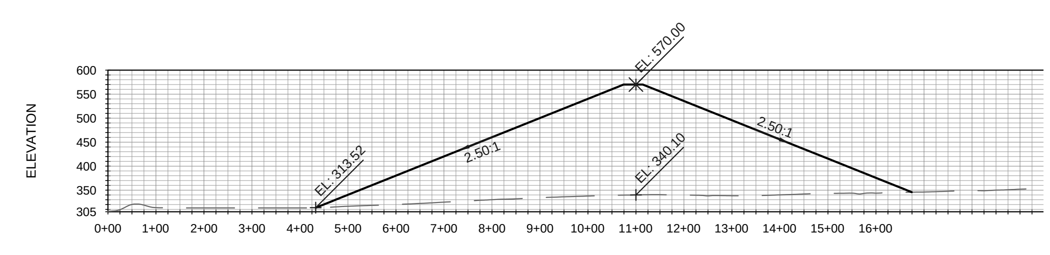



GABILAN RANGE 25K AF RESERVOIR CONCEPT

SCALE: 1" = 500'




VICINITY MAP




CONCEPTUAL DAM SECTION

## Summary

Table 4 summarizes the capacity and capital cost estimates for the two conceptual reservoirs proposed for use in the C&E project concepts.

*Table 4. Storage Reservoirs Assumed for C&E Project Concepts*

| Reservoir | Capacity, Acre-Feet | Capital Cost Estimate |
|---|---|---|
| Merritt Lake, Combined (Max. WS EL. 36) | 13,000 | $117M |
| Gabilan Range Reservoir (Max. WS EL. 560) | 25,000 | $355M |

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# Appendix I

# Modeling Results

MONTGOMERY
& ASSOCIATES
Water Resource Consultants



# TECHNICAL MEMORANDUM

**DATE:** March 31, 2026 **PROJECT #:** 9100.78

**TO:** Salinas Valley Basin Groundwater Agency

**FROM:** Stephen Hundt

**REVIEWER:** Staffan Schorr and Abby Ostovar, Ph.D.

**PROJECT:** Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study

**SUBJECT:** Groundwater Modeling Results

## INTRODUCTION

This appendix documents the groundwater modeling methods and assumptions used to evaluate project scenarios developed for the Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study (C&E Study). In addition, it includes results for all scenarios. The modeling was conducted to support comparative, planning-level assessment of how potential Salinas River diversion project concepts could help reach groundwater sustainability goals in the Eastside Aquifer (Eastside), Langley Area (Langley), and 180/400-Foot Aquifer (180/400) Subbasins. For the 4 project concepts, 8 different scenarios were modeled:

1. Eastside Recharge Basins Project Concept
    a. 400 cfs Scenario
    b. 200 cfs Scenario
    c. 100 cfs Scenario
    d. 50 cfs Scenario
2. Northern Eastside Injection Project Concept
    a. 100 cfs Scenario
    b. 50 cfs Scenario
3. Coastal Injection Project Concept/Scenario
4. New Seawater Intrusion Project (NSIP) Concept/Scenario

The study context and project descriptions are provided in the main body of the report.

The sections that follow introduce the groundwater models used in this study and the assumptions used to represent project operations and boundary conditions under future scenarios. Model simulations were designed to evaluate relative changes in groundwater levels and seawater intrusion response across scenarios, rather than to predict precise future conditions.

# GROUNDWATER MODELS

Simulations for the C&E project scenarios use 2 groundwater models: the Salinas Valley Operations Model (SVOM) and the Seawater Intrusion Model (SWIM), which are further described below.

## Salinas Valley Operations Model (SVOM v1)

The Salinas Valley Operations Model (SVOM v1) was the primary groundwater model used to support the C&E project feasibility analysis. SVOM was applied to evaluate the groundwater level response and surface water–groundwater interactions associated with the proposed project scenarios and serves as the sole model used for all components of the Eastside Recharge Basins and Eastside Injection Scenarios.

SVOM v1 is based on the Salinas Valley Integrated Hydrologic Model (SVIHM) Version 1, an updated implementation of the original USGS SVIHM. 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, groundwater pumping, surface water diversions and deliveries, and recycled water. For the C&E Study, all project scenarios were developed from a common future baseline simulation – Baseline Scenario – documented in Montgomery & Associates ([M&A] 2026), which is a status quo simulation with no additional projects or management actions. It assumes future conditions without incorporation of climate change.

The future Baseline Scenario employed the Surface Water Operations (SWO) module to dynamically simulate operations of Nacimiento and San Antonio Reservoirs in response to climatic inputs, reservoir operating rules, CSIP demands, and simulated Salinas River flows influenced by reservoir releases, tributary inflows, and surface water–groundwater exchange. For all C&E project scenarios, the SWO module was omitted, and reservoir releases and Salinas River Diversion Facility (SRDF) diversions from the future Baseline Scenario were applied as fixed inputs. This approach isolates the groundwater system response to proposed project actions while maintaining consistency in upstream reservoir operations across scenarios. The rationale for this modeling choice, and its implications for interpretation of results, are discussed further in subsequent sections of this appendix.

## Seawater Intrusion Model (SWIM)

The SWIM was used to evaluate seawater intrusion response for the coastal injection project scenario, the NSIP scenario, and for the corresponding future baseline (status quo, no-project) condition for seawater intrusion. The SWI Model was used only where variable-density groundwater flow and simulation of seawater intrusion processes were required to assess the effectiveness of coastal injection for addressing seawater intrusion.

The SWIM is a variable-density, regional groundwater flow model developed by M&A (2023; 2024) to simulate seawater intrusion in the 180/400 Subbasin. The model represents coupled groundwater flow and salinity transport at the basin scale and is used to evaluate changes in groundwater levels and chloride distributions under alternative future conditions. The SWIM covers the entire coastal Salinas Valley and extends south to Chualar.

The SWIM and SVOM are linked only for the future Baseline Scenario. In the baseline configuration, outputs from the SVOM future Baseline Scenario—including river flows, recharge, and pumping distributions—were used to define boundary conditions and stresses for the SWIM and develop a SWIM Baseline Scenario.

The Coastal Injection project scenario evaluated with the SWIM was derived directly from the Baseline Scenario with 2 adjustments: (1) representation of additional diversion at the SRDF under the 11043 permit with a 50 cfs diversion capacity, and (2) introduction of coastal injection wells. All other inputs—including flows, recharge, and pumping derived from the SVOM future baseline—were held constant between the baseline and project scenarios.

The NSIP scenario evaluated with the SWIM was derived directly from the Baseline Scenario with 1 adjustment: all wells within the NSIP area were set to have no pumping. All other inputs—including flows, recharge, and pumping derived from the SVOM future baseline—were held constant between the baseline and project scenarios.

# MODEL SCENARIO SETUP

Project scenarios were compared to either the Baseline Scenario run with the SVOM or the SWIM Baseline Scenario. Non-project assumptions were maintained as in the Baseline Scenario to isolate the effect of the projects. Projects were simulated to begin in 2035 (Water Year [WY] 2036). Infrastructure sizing and locations were co-developed with the engineering layouts and match the description in the main report.

## Baseline Scenarios

The Baseline (status quo) Scenarios represents future groundwater and surface-water conditions assuming no new projects or management actions are implemented. This scenario is documented in M&A (2026) and is summarized in the main body of this report. In brief, groundwater flow modeling was conducted using the SVOM and the SWIM to project groundwater levels, surface-water flows, reservoir operations, agricultural and municipal pumping, and seawater intrusion through 2072 under a representative historical climate sequence. The Baseline Scenario reflects current reservoir operating rules, projected demands, and existing management practices, and provides the reference condition against which all project scenarios are evaluated.

The projected hydrology used in the SVOM 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. The sequence corresponds to the hydrology of water years 1993, 2019, 1975, and 1999-2020 to best match observed recent conditions and provide a representative mix of wet and dry years. Actual future climate is unknown; however, this provides a representative estimate through which potential projects can be assessed. Additional modeling could evaluate different sequences of wet and dry years and climate change.

All project scenarios are built directly from the Baseline Scenario, duplicating its time period, spatial properties, climate sequence, and boundary conditions, with only the specific project-related modifications described in the scenario definitions. The baseline serves primarily as a point of comparison for evaluating changes in groundwater levels, groundwater storage, and seawater intrusion attributable to the project concepts. In addition, baseline SVOM outputs are used to derive key inputs for the project analysis, including streamflows used to estimate water available for diversion under Permit 11043 (with additional constraints described in the main body and Appendix E), as well as reservoir releases and SRDF operations.

### Reservoir operations in baseline and project scenarios

In the future Baseline Scenario, the SVOM SWO module was used to dynamically simulate reservoir releases and SRDF operations in response to climate, CSIP irrigation demands, and operating rules. In contrast, the SWO module was not active in the project scenarios; instead, reservoir releases and SRDF diversions from the baseline were applied as fixed inputs. This approach assumes that the projects do not affect reservoir operating decisions and allows the analysis to focus on the direct effects of recharge and diversion.

While this simplification supports clearer comparisons between the baseline and project scenarios, it does not account for potential changes in reservoir operations that could result from higher groundwater levels or increased baseflow. However, given the locations of the project scenarios, any such effects on reservoir operations are expected to be minimal. As a result, the approach is appropriate for this stage of analysis but may understate some secondary benefits of the projects.

## Eastside Recharge Basins

The Eastside Recharge Basins project concept evaluates diversion of Salinas River water under Permit 11043 for recharge in the Eastside Subbasin, with 4 diversion capacities (400, 200, 100, and 50 cfs) simulated to represent a range of project sizes. Under this project concept, river water is diverted at the Castroville Canal Intake location and directed into recharge basins in the Eastside Subbasin after sediment is settled out. The project infrastructure ends at this point, but recharged water is assumed to be later extracted through private agricultural and municipal wells.

### Recharge rates and timing

Recharge rates for the Eastside Recharge Basins scenarios were derived directly from the diversion estimates developed for each diversion capacity, as described in Appendix E. Average annual diversion volumes are summarized in Table 1, and interannual variability in total diversion at the Castroville Canal Intake volume is shown on Figure 1. For all scenarios, it was assumed that the recharge basins have sufficient infiltration capacity to recharge diverted water as soon as it is delivered, or, at a minimum, within the same monthly stress period in which the diversion occurs, consistent with the temporal resolution of the model.

Recharge rates were not constrained by simulated groundwater levels in the top model layer beneath the recharge basins. The applicability of this assumption was evaluated by comparing simulated groundwater levels to ground surface elevations in the uppermost model layer beneath and adjacent to the basins. In most locations and scenarios, simulated water levels remained below ground surface. However, in the 400 cfs scenario, simulated groundwater levels in a limited number of basins in the northern Eastside Subbasin regularly rise to or above ground surface. This suggests that, under those conditions, the modeled recharge rates may exceed the infiltration capacity implied by elevated water tables, and that recharge efficiency could be reduced relative to the modeled assumption in those specific locations.

Table 1. Projected Average Annual Diversions at Castroville Canal Intake
Compared to Historical Annual Diversions at Chualar

| | 400 cfs capacity (AFY) | 200 cfs capacity (AFY) | 100 cfs capacity (AFY) | 50 cfs capacity (AFY) |
|---|---|---|---|---|
| Historical - WY 2000-2024 | 31,700 | 18,200 | 10,000 | 5,300 |
| Historical - WY 2010-2024 | 29,300 | 16,200 | 8,600 | 4,400 |
| Projected | 26,800 | 17,200 | 9,700 | 5,100 |

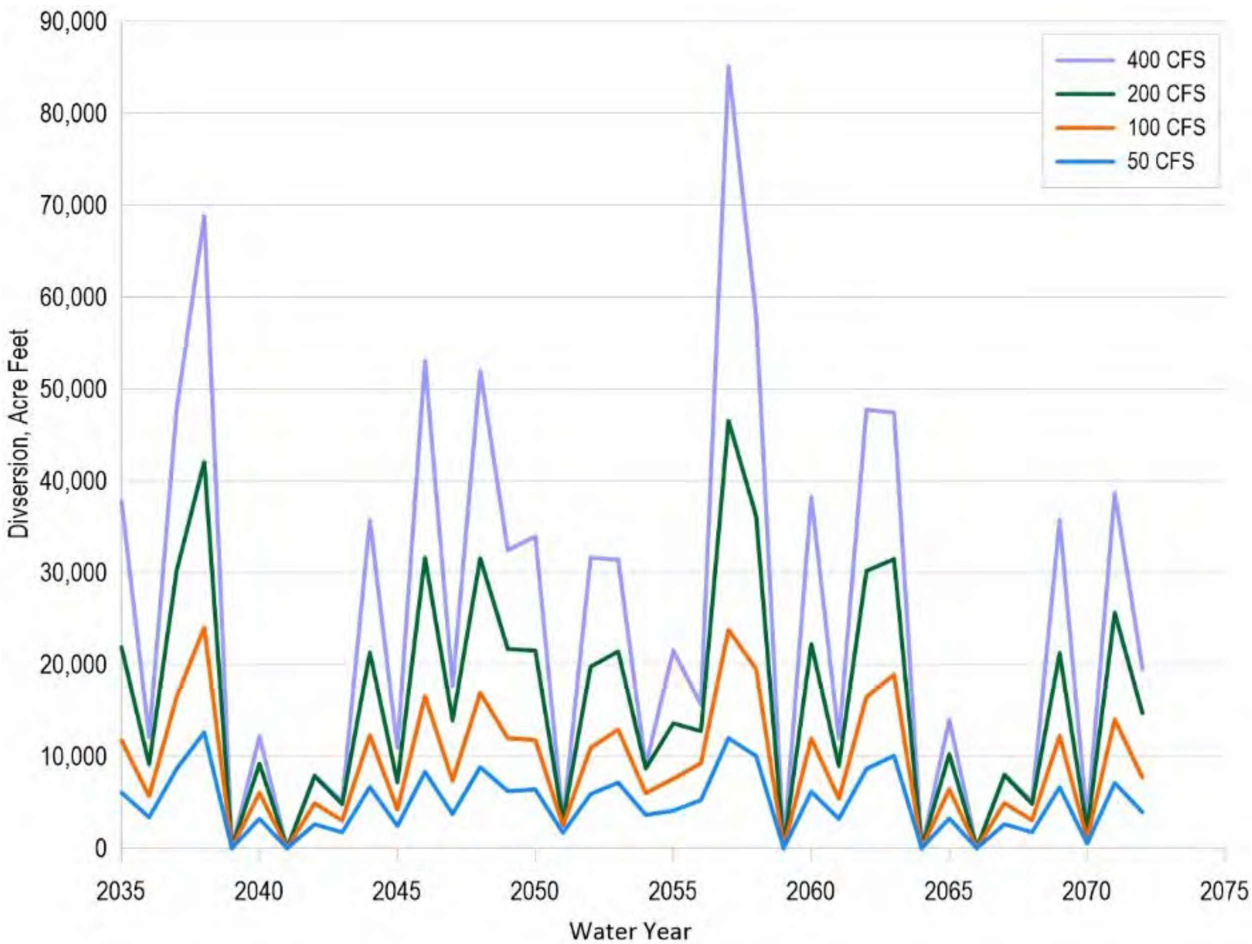


Figure 1. Projected Annual Diversions Under Various Diversion Capacities

## Recharge basin locations

Recharge basins were distributed across the central and Eastside Subbasins, with the number and spatial extent of basins increasing with higher diversion and recharge rates. Basin placement was refined through an iterative process that considered modeled results and physical siting constraints.

Priority was given to areas within the Quail Creek and Alisal Creek alluvial fans, identified as favorable recharge locations as described in Appendix H. Additional basins were placed to spatially distribute recharge benefits and avoid excessive concentration of groundwater level increases near individual basins. This approach was intended to improve groundwater levels in portions of the Eastside Subbasin where RMS wells were simulated to fall below minimum thresholds (MTs) in the 2040–2041 evaluation period under baseline conditions. As diversion capacity increased, basins were extended farther south of Quail Creek and northward toward the vicinity of Gabilan Creek.

Several siting constraints were applied during basin selection. Recharge basins were generally not placed over areas underlain by the Salinas Valley Aquitard or mapped shallow clays, except where the clays were identified as very thin, to facilitate recharge to deeper aquifers. Basin locations were also selected to avoid proximity to stream channels, where elevated groundwater levels could be rapidly drained as baseflow, and to avoid areas of residential or commercial development.

The final basin layouts for each scenario are shown on Figure 2. Recharge was applied in model cells identified by intersecting basin footprint polygons with the model grid. Cells were selected such that the combined area of the selected cells approximately matched the surface area of each recharge basin.

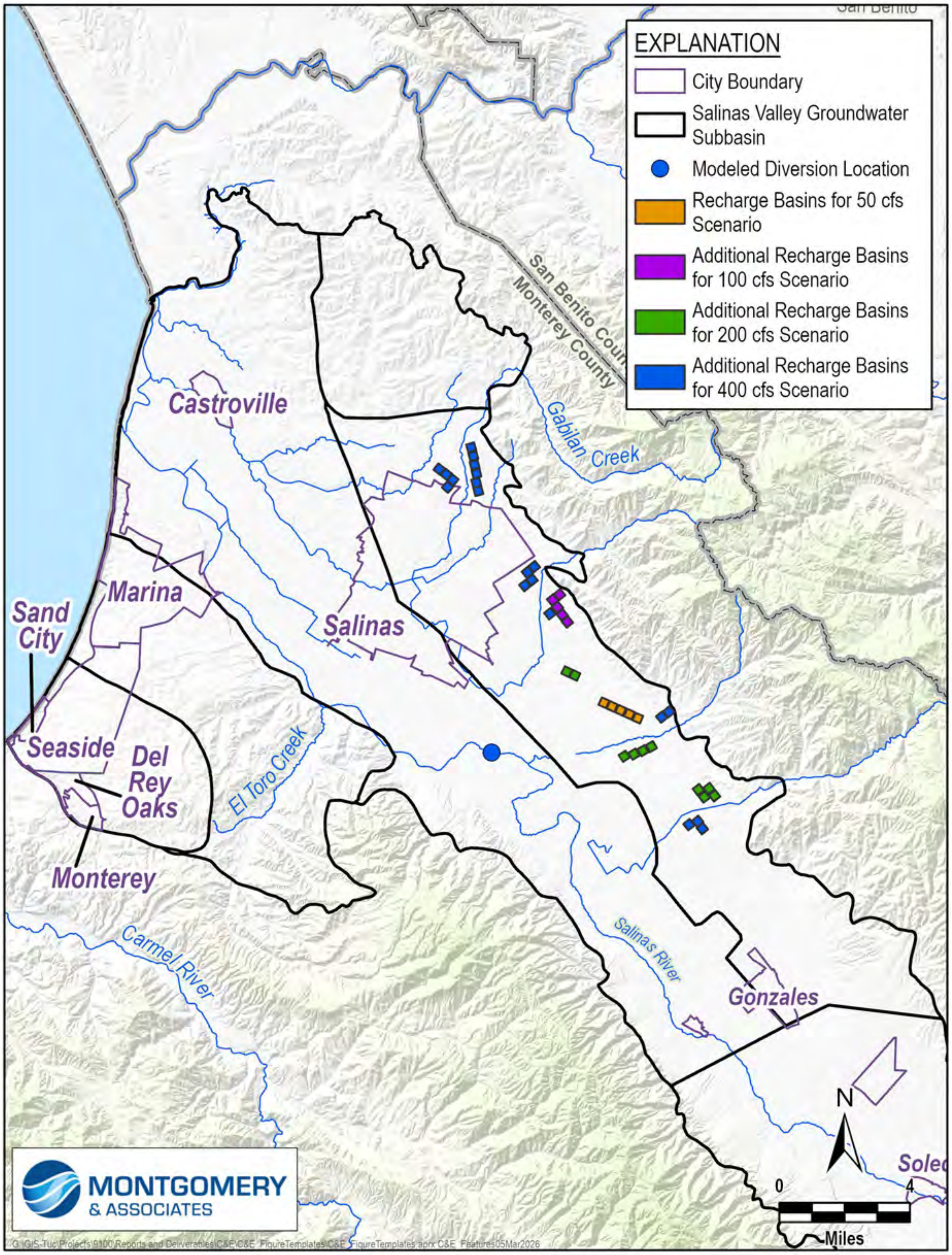


Figure 2. Location of Eastside Recharge Basin Scenarios

### Removal of land from agricultural production

In addition to simulating recharge, the scenarios account for the removal of land within the recharge basin footprints from agricultural production. The model cells affected by this land use change were identified using a similar approach to that used for assigning recharge, although the total footprint was expanded by manually applying buffers around each basin to represent ancillary infrastructure and operational space.

Two modifications were applied within these footprints beginning in 2035. First, agricultural demand was removed by reducing potential evapotranspiration to zero in the affected cells. Second, any agricultural pumping wells located within the footprint were removed from the simulation after 2035.

The removal of land from agricultural production results in reduced groundwater pumping and associated increases in groundwater levels that are independent of recharge. These effects occur continuously after implementation, regardless of the timing or magnitude of diversions and recharge in any given year.

### Recharge and diversion implementation

Recharge through the Eastside Recharge Basins was simulated using specified inflows applied via the MODFLOW WEL package to layer 1 of the model. For each scenario, the total recharge volume was divided evenly among the recharge basins and then distributed to the intersecting model cells in proportion to their intersecting area.

Diversion from the Salinas River was represented by adding an additional streamflow routing (SFR) segment at the Castroville Canal Intake location. For each monthly stress period, the calculated diversion volume was applied as an inflow to this segment from the upstream Salinas River reach. Outflow from the diversion segment was defined as leaving the model domain, representing conveyance of diverted water to the recharge basins.

## Northern Eastside Injection

The Northern Eastside Injection project concept evaluates diversion of Salinas River water at the Castroville Canal Intake location for recharge via injection wells in the northern Eastside Subbasin. Diverted water is conveyed to surface storage, treated, and injected through a network of wells. Two diversion capacities were simulated—100 cfs and 50 cfs—to represent a range of project sizes and 2 options for surface storage.

Injection is assumed to be more suitable than surficial recharge in this area due to the presence of shallow clay layers that limit infiltration (see Appendix H). Storage and treatment are therefore integral components of this project concept.

## Treatment and storage of diverted water

Treatment of diverted water prior to injection is required, as described in the main body of the report. Because diversion opportunities are irregular and episodic, treatment plant capacity was assumed to be substantially smaller than diversion capacity, necessitating surface storage to regulate flows.

Consistent with assumptions described in the main report and Appendix E, feasible treatment plant capacities were defined and corresponding storage volumes estimated. For the 100 cfs scenario, storage is assumed at a proposed reservoir site in the Gabilan Range near Alisal Creek; for the 50 cfs scenario, storage is assumed at the proposed Merritt Lake site. Assumed storage capacities of approximately 25,000 AF and 13,000 AF, respectively, support continuous treatment and injection at rates of 13 mgd and 6.5 mgd.

## Injection rates and timing

Injection wells were assumed to have a maximum capacity of 400 gpm. The number of wells in each scenario was selected such that total injection capacity matches the assumed treatment plant capacity. Treated water was assumed to be distributed evenly among all wells.

No site-specific analysis of injection capacity was conducted based on well construction or local hydrogeology. The assumed per-well injection rate is lower than rates used in other injection-based simulations in the region and was selected to distribute recharge over a larger area and reduce localized mounding. Injection was assumed to occur continuously, subject to available treated water from storage. A summary of the injection wells for each scenario is provided in Table 2. The annual volume of injection under each scenario is shown on Figure 1.

Table 2: Injection wells for Scenario 2, Northern Eastside Injection

| Scenario (Diversion Capacity) | Total Injection Well Capacity | # of Injection Wells | Flow Rate per Injection Well, gpm |
|---|---|---|---|
| 100 cfs | 13 mgd (20 cfs) | 23 | 390 |
| 50 cfs | 6.5 mgd (10 cfs) | 12 | 375 |

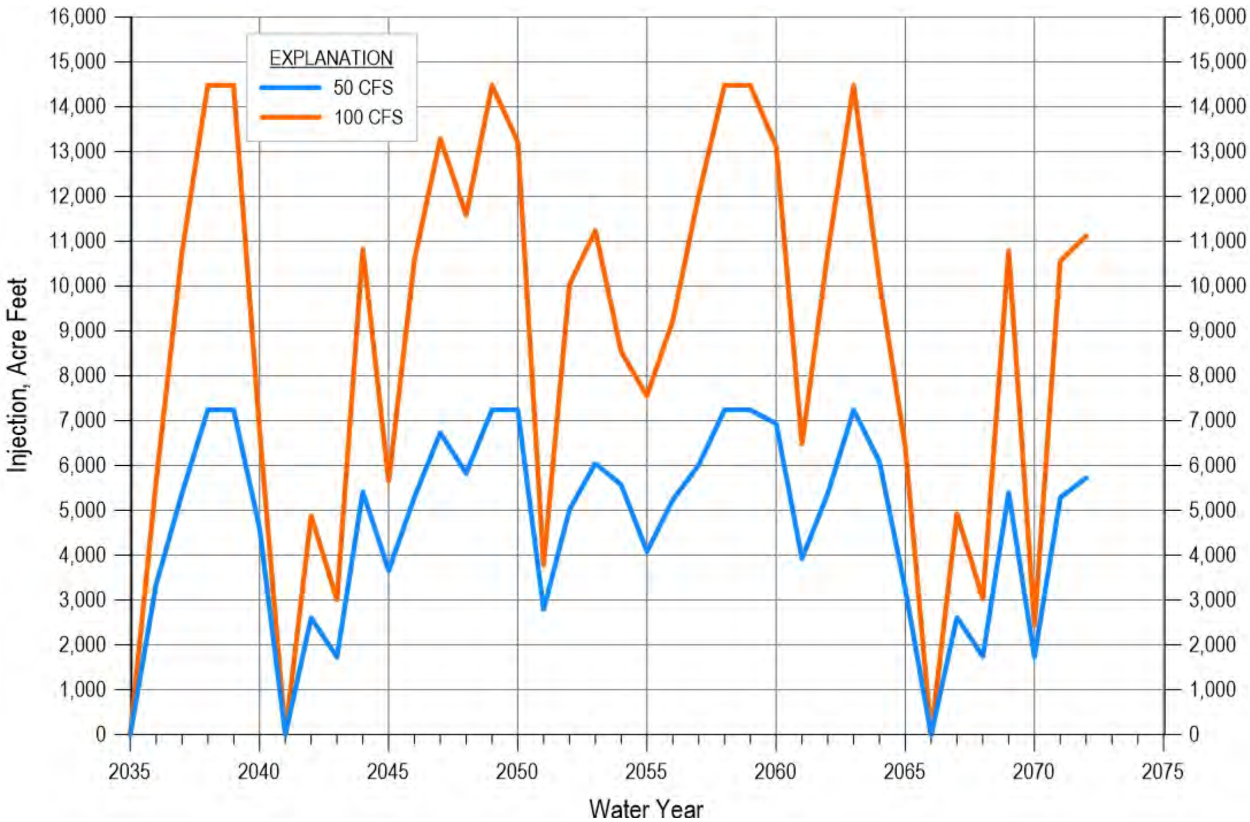


Figure 3. Projected Annual Injection, in acre-feet per year

## Injection well locations and depths

Injection wells were placed within a broad area of the northern Eastside Subbasin where baseline modeling indicates the greatest groundwater level declines. Wells were randomly distributed within this area to achieve approximately even spacing. Wells included in the 50 cfs scenario represent a subset of those included in the 100 cfs scenario.

All wells inject into both the 180-Foot and 400-Foot Aquifer model layers, with injection apportioned between layers in proportion to layer thickness. The proposed layouts are presented on Figure 4 below.

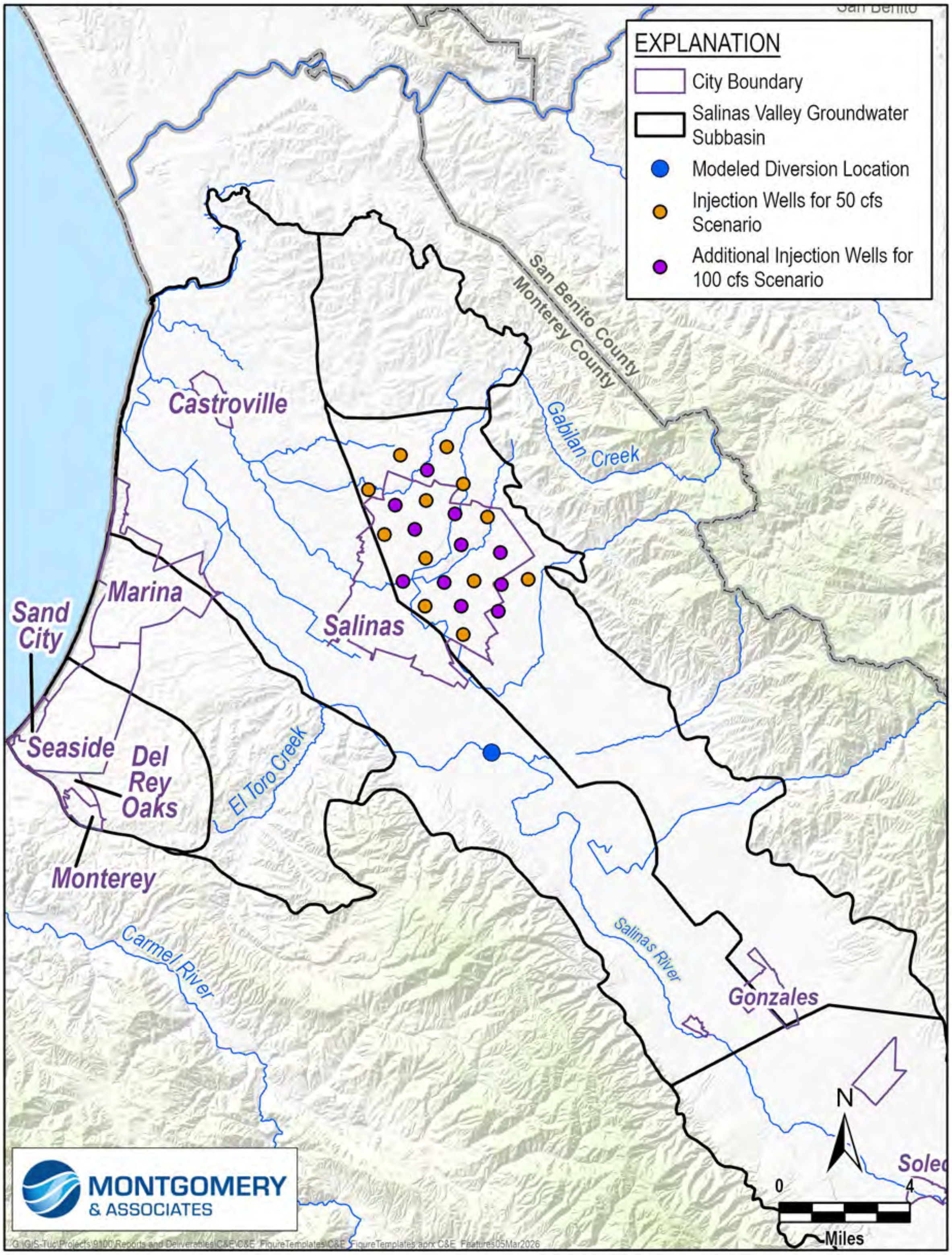


Figure 4. Injection Well Locations for Northern Eastside Injection Scenarios

### Injection and diversion implementation

Injection was simulated using the MODFLOW WEL package, with specified inflows applied to the 180-Foot and 400-Foot Aquifer model layers in the Eastside Subbasin, consistent with each scenario's injection capacities.

Diversion from the Salinas River was represented in the same manner as for the Eastside Recharge Basins scenarios. Diversion volumes were calculated at the Castroville Canal Intake with diversions assumed to begin in 2035. Diverted water was removed from the streamflow routing network and conveyed to off-channel storage prior to treatment and injection.

## Coastal Injection

The Coastal Injection project concept evaluates diversion of Salinas River water under Permit 11043 for groundwater injection in the coastal 180/400 Subbasin to address seawater intrusion. Water is diverted near the SRDF, conveyed to surface storage, treated, and injected through a network of wells. Only a single diversion capacity of 50 cfs was simulated, consistent with the available storage capacity at Merritt Lake.

Groundwater impacts were simulated using the SWIM. The SWIM baseline was developed using boundary conditions and fluxes derived from the SVOM future baseline simulation. The Coastal Injection scenario is identical to the SWIM baseline except for 2 modifications: (1) diversion of surface water from the Salinas River near the SRDF location and (2) injection of treated water into the coastal aquifer system.

### Treatment and storage of diverted water

Like the Northern Eastside Injection project concept, treatment of diverted water is required prior to injection. Because diversion opportunities are irregular and episodic, treatment capacity was assumed to be substantially smaller than diversion capacity, requiring surface storage to regulate flows. Treatment and storage were defined for this scenario using the Merritt Lake site. Given the injection well location within the coastal 180/400 Subbasin, only the Merritt Lake storage option was carried forward; accordingly, the Coastal Injection scenario is limited to the 50 cfs diversion capacity.

### Injection well locations and depths

Well placement was informed by prior analyses and iterative evaluation of groundwater modeling results, with the objective of most effectively mitigating seawater intrusion along the coastal front.

Injection was applied exclusively to the 400-Foot Aquifer. The 50 cfs diversion volume was considered insufficient to distribute injection across multiple aquifers, and the 400-Foot Aquifer was selected because it is the primary aquifer relied on for groundwater supply in the area and is where seawater intrusion is advancing most rapidly.

### Injection rates and timing

Injection timing for the Coastal Injection scenario follows the same assumptions as the 50 cfs Eastside Injection scenario. Injection occurs at a relatively constant rate, is regulated by available treated water from storage, and is not directly tied to the timing of individual diversion events.

### Injection and diversion implementation

Injection wells were implemented in the SWIM using the Well (WEL) package. Specified injection rates were applied to WEL cells representing injection wells screened in the 400-Foot Aquifer.

Diversion from the Salinas River was represented by removing water from the CLN feature representing the river channel. Water was removed at the location corresponding to the Salinas River Diversion Facility (SRDF).

## NSIP

The NSIP concept evaluates the diverting of Salinas River water under Permit 11043 and supplementing it with additional sources to provide treated replacement water to existing groundwater users within the seawater intrusion area. This project concept is further described in the New Seawater Intrusion Project Evaluation (NSIP Evaluation) by Carollo Engineers (2026), and this groundwater modeling is of the Maximum Size NSIP Scenario, as the other 2 NSIP scenarios do not rely on Permit 11043. Under the Maximum Size scenario, water is diverted near the SRDF, conveyed to surface storage at Merritt Lake, treated, and delivered through a proposed distribution system serving users historically reliant on pumping from the Deep Aquifers within or near the seawater intrusion front.

A single scenario was simulated in which NSIP begins operation in October 2035 and provides an alternative water supply for irrigation. Correspondingly, beginning in October 2035, all groundwater pumping within the NSIP area ceases, with no compensating increase in pumping elsewhere. The volume of pumping removed is approximately 32,000 AF/year, as NSIP would directly deliver irrigation supply water from a combination of Salinas River water diverted under Permit 11043 and other sources. The timing and amount of surface water derived from a 100 cfs diversion was calculated in a similar manner to the other C&E scenarios. The NSIP Evaluation documents how this was combined with the other source waters, surface storage, and rate of distribution through the NSIP system.

Groundwater impacts were simulated using the SWIM. The SWIM Baseline Scenario was developed by M&A (2026b) using boundary conditions and fluxes derived from the SVOM future Baseline Scenario. The NSIP Scenario is identical to the SWIM Baseline Scenario except that pumping from all wells within the NSIP area was reduced to zero for all stress periods after October 2035.

### Pumping removal implementation

Pumping cessation was implemented by modifying the Well (WEL) package only; all pumping rates for identified NSIP-area wells were set to zero beginning in October 2035. Many wells in SWIM are represented as screened across multiple model layers via the Connected Linear Network (CLN) module, with pumping drawn from the base of each well's CLN network. The CLN module was not modified, so inter-layer connections through each wellbore remain intact. This implementation is equivalent to assuming that wells cease pumping but are not decommissioned.

## MODEL RESULTS

Groundwater impacts are assessed differently for the Eastside project concepts that use the SVOM than the coastal 180/400 project concepts that use the SWIM and compared to the SVOM Baseline Scenario and SWIM Baseline Scenario, respectively.

For the Eastside Recharge Basins and Northern Eastside Injection scenarios, results were analyzed in 4 main ways:

1. **Groundwater Level Difference from Baseline:** Groundwater level difference maps show which areas respond most to demand management. Difference maps are calculated for the average of November 2040 and 2041 water levels project scenario minus the baseline, so that positive values correspond to groundwater level rise. The average of these 2 years is used because across the model area, it is generally representative of average conditions and close to the SGMA sustainability deadline. Groundwater level change is not shown for model layer(s) where the aquifer is less than 1 foot thick, as they are defined as pass through cells (M&A 2025).

2. **Groundwater Level Hydrographs:** Groundwater level variation across the projected climate sequence are reviewed to understand the fluctuation across wet and dry years.

3. **Comparison to Groundwater Level SMC:** To assess the impacts of pumping reductions on sustainability, simulated heads at RMS wells are compared to the minimum thresholds and measurable objective for that well. For the SMC assessment, simulated timeseries in RMS wells are bias-adjusted based on the calibration of the historical model. Details on the bias adjustment can be found in the SVOM Update and Projected Baseline Simulation (M&A, 2026).

4. **Change in Groundwater Pumping, Flow, and Storage:** All water budgets are presented for the average of WY 2040-2064. This period represents a 25-year period with climate conditions representative of average historical climate, beginning 5 years after the projects have begun operating.

The Eastside Subbasin contains a single principal aquifer—the Basin Fill Aquifer—so all groundwater-level RMS wells are categorized as Basin Fill and are evaluated together for the SMC assessment. However, groundwater level change maps are presented by 180/400 Subbasin aquifer and the stratigraphically equivalent part of the aquifer in the Eastside Subbasin: the 180-Foot Aquifer and equivalent, the 400-Foot Aquifer and equivalent, and the Deep Aquifers and equivalents. These correspond to model layers 3-5, 7, and 9, respectively.

The Coastal Injection and NSIP scenarios use the SWIM to assess the effect on seawater intrusion in addition to groundwater levels. For these scenarios, results were analyzed in 3 main ways:

1. **Groundwater Level Difference from Baseline:** Groundwater level difference maps show which areas in each subbasin respond most to demand management. Difference maps are calculated for the average of November 2040 and 2041 water levels of the project scenario minus the baseline, so that positive values correspond to a relative increase in groundwater levels. The average of these 2 years is used because across the model area, it is representative of average conditions and close to the SGMA sustainability deadline. Groundwater level change is not shown for model layer(s) where the aquifer is less than 1 foot thick, as they are defined as pass through cells (M&A 2025).

2. **Seawater Intrusion Progression:** Maps of the 500 mg/L chloride isocontour at 2022, 2030, 2040, 2050, and 2060 show how seawater intrusion progresses over time in the 180-Foot Aquifer, 400-Foot Aquifer, and Deep Aquifers under the baseline and project scenarios.

3. **Comparison to Seawater Intrusion SMC:** Maps of the 500 mg/L isocontour in 2040 within the 400-Foot Aquifer for the baseline and project scenario show how close or far the project scenario comes to achieving sustainability.

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## Eastside Recharge Basins

Groundwater impacts of the Eastside Recharge Basin Scenarios were simulated using the SVOM. Model results show that all 4 Eastside Recharge Basin scenarios lead to higher groundwater levels relative to the Baseline Scenario. In some areas, groundwater levels increase or stabilize, while in others the primary benefit is reduced drawdown rather than full recovery. Groundwater level increases generally extend through most of the aquifer system, becoming slightly smaller with depth, but remaining evident in deeper layers.

### Groundwater level change

Figure 5 through Figure 8 compare simulated 2040–2041 groundwater levels in the project scenarios to those of the Baseline Scenario for the 180-Foot and equivalent, 400-Foot and equivalent, and Deep Aquifers. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. The results show several consistent patterns. In most cases, water-level increases are similar in the 180-Foot and 400-Foot Aquifers and their equivalents in the Eastside Subbasin and are slightly smaller in the deepest layers. This behavior is consistent with the conceptual model of the Eastside alluvial fans, which, despite containing localized low-permeability lenses, show no evidence of laterally extensive aquitards that would strongly impede vertical flow and substantially attenuate project impacts at depth—particularly for recharge distributed over a broad footprint, as in these scenarios.

The results also show that benefits do not spread uniformly away from the recharge basins, reflecting spatial variability in hydraulic properties. For example, in the 180-Foot and to a lesser extent, the 400-Foot Aquifers, transmissivity increases sharply near the boundary between the 180/400 and Eastside Subbasins. Lower transmissivity east of this boundary supports higher head gradients and greater water-level accumulation near the recharge areas compared to the higher-transmissivity zone to the west. Groundwater level increases are also simulated along portions of the Salinas River corridor, which may reduce stream seepage losses in some reaches and, in other areas, increase baseflow.

**Caution Regarding 400 cfs Scenario:** Figure 5 though Figure 8 show that in most scenarios groundwater level increases are distributed broadly across the central Eastside rather than being concentrated immediately adjacent to the recharge basins. This pattern reflects an iterative modeling process in which basin locations were progressively spread over a larger footprint to improve the spatial distribution of benefits.

This broadly distributed response is not maintained in the 400 cfs project scenario. In that scenario, recharge basins were placed farther north than the locations identified as most suitable for recharge (Appendix F) to reach a remaining cluster of northern Eastside wells that were not raised above their minimum thresholds by the 200 cfs project. Although this approach largely achieved that objective, the feasibility of surficial recharge at the specific modeled locations is uncertain.

In the model, the location of the northernmost recharge basins coincides with a zone of low transmissivity in both the surficial sediments and the underlying 180-Foot aquifer. As a result, recharge in this area produces extremely large and highly localized groundwater level increases immediately beneath and adjacent to the basins, with simulated rises of up to 160 feet relative to baseline and, in some cases, water levels exceeding ground surface.

This outcome is undesirable for 2 reasons. First, although modeled hydraulic properties are subject to considerable uncertainty, the results provide a clear warning regarding surficial recharge in this area. They underscore the fact that aquifer hydraulic properties represented in the model are bulk, equivalent values that necessarily simplify highly heterogeneous subsurface conditions. It is possible that even lower-permeability zones exist in the shallow subsurface that could substantially impede vertical and lateral flow, limiting basin recharge capacity and leading to ponding beneath recharge facilities even where surface infiltration rates appear favorable.

Second, the benefits of recharge in the 400 cfs scenario are not widely distributed. A more effective approach may have been to deliver less water to the northern Eastside basins and allocate more recharge to the central Eastside, where groundwater level increases are more broadly spread and less prone to extreme local mounding.

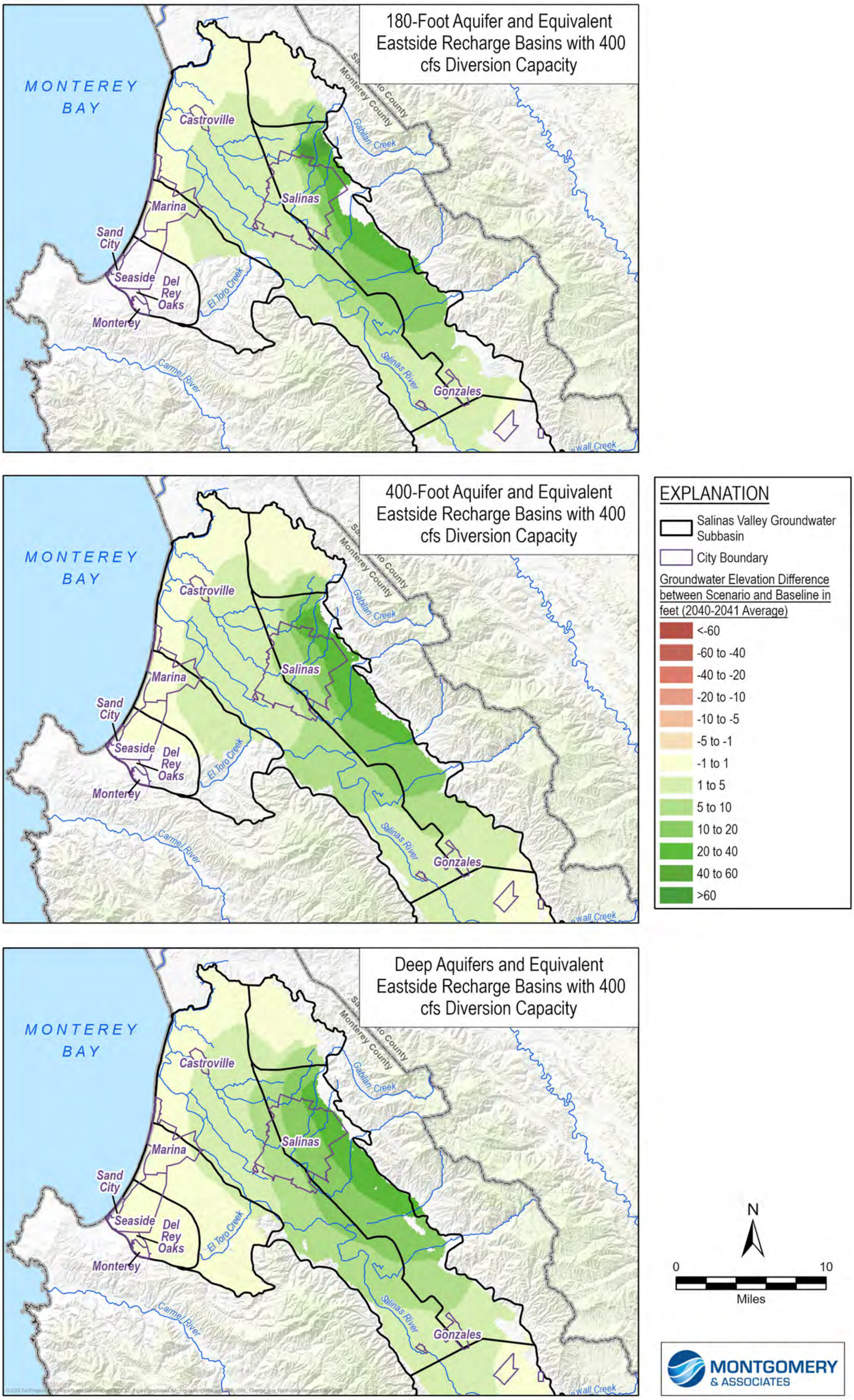


Figure 5. November 2040 and 2041 Average Difference from Baseline for Eastside Recharge Basin 400 cfs Scenario

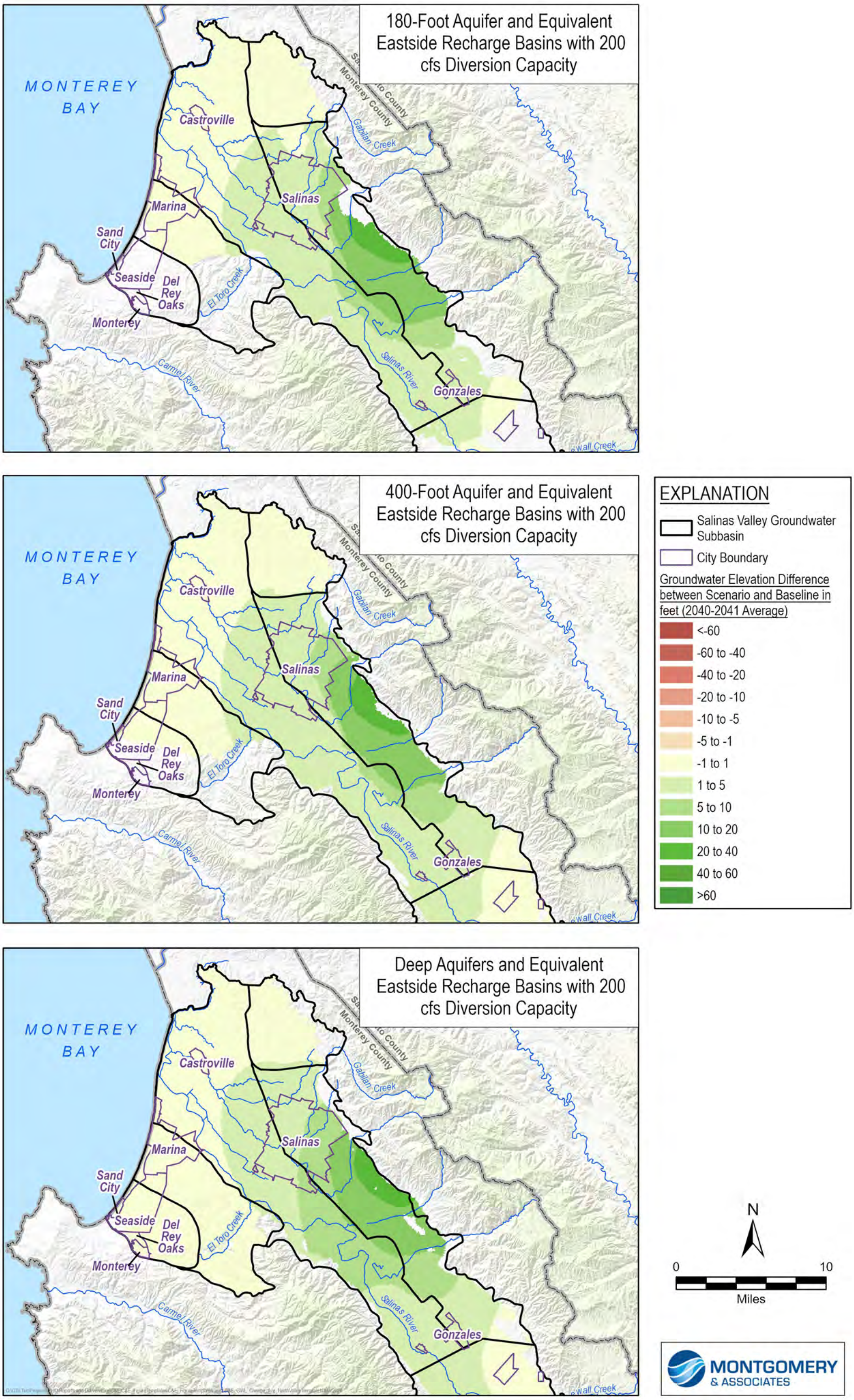


Figure 6. November 2040 and 2041 Average Difference from Baseline for Eastside Recharge Basin 200 cfs Scenario

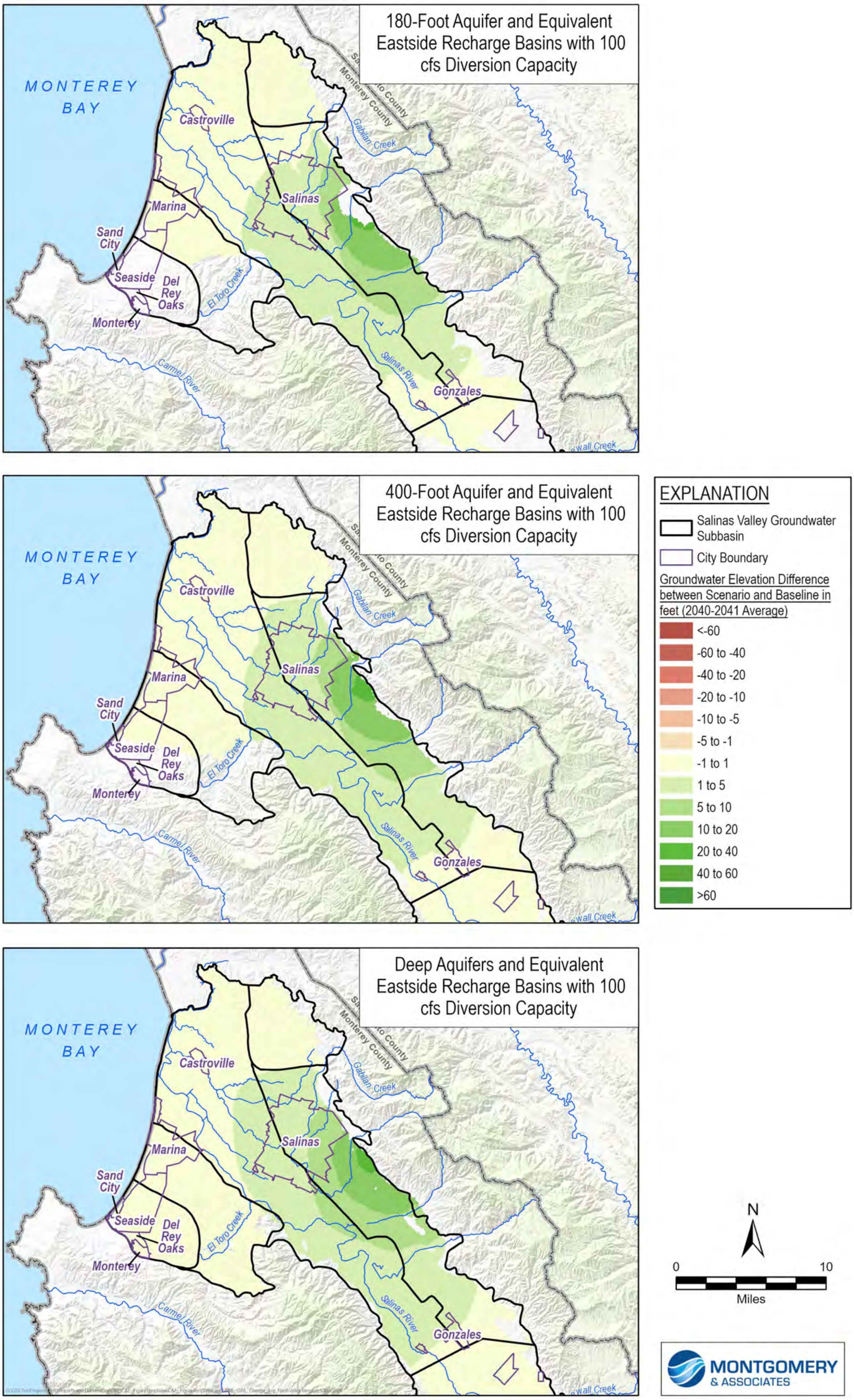


Figure 7. November 2040 and 2041 Average Groundwater Level Difference from Baseline for Eastside Recharge Basin 100 cfs Scenario

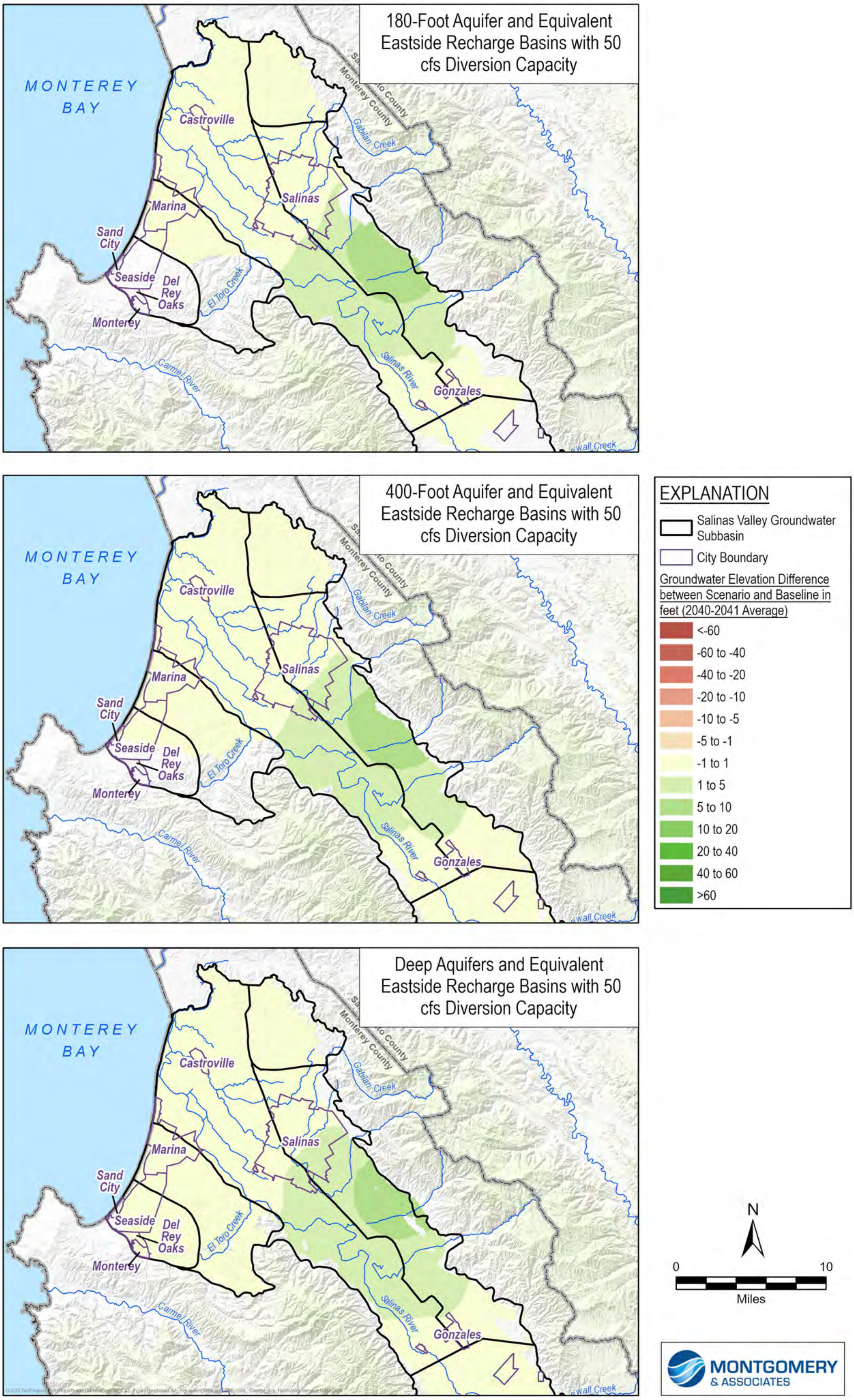


Figure 8. November 2040 and 2041 Average Difference from Baseline for Eastside Recharge Basin 50 cfs Scenario

## Representative hydrographs

In many RMS wells, simulated groundwater levels rise above and fall below their minimum thresholds multiple times over the course of the simulation period. Several factors drive the observed patterns. First, the climate sequence used for the future projections (M&A, 2026) is a primary driver of both annual and multi-year variability. Drought years tend to draw down groundwater levels, increasing the number of wells below their minimum thresholds, while wet years generally have the opposite effect. Climate-driven patterns that are evident in the Baseline Scenario are amplified in the project scenarios because diversion and recharge volumes, and the associated groundwater level increases, are greater during wet years than during dry years.

The distance between the monitoring well and the recharge basins also affects the extent to which each scenario raises groundwater levels. Figure 9 shows the hydrograph for a well in the northern Eastside Subbasin. The 400 cfs diversion has a noticeably larger effect on groundwater levels than the other scenarios. This is in large part because only that scenario had recharge basins in this vicinity. On Figure 11, the 50 cfs scenario has the least effect on groundwater levels; however, it is not only the smallest diversion scenario, but that scenario also has no recharge basins in the vicinity of the monitoring well.

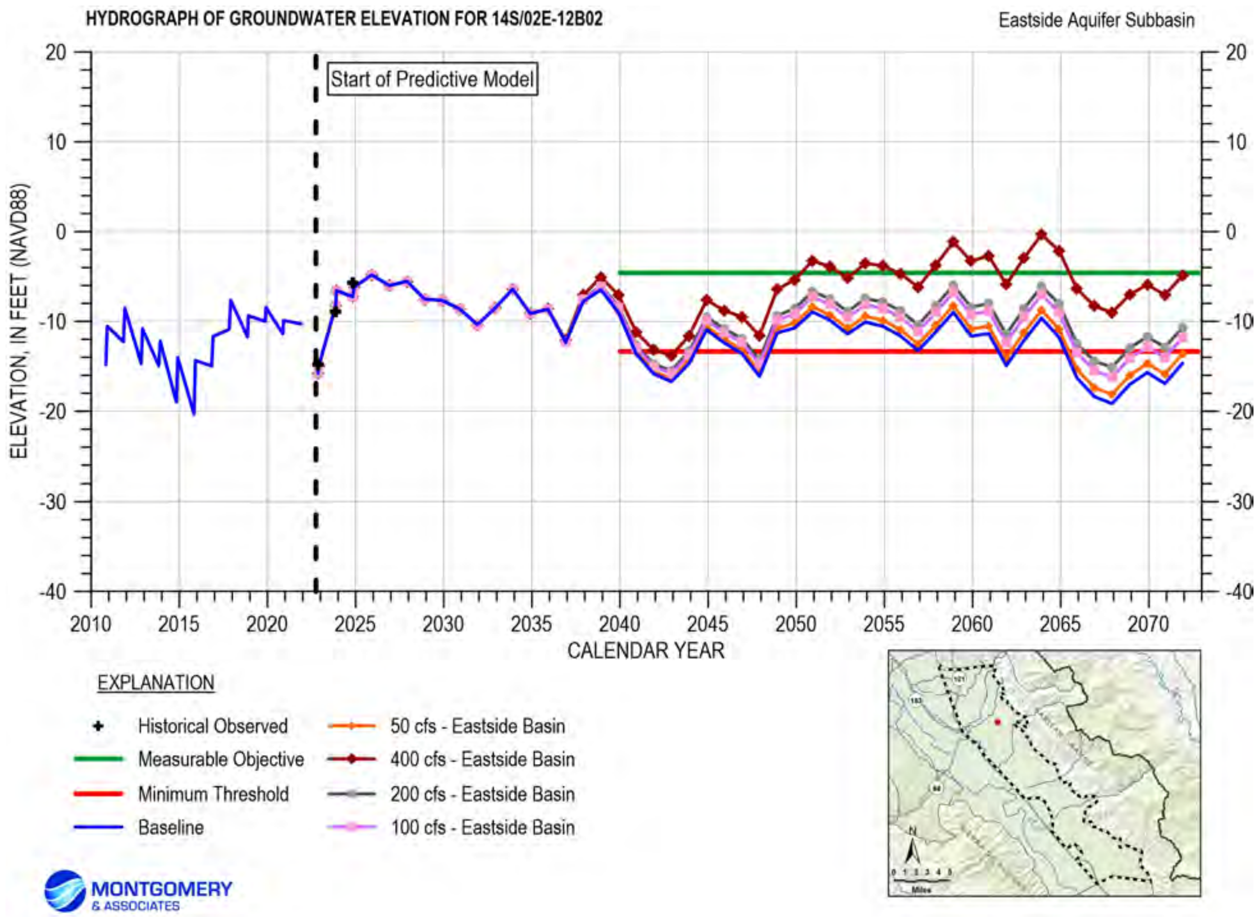


Figure 9. Simulated Groundwater Level Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 14S02E12B02

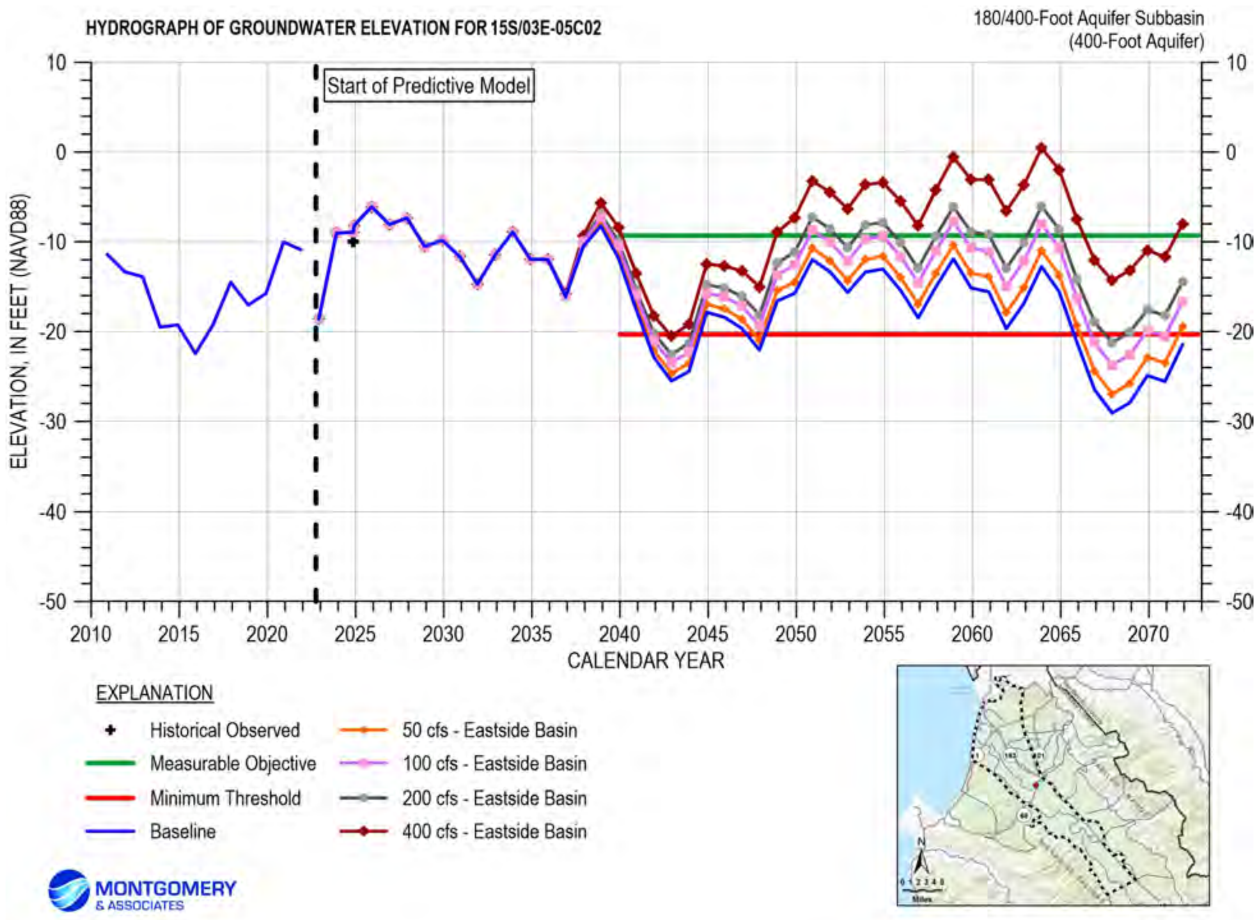


Figure 10. Simulated Groundwater Level Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 15S03E05C02

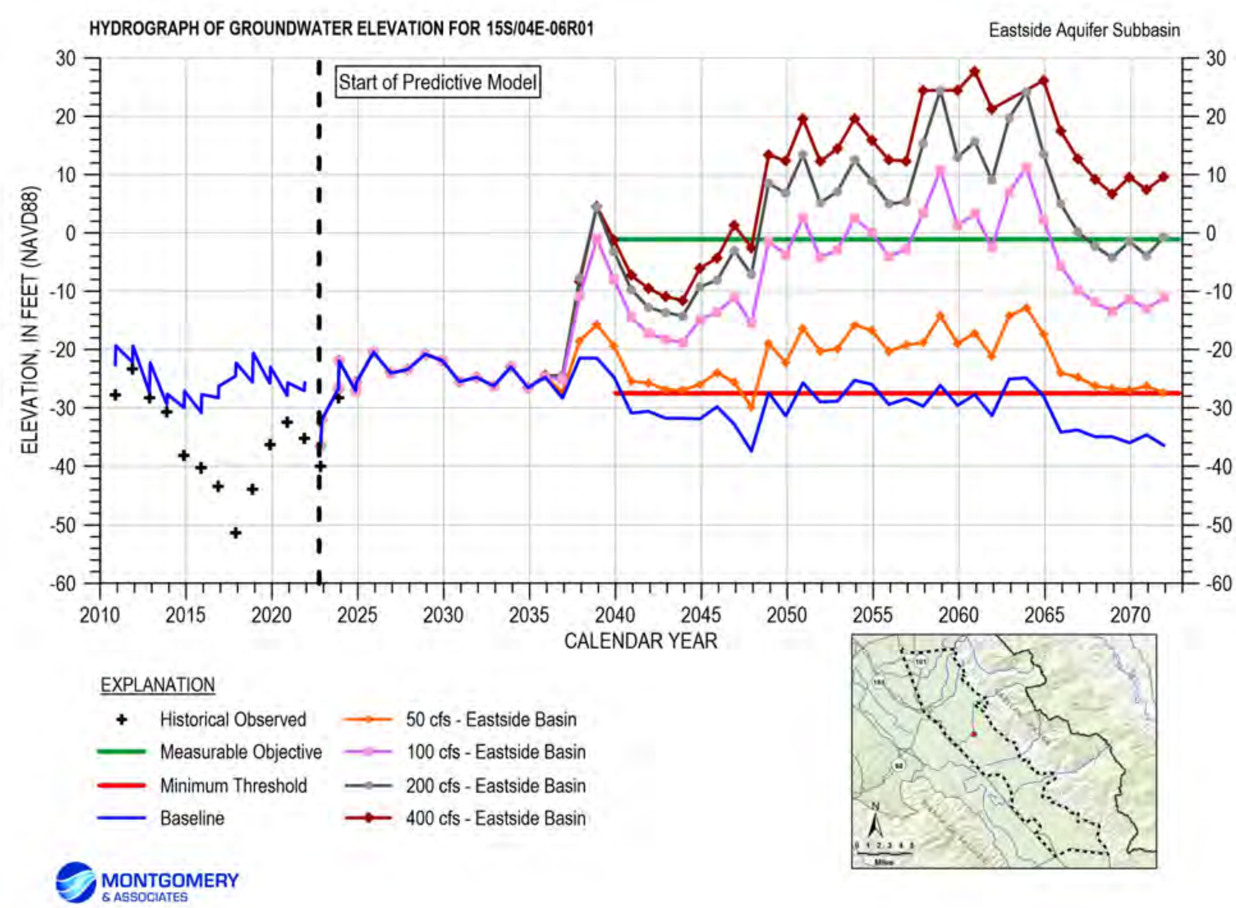


Figure 11. Simulated Groundwater Level Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 15S04E06R01

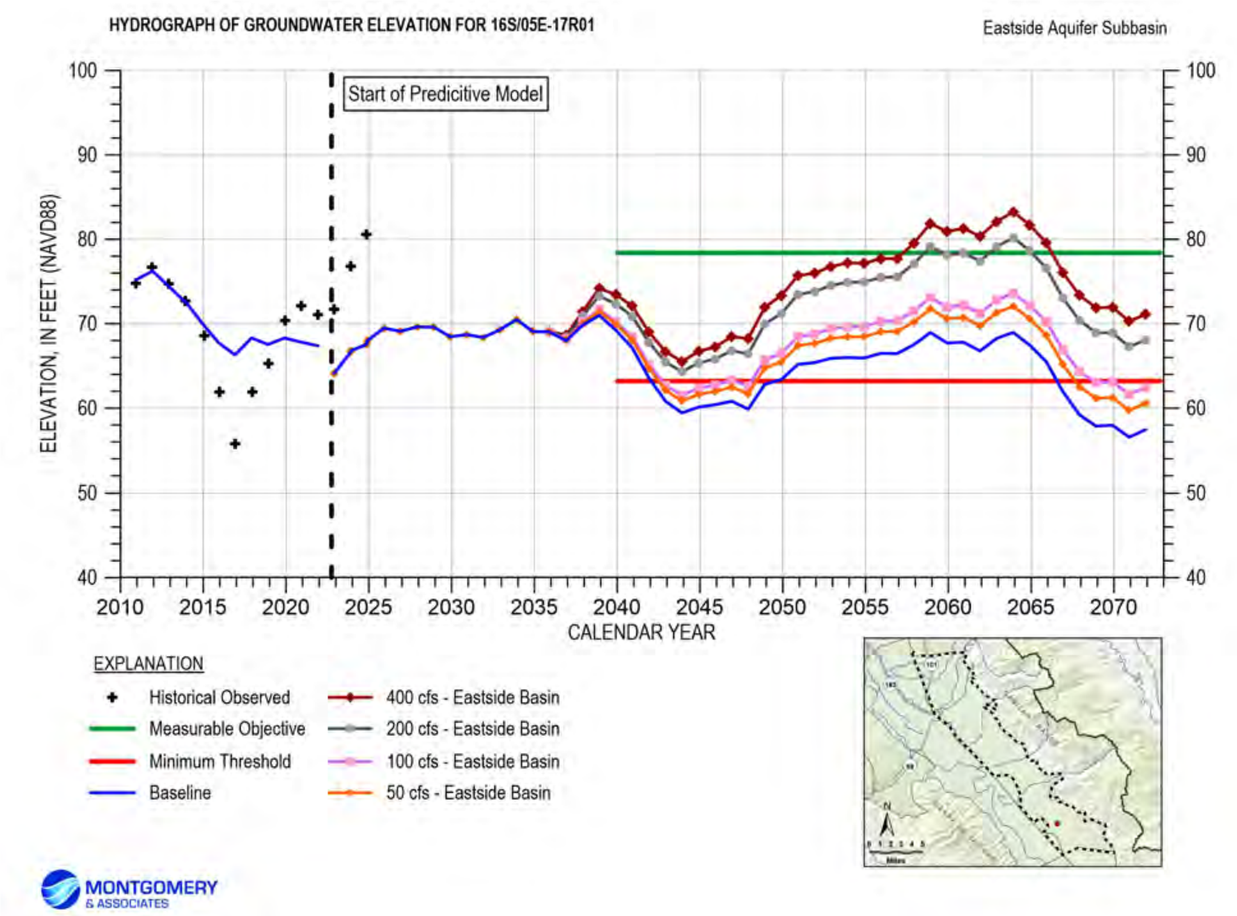


Figure 12. Simulated Groundwater Level Hydrograph for Baseline and Eastside Recharge Basin Scenarios in Well 16S05E17R01

## Comparison to Groundwater Level SMC

Table 3 summarizes the percentage of wells for which simulated groundwater levels were below their minimum thresholds during the sustainability evaluation period of 2040–2041. For the Eastside Subbasin, the Baseline Scenario results in 62% of wells below their minimum thresholds during the evaluation period. The Eastside Recharge Basin projects lower this percentage to between 52% and 14%, an improvement of 10% to 48%. While not the target of these project concepts, the 180/400 Subbasin also sees modest improvements of 2% to 12%. As anticipated, scenarios with higher diversion and recharge volumes result in fewer RMS wells below minimum thresholds. Table cells highlighted in light green indicate the number of wells with groundwater levels below the minimum threshold is lower than 15%, and therefore there is no undesirable result.

Table 3 Percentage of RMS Wells with Water Levels Simulated Below Their MT During 2040-2041 Evaluation Period for the Eastside Recharge Basin Scenarios

| Subbasin* | Wells Evaluated | Single well % | Baseline | Eastside Recharge Basins | | | |
|---|---|---|---|---|---|---|---|
| | | | | 50 cfs | 100 cfs | 200 cfs | 400 cfs |
| Eastside | 29 | 3% | 62% | 52% | 31% | 28% | 14% |
| 180/400 | 66 | 2% | 73% | 71% | 68% | 64% | 61% |

* Projects have no impact on percentages in other subbasins

Figure 13 shows the percentage of RMS wells in the Eastside Subbasin that are below their minimum thresholds at the end of November for each simulated year under the Baseline and Eastside Recharge Basin Scenarios. The relative improvements associated with the 4 proposed Eastside Recharge Basin scenarios vary from year to year.

In addition to the climate sequence discussed above, elapsed time also influences these patterns. In many wells and across all scenarios, time allows longer-term trends—primarily drawdown, but in some cases recovery—to become more fully expressed, resulting in wells falling progressively farther below their minimum thresholds. In the project scenarios, however, time allows groundwater level increases caused by the project's recharge to accumulate after it begins 2035. This cumulative effect is evident in the simulated hydrographs for individual wells, such as those shown on Figure 9. These hydrographs also illustrate how benefits accumulate over time, with relative increases over the baseline often most pronounced during wet years when diversion and recharge volumes are highest.

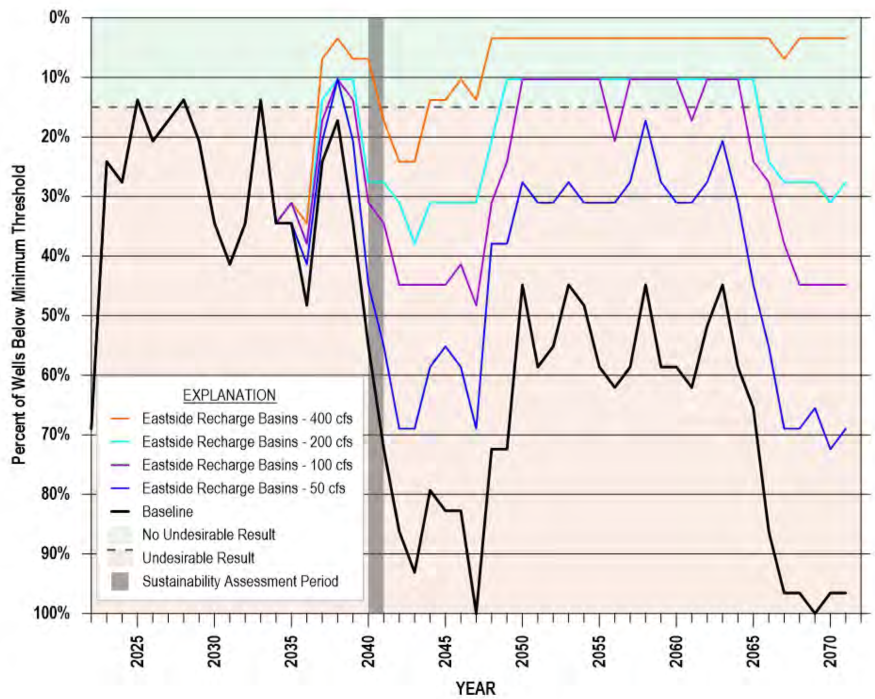


Figure 13. Percentage of RMS Wells with November Water Levels Simulated Below their MT for Years 2022-2072

A spatial pattern, not immediately apparent from this presentation of the results, is evident on Figure 13. In the 100, 200, and 400 cfs scenarios, there are many years in which the percentage of wells below their minimum thresholds remains unchanged, despite the presence of year-to-year variability in the baseline and 50 cfs scenarios. This plateau in benefit reflects the limited spatial extent of recharge from the basins: groundwater level increases are greatest near the recharge facilities and diminish with distance to varying degrees, depending on local hydrogeologic conditions.

The extent of the project benefit, measured in terms of wells rising above their minimum thresholds (and, in some cases, their measurable objectives) can be seen on Figure 14 through Figure 17, which map RMS well groundwater levels relative to the SMC in the Baseline Scenario. These figures show that the 50 cfs scenario, and even more so the 100 cfs scenario, leads to most of the RMS wells in the central portion of the Eastside Subbasin rising above their minimum thresholds. However, the cluster of wells in the northern Eastside Subbasin, in and around the City of Salinas, does not begin to see improvement until substantial recharge occurs in the basins to the east and northeast of the City.

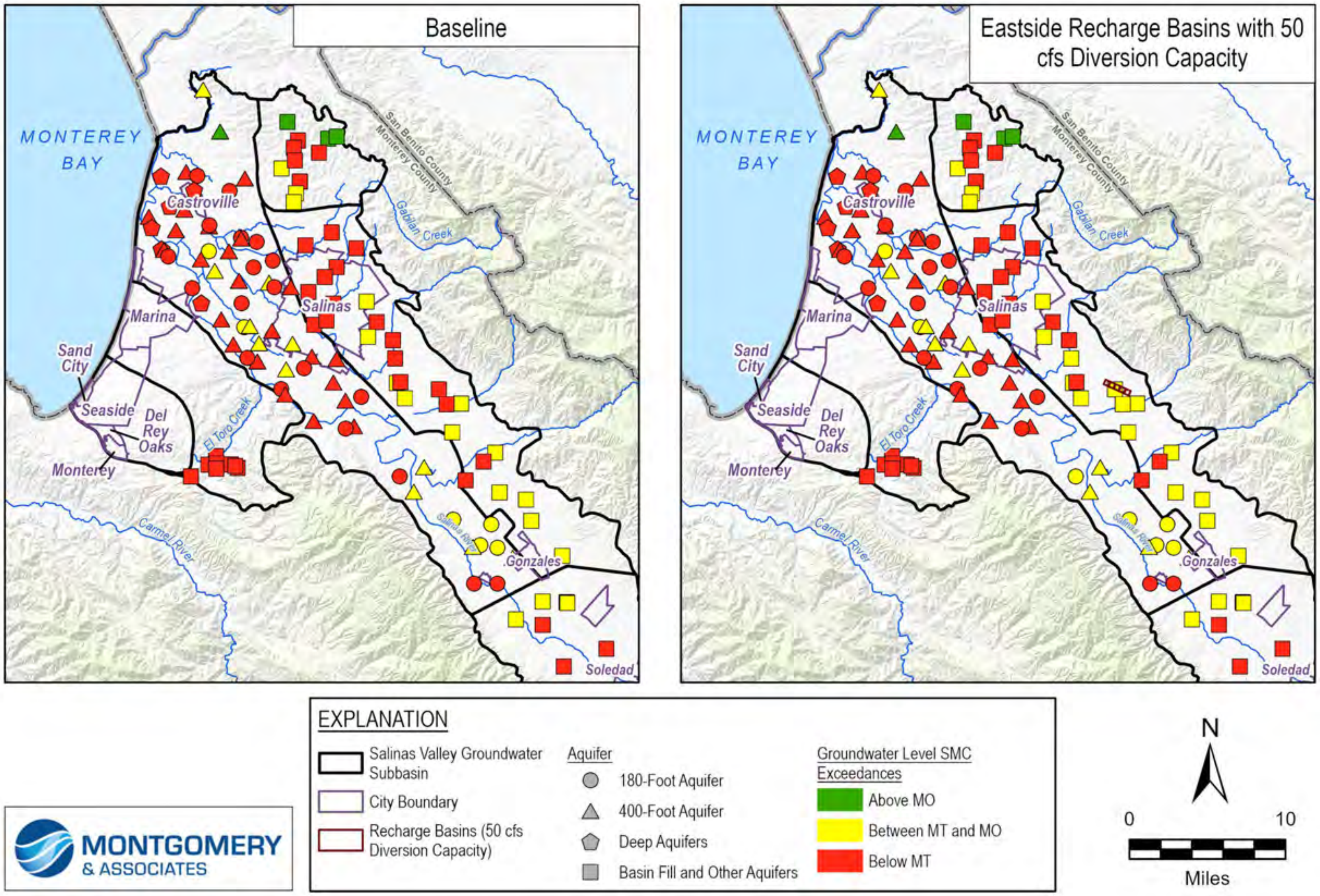


Figure 14. Groundwater Level SMC Assessment in the Baseline and Eastside Basin 50 cfs Scenario During 2040-2041 Evaluation Period

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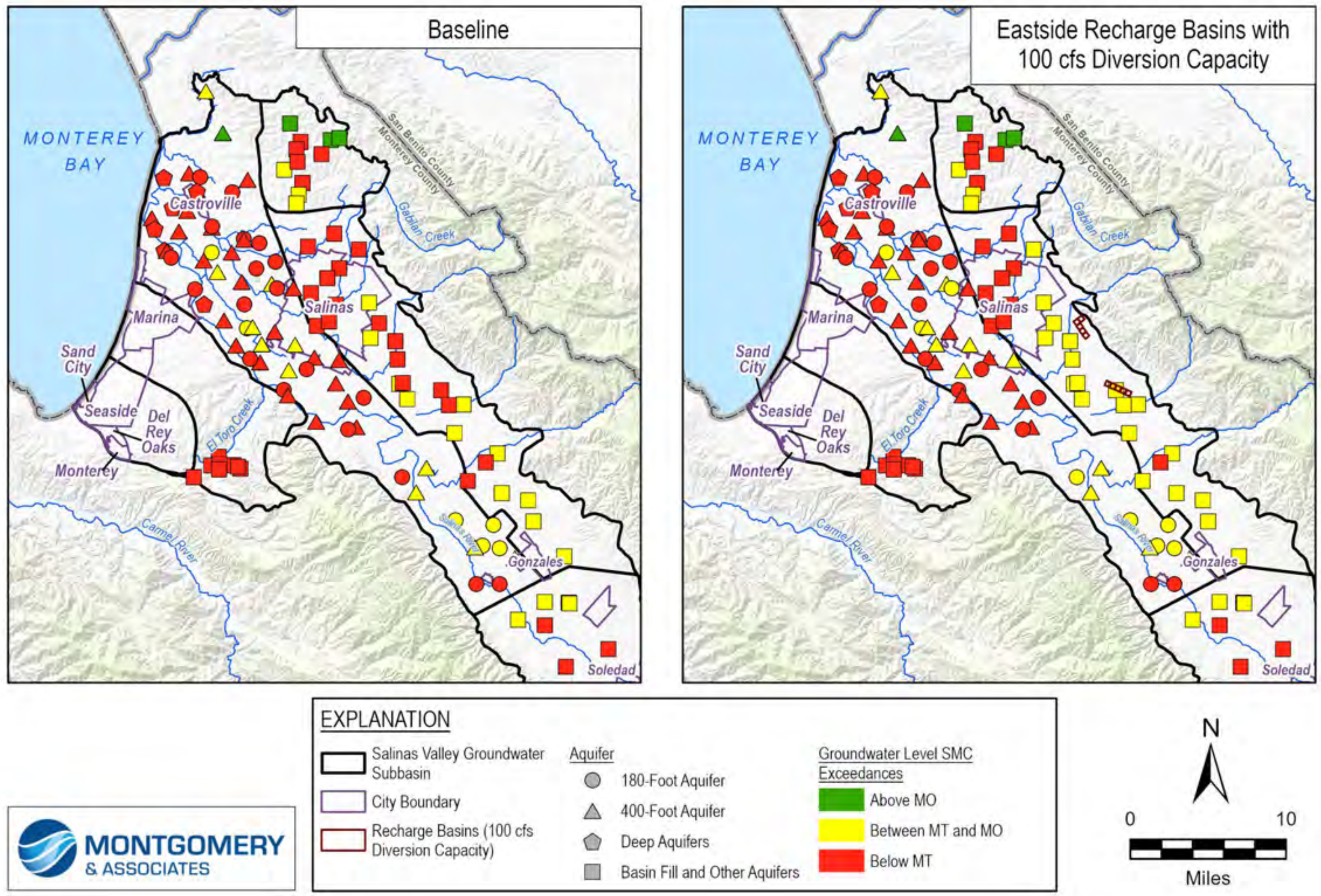


Figure 15. Groundwater Level SMC Assessment in the Baseline and Eastside Basin 100 cfs Scenario During 2040-2041 Evaluation Period

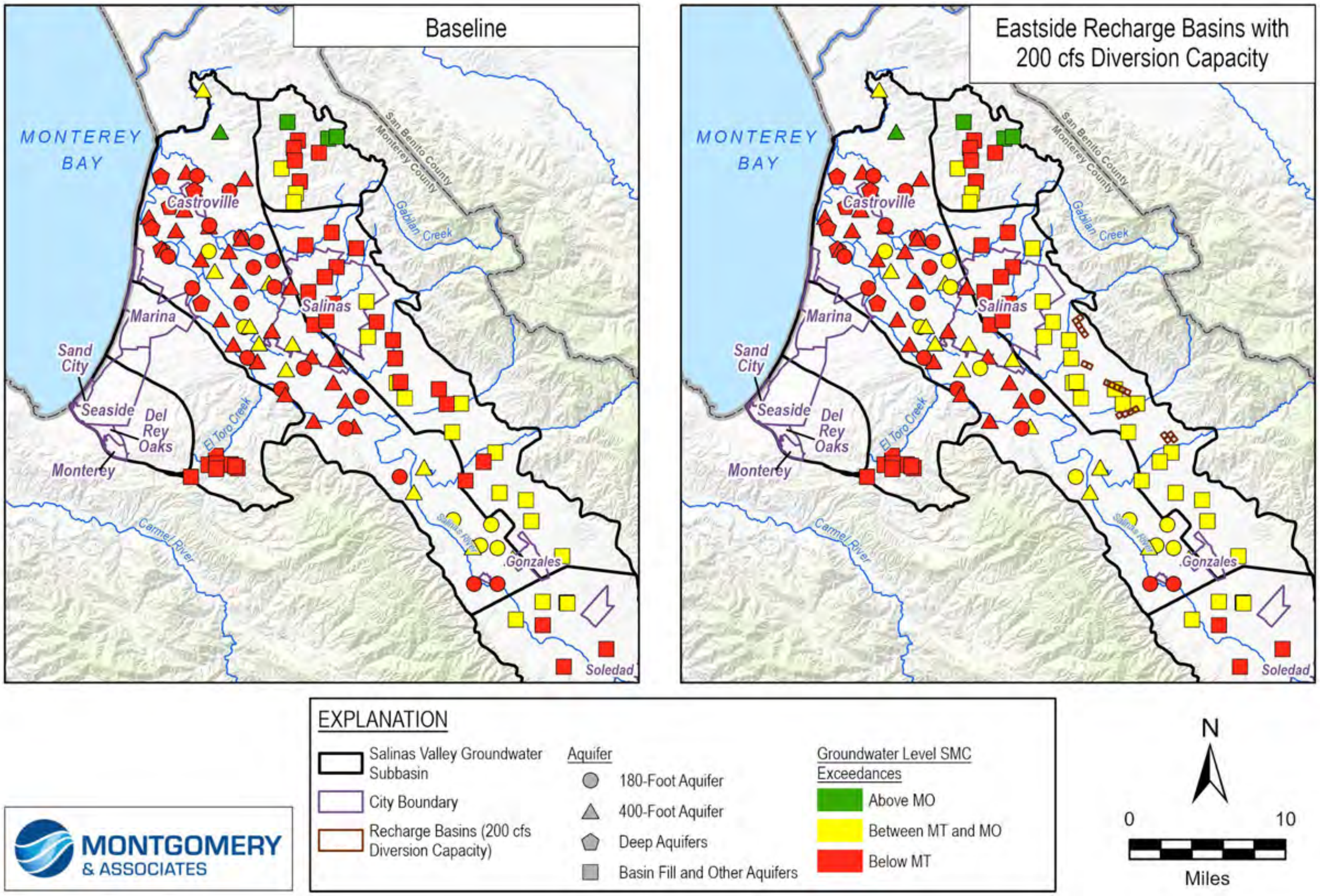


Figure 16. Groundwater Level SMC Exceedances in the Baseline and Eastside Basin 200 cfs Scenario During 2040-2041 Evaluation Period

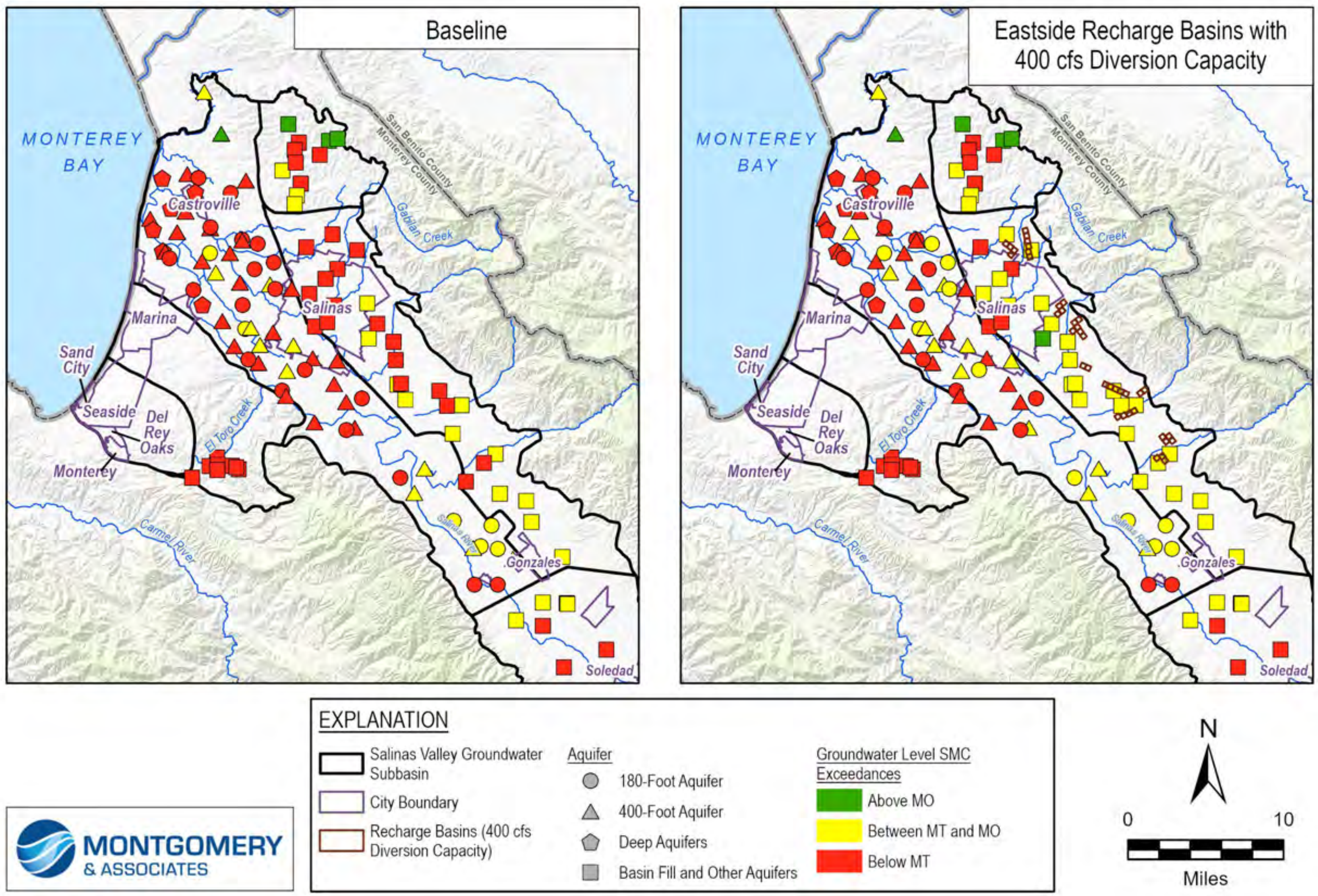


Figure 17. Groundwater Level SMC Exceedances in the Baseline and Eastside Basin 400 cfs Scenario During 2040-2041 Evaluation Period

## Changes in groundwater pumping, flow, and storage

Table 4 summarizes the average annual net change in groundwater storage over the 25-year simulation period for all subbasins and model scenarios. For the Eastside Recharge Basin scenarios, modeled storage increases in the Eastside Subbasin range from approximately 1,100 to 7,700 AF/year relative to baseline. Two key patterns are evident. First, storage gains are not confined to the Eastside Subbasin; substantial increases also occur in adjacent subbasins. Second, the total net increase in groundwater storage is considerably smaller than the average annual recharge volumes applied by the projects.

These patterns are examined more closely in Table 5. Comparison of the model-wide change in groundwater storage with total project recharge shows that, on average, net increases in storage represent only about 35% to 49% of the applied recharge volumes. This reflects the integrated system response to recharge, including changes in flow gradients and boundary fluxes, rather than the fate of recharge water itself. The Eastside Subbasin accounts for approximately 60% of the total storage increase, with the remainder distributed among adjacent subbasins.

Table 4. Average Annual Net Storage Change over Model Years 2040-2064, for the Eastside Recharge Basin Scenarios

| Scenario | Eastside | 180/400 | Langley | Forebay | Upper Valley | Monterey | Seaside |
|---|---|---|---|---|---|---|---|
| Baseline | -900 | -500 | 600 | -400 | -200 | -7,600 | -2,600 |
| Eastside Recharge Basins 50 cfs Scenario | 200 | -200 | 700 | -300 | -200 | -7,400 | -2,600 |
| Eastside Recharge Basins 100 cfs Scenario | 1,500 | 100 | 800 | -200 | -200 | -7,100 | -2,500 |
| Eastside Recharge Basins 200 cfs Scenario | 3,100 | 500 | 900 | 0 | -200 | -6,900 | -2,500 |
| Eastside Recharge Basins 400 cfs Scenario | 6,800 | 1,100 | 2,200 | 100 | -100 | -6,200 | -2,300 |

All values in AFY

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Table 5. Relative Storage Increase by Eastside Recharge Basin Scenarios over Baseline for the Eastside Recharge Basin Scenarios

| Scenario | Average annual project recharge (AF/year) | Storage increase | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Model-wide average annual increase in storage (AF/year) | Model-wide storage increase as % of project recharge | % in Eastside | $ in 180/400 | % in Langley | % in Monterey | % in Forebay | % in Seaside | % in Upper Valley |
| Eastside Recharge Basins 50 cfs Scenario | 5,100 | 1,806 | 35% | 61% | 16% | 4% | 11% | 6% | 2% | 0% |
| Eastside Recharge Basins 100 cfs Scenario | 9,700 | 4,099 | 42% | 60% | 15% | 6% | 13% | 4% | 3% | 0% |
| Eastside Recharge Basins 200 cfs Scenario | 17,200 | 6,637 | 39% | 61% | 15% | 4% | 11% | 6% | 2% | 0% |
| Eastside Recharge Basins 400 cfs Scenario | 26,800 | 13,227 | 49% | 59% | 13% | 12% | 11% | 4% | 2% | 0% |

**Stream seepage**

Stream seepage results (Table 6) indicate that net seepage from streams to groundwater decreases under the recharge basin scenarios relative to Baseline Scenario, with the largest reductions occurring in the 180/400 Subbasin. This reduction is consistent with higher groundwater levels near the Salinas River corridor in the project scenarios, which reduces head gradients from the river to the aquifer and therefore reduces seepage losses. As shown in Table 7, model-wide seepage reductions represent a substantial fraction of applied project recharge, indicating that a portion of the project benefit manifests as reduced stream losses and redistributed boundary fluxes rather than as a one-for-one increase in stored groundwater.

Table 6. Average Annual Net Stream Seepage (into aquifer) over Model Years 2040-2064

| Scenario | Eastside | 180/400 | Langley | Forebay | Monterey | Seaside | Upper Valley |
|---|---|---|---|---|---|---|---|
| Baseline | 7,100 | 55,400 | 1,900 | 118,600 | 4,500 | 1,000 | 95,300 |
| Eastside Recharge Basins 50 cfs Scenario | 7,100 | 52,700 | 1,900 | 117,900 | 4,500 | 1,000 | 95,300 |
| Eastside Recharge Basins 100 cfs Scenario | 7,000 | 51,000 | 1,900 | 117,600 | 4,400 | 1,000 | 95,300 |
| Eastside Recharge Basins 200 cfs Scenario | 7,000 | 47,200 | 1,900 | 116,200 | 4,400 | 1,000 | 95,200 |
| Eastside Recharge Basins 400 cfs Scenario | 7,000 | 45,100 | 1,800 | 115,600 | 4,300 | 1,000 | 95,200 |

All values in AFY

Table 7. Relative Reduction in Stream Seepage by Project Scenarios over Baseline

| | Average annual project recharge (AF/year) | Stream seepage reduction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Model-wide average annual stream seepage reduction (AF/year) | Model-wide stream seepage reduction as % of project recharge | % in Eastside | % in 180/400 | % in Langley | % in Monterey | % in Forebay | % in Seaside | % in Upper Valley |
| Eastside Recharge Basins 50 cfs Scenario | 5,100 | -3,452 | -68% | 0% | 78% | 0% | 1% | 20% | 0% | 0% |
| Eastside Recharge Basins 100 cfs Scenario | 9,700 | -5,559 | -57% | 1% | 79% | 0% | 2% | 19% | 0% | 0% |
| Eastside Recharge Basins 200 cfs Scenario | 17,200 | -10,839 | -63% | 0% | 76% | 0% | 1% | 22% | 0% | 0% |
| Eastside Recharge Basins 400 cfs Scenario | 26,800 | -13,779 | -51% | 1% | 75% | 0% | 2% | 22% | 0% | 0% |

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### Groundwater pumping

Groundwater pumping changes are summarized in Table 8. For the Eastside Recharge Basin scenarios, the primary modeled pumping reduction is attributable to removal of agricultural demand within recharge basin footprints beginning in 2035. As a result, pumping reductions occur consistently across years and are not tied to the timing of diversion and recharge events. Additional small decreases in groundwater pumping are seen in the 180/400 and Forebay Subbasins and are caused by an increase in transpiration of newly reachable groundwater by crops.

Table 8. Average Annual Groundwater Pumping over Model Years 2040-2064

| Scenario | Eastside | 180/400 | Langley | Forebay | Monterey | Seaside | Upper Valley |
|---|---|---|---|---|---|---|---|
| Baseline | 82,600 | 108,400 | 2,300 | 138,600 | 9,800 | 900 | 94,500 |
| Eastside Recharge Basins 50 cfs Scenario | 82,100 | 108,300 | 2,300 | 138,500 | 9,800 | 900 | 94,500 |
| Eastside Recharge Basins 100 cfs Scenario | 81,600 | 108,200 | 2,300 | 138,500 | 9,800 | 900 | 94,500 |
| Eastside Recharge Basins 200 cfs Scenario | 80,700 | 108,100 | 2,300 | 138,500 | 9,800 | 900 | 94,500 |
| Eastside Recharge Basins 400 cfs Scenario | 79,200 | 107,900 | 2,300 | 138,500 | 9,800 | 900 | 94,500 |

All values in AFY

### Inter-subbasin groundwater flow

Inter-subbasin groundwater flows (Table 9) shift under the recharge basin scenarios in a manner consistent with increased heads in the Eastside Subbasin. In general, flows from the 180/400 Subbasin to the Eastside decrease as recharge increases, reflecting reduced hydraulic gradients across the subbasin boundary. Smaller changes are also simulated for other inter-subbasin flow components, indicating that project recharge alters regional gradients and redistributes groundwater movement beyond the immediate recharge footprint.

Table 9. Average Annual Inter-subbasin Flow over Model Years 2040-2064

| Scenario | 180/400 to Eastside | Forebay to Eastside | Langley to Eastside | Forebay to 180/400 | Monterey to 180/400 | Langley to 180/400 | Upper valley to Forebay |
|---|---|---|---|---|---|---|---|
| Baseline | 41,400 | 6,400 | 4,200 | 29,900 | 21,100 | 500 | 25,600 |
| Eastside Recharge Basins 50 cfs Scenario | 37,100 | 6,200 | 4,100 | 29,200 | 20,700 | 500 | 25,600 |
| Eastside Recharge Basins 100 cfs Scenario | 33,700 | 6,100 | 3,900 | 28,900 | 20,000 | 500 | 25,600 |
| Eastside Recharge Basins 200 cfs Scenario | 27,300 | 5,700 | 3,800 | 27,500 | 19,600 | 500 | 25,600 |
| Eastside Recharge Basins 400 cfs Scenario | 21,600 | 5,500 | 2,400 | 26,900 | 18,200 | 600 | 25,600 |

All values in AFY

## Northern Eastside injection

Groundwater impacts of the 2 Northern Eastside Injection Scenarios were modeled with the SVOM. Both scenarios lead to higher groundwater levels relative to the Baseline Scenario, with benefits concentrated near the injection field and reflecting the lower transmissivity conditions in the northern Eastside Subbasin. Groundwater level increases also propagate into adjacent subbasins, and both scenarios reduce the percentage of RMS wells below their minimum thresholds during the 2040–2041 evaluation period, though neither avoids an undesirable result in the Eastside Subbasin. Compared to the recharge basin scenarios, the injection scenarios produce a more localized response and a larger share of storage gains in adjacent subbasins, particularly the Langley Subbasin.

### Groundwater level change

Figure 18 and Figure 19 compare simulated 2040–2041 groundwater levels in the injection scenarios to the baseline scenario for the 180-Foot, 400-Foot, and Deep Aquifers. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. As with the recharge basin scenarios, the vertical and lateral distribution of water-level increases reflects both the conceptual hydrogeology and spatial variability in hydraulic properties. However, because recharge is introduced through injection wells, the response is expected to be more localized near the injection field and more dependent on (1) the model layers in which injection was applied, and (2) the degree of vertical connectivity between aquifers in the Northern Eastside area. The low transmissivity zone in the northern Eastside Subbasin is evident where groundwater level rises are limited to the immediate vicinity of the injection wells.

Compared to the recharge basin scenarios, the injection scenarios produce more concentrated groundwater level increases near the recharge locations, consistent with the localized nature of injection and the lower transmissivity conditions in the northern Eastside. At the same time, model results indicate that groundwater level increases propagate into adjacent areas, including portions of the 180/400 and Langley Subbasins, reflecting regional hydraulic connectivity in the simulated system.

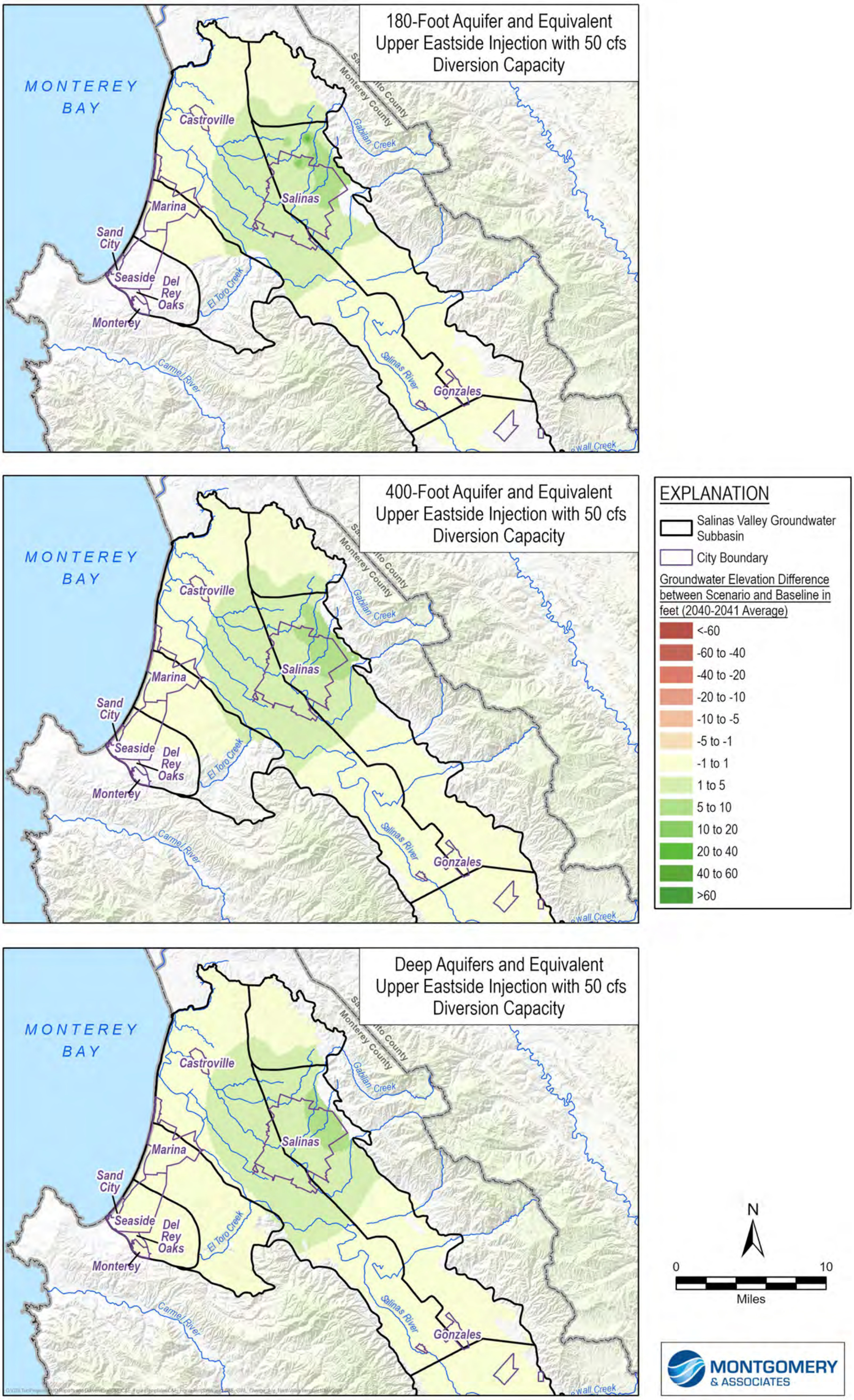



Figure 18. Difference Between North Eastside Injection Project (50cfs) Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers

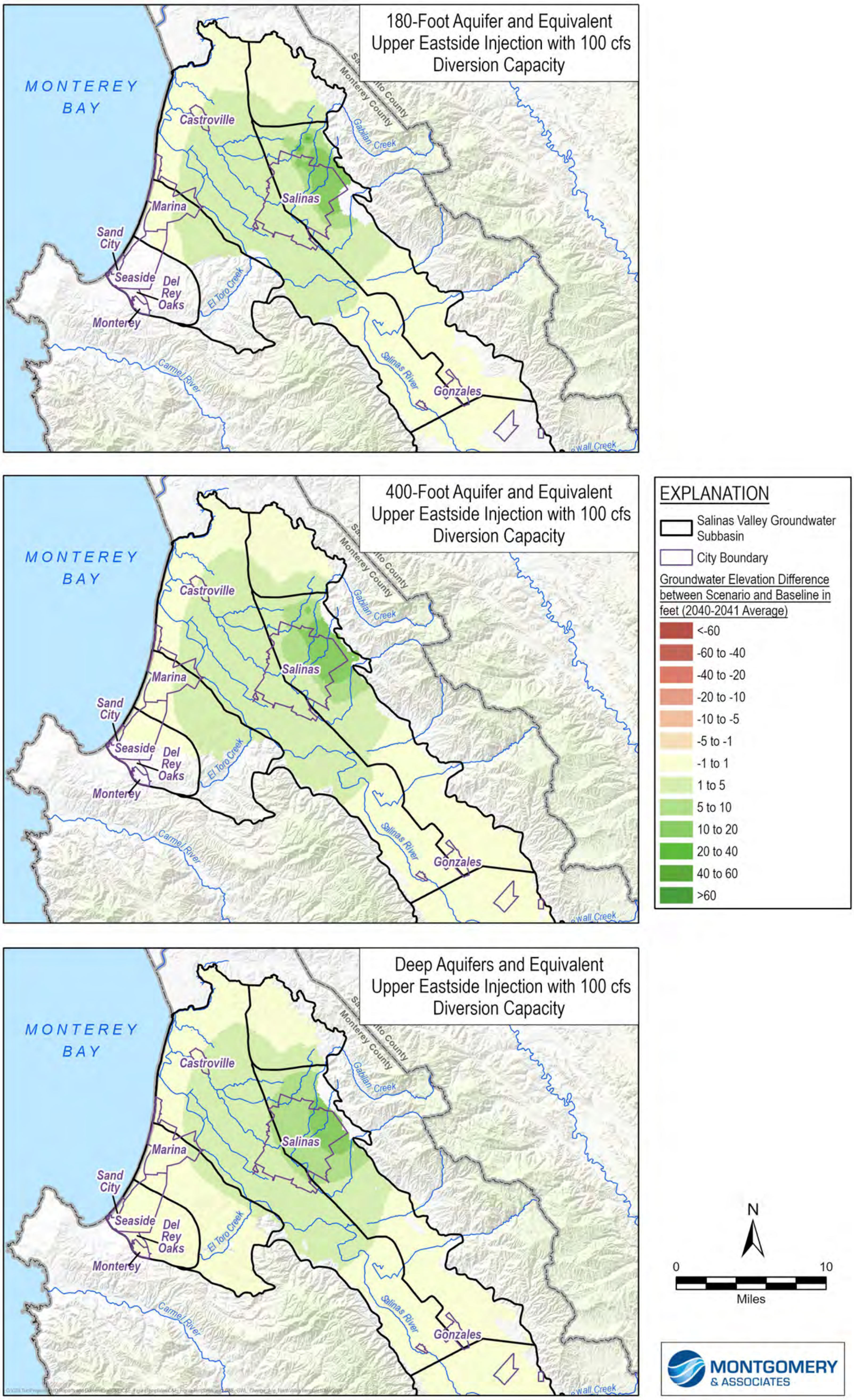



Figure 19. Difference Between North Eastside Injection Project (100cfs) Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers

## Representative hydrographs

In many RMS wells, simulated groundwater levels rise above and fall below their minimum thresholds multiple times over the course of the simulation period, as shown on Figure 20 to Figure 23. Several factors drive the observed patterns. First, the climate sequence used for the future projections (M&A, 2026) is a primary driver of both annual and multi-year variability. Drought years tend to draw down groundwater levels, increasing the number of wells below their minimum thresholds, while wet years generally have the opposite effect. Climate-driven patterns that are evident in the Baseline Scenario are amplified in the project scenarios because diversion and recharge volumes, and the associated groundwater level increases, are greater during wet years than during dry years. Due to surface water storage required for treatment, this amplification is less than under the recharge basin scenarios.

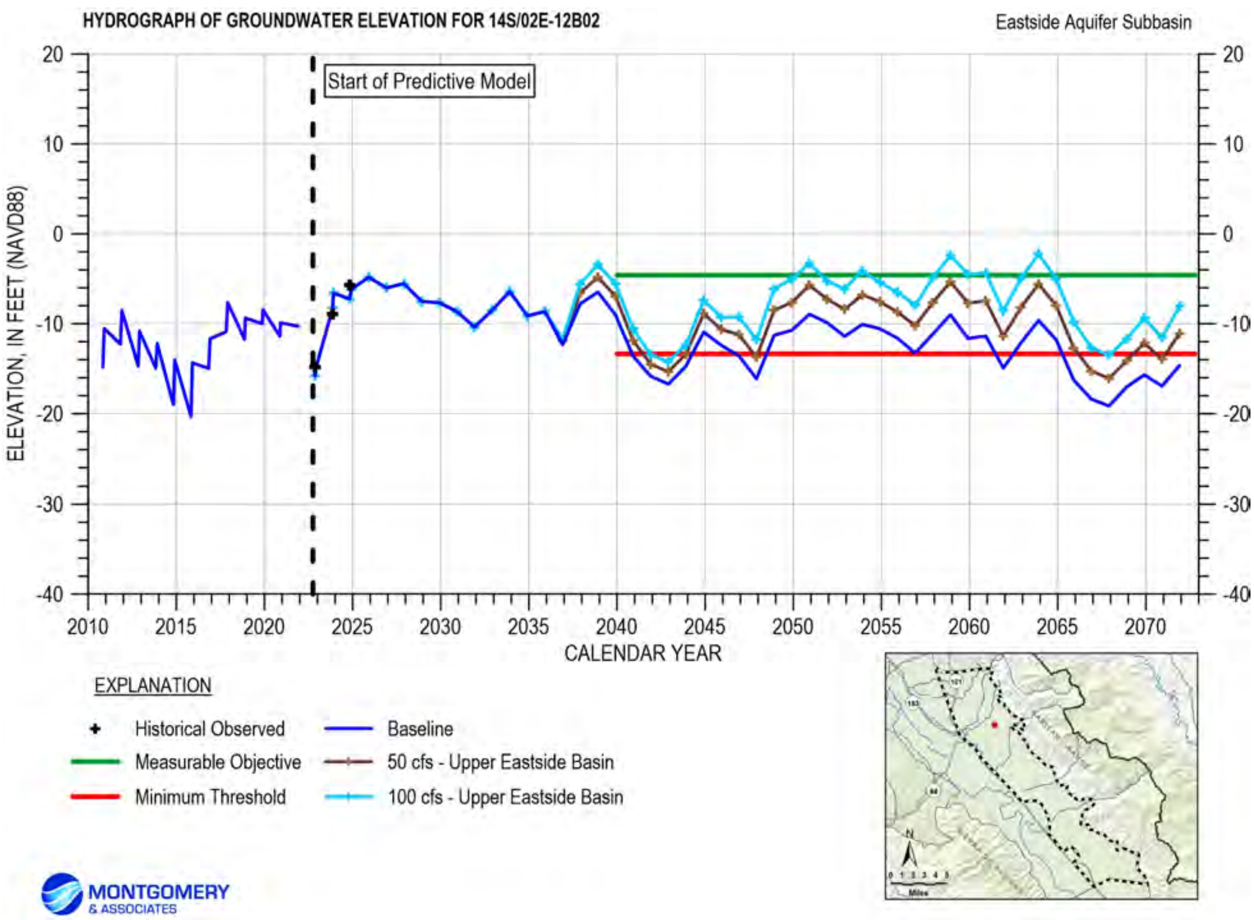



Figure 20. Simulated Groundwater Level Hydrograph for Baseline and Eastside Injection Scenarios in Well 14S02E12B02

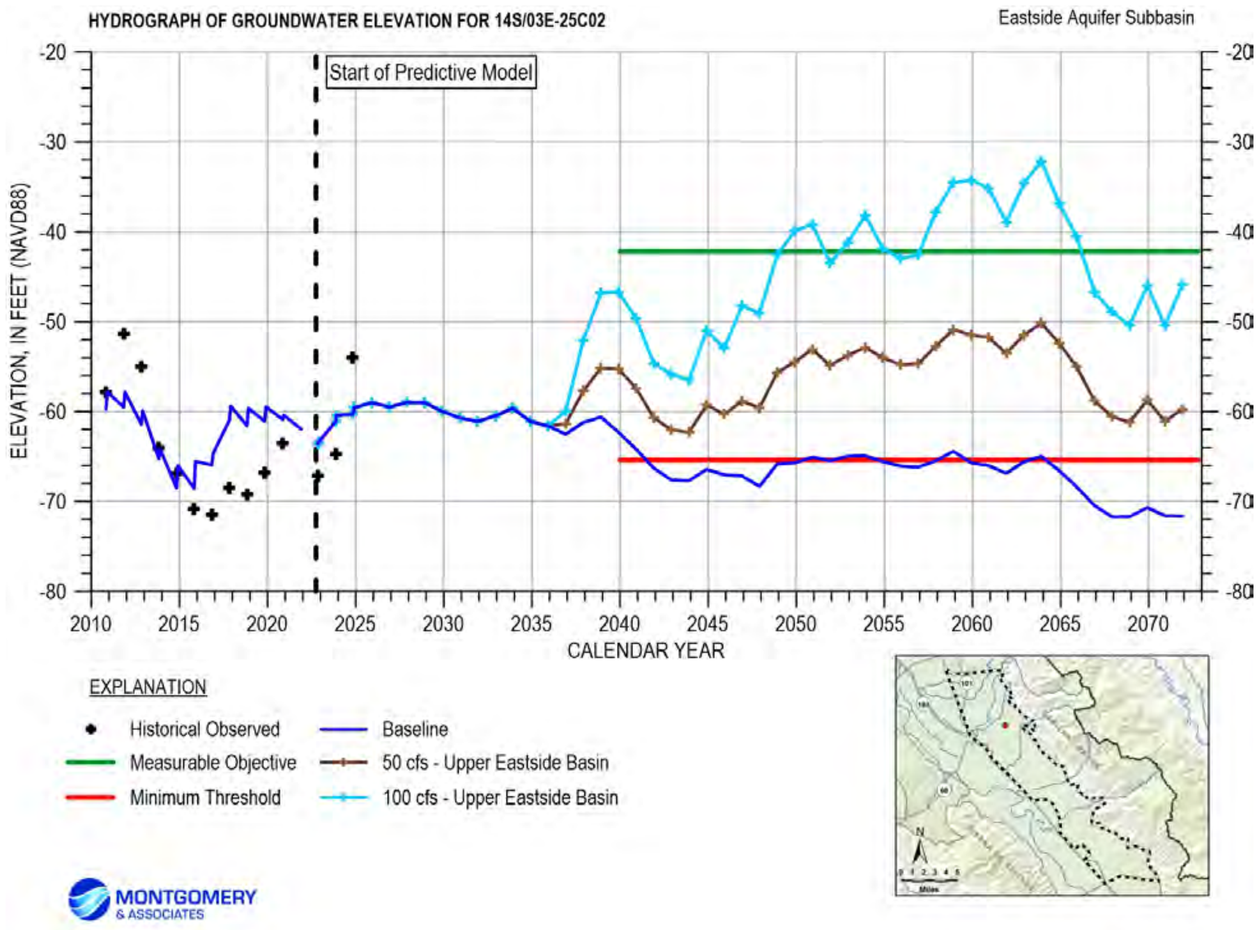



Figure 21. Simulated Groundwater Level Hydrograph for Baseline and Eastside Injection Scenarios in Well 14S03E25C02

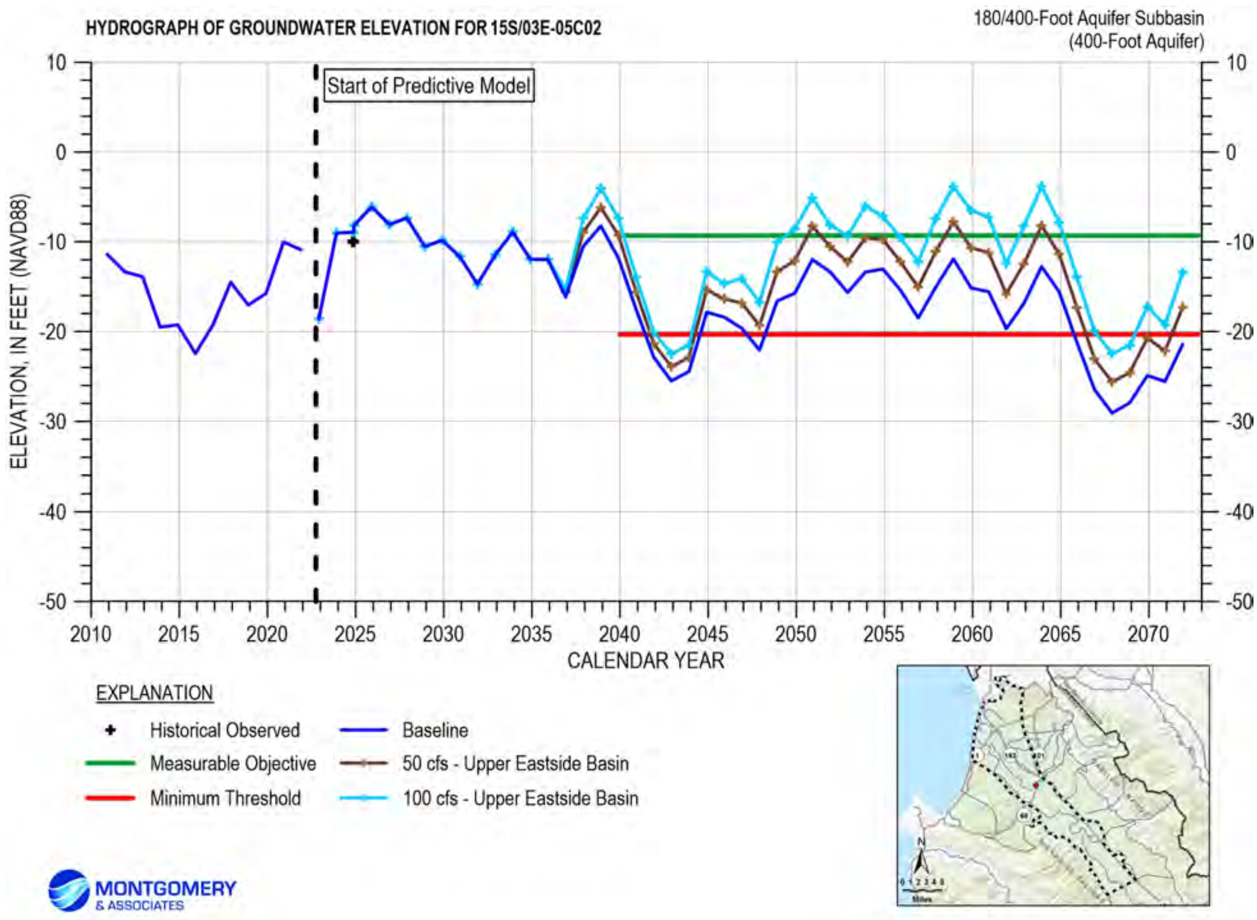



Figure 22. Simulated Groundwater Level Hydrograph for Baseline and Eastside Injection Scenarios in Well 15S03E05C02

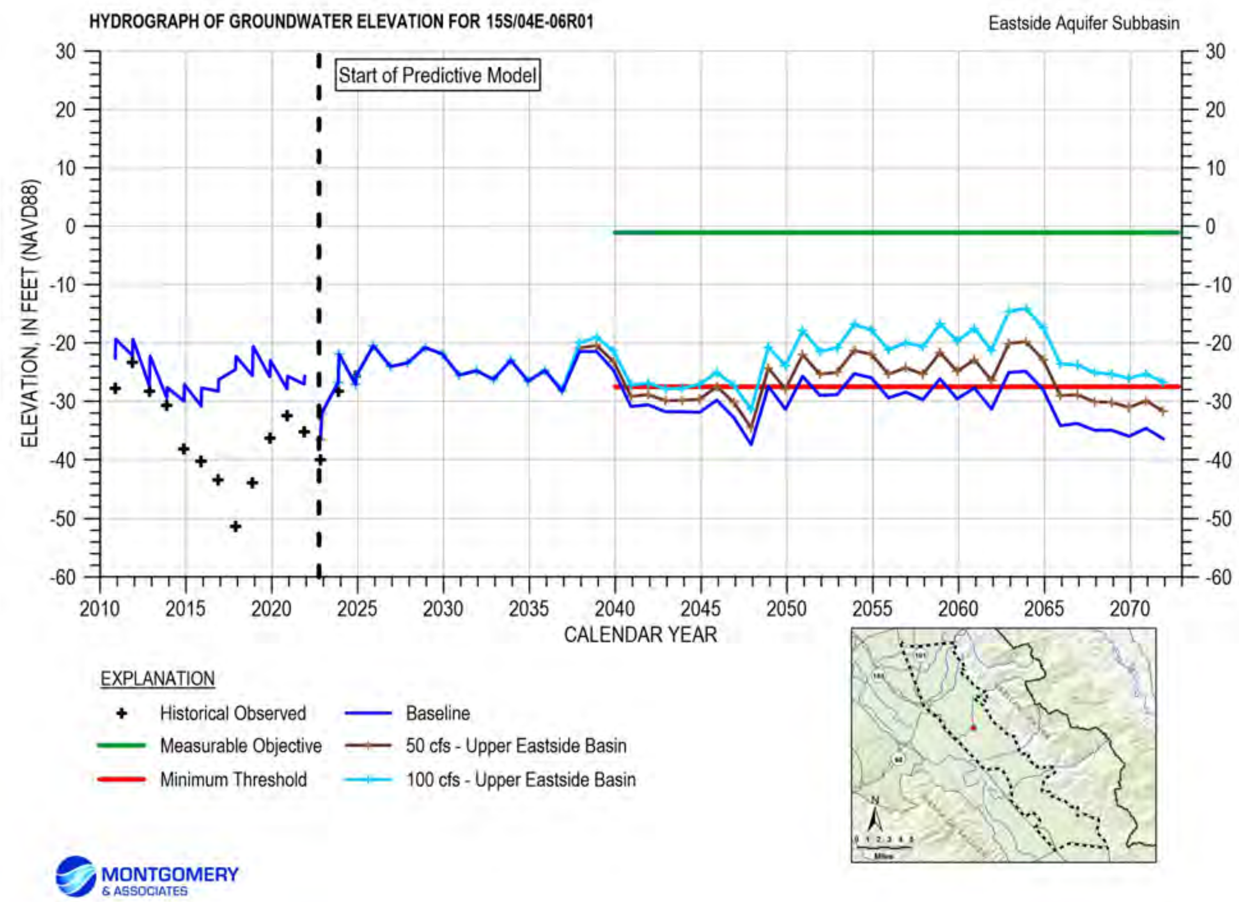



Figure 23. Simulated Groundwater Level Hydrograph for Baseline and Eastside Injection Scenarios in Well 15S04E06R01

## Comparison to Groundwater Level SMC

Table 10 summarizes the percentage of RMS wells for which simulated water levels were below their minimum threshold during the 2040–2041 evaluation period.

Table 10. Percentage of RMS Wells with Water Levels Simulated Below Their MT During 2040-2041 Evaluation Period for the Northern Eastside Injection Scenarios

| Subbasin* | Wells Evaluated | Single well % | Baseline | Northern Eastside Injection | |
|---|---|---|---|---|---|
| | | | | 50cfs | 100cfs |
| Eastside | 29 | 3% | 62% | 55% | 38% |
| 180/400 | 66 | 2% | 73% | 67% | 62% |

* Minimal effect in all other subbasins.

For the Eastside Subbasin, the Baseline (no project) Scenario results in 62% of wells below minimum thresholds during the evaluation period. The Northern Eastside injection scenarios reduce this percentage to 55% (50 cfs) and 38% (100 cfs), corresponding to improvements of 7% and 24%, respectively. As with the recharge basin scenarios, the 180/400 subbasin also shows modest improvements: baseline conditions yield 73% of wells below minimum threshold, which decreases to 67% (50 cfs) and 62% (100 cfs) under the injection scenarios. Neither injection scenario avoids an undesirable result in the Eastside Subbasin by the evaluation period, but both reduce the magnitude of exceedances relative to Baseline.

As in the recharge basin scenarios, many RMS wells rise above and fall below their minimum thresholds multiple times over the simulation period, reflecting both climate-driven variability and longer-term trends. Figure 24 shows the percentage of Eastside RMS wells below minimum thresholds at the end of November for each simulated year under the baseline and northern Eastside injection scenarios. Relative improvements vary from year to year, in part because diversion, storage, and injection volumes are higher in wetter years than in drier years, which amplifies climate-driven patterns evident in the baseline scenario. Time since project initiation also plays a role: after injection begins (assumed in 2035, consistent with the preceding section), benefits can accumulate over multiple years and become more evident in well hydrographs.

Model results indicate that groundwater level increases are concentrated in and around the injection field, where the baseline simulation shows a persistent groundwater depression in the northern Eastside area. This depression is influenced by a combination of relatively low aquifer permeability, limited vertical connectivity associated with shallow clay layers, and substantial municipal pumping in and around the City of Salinas.

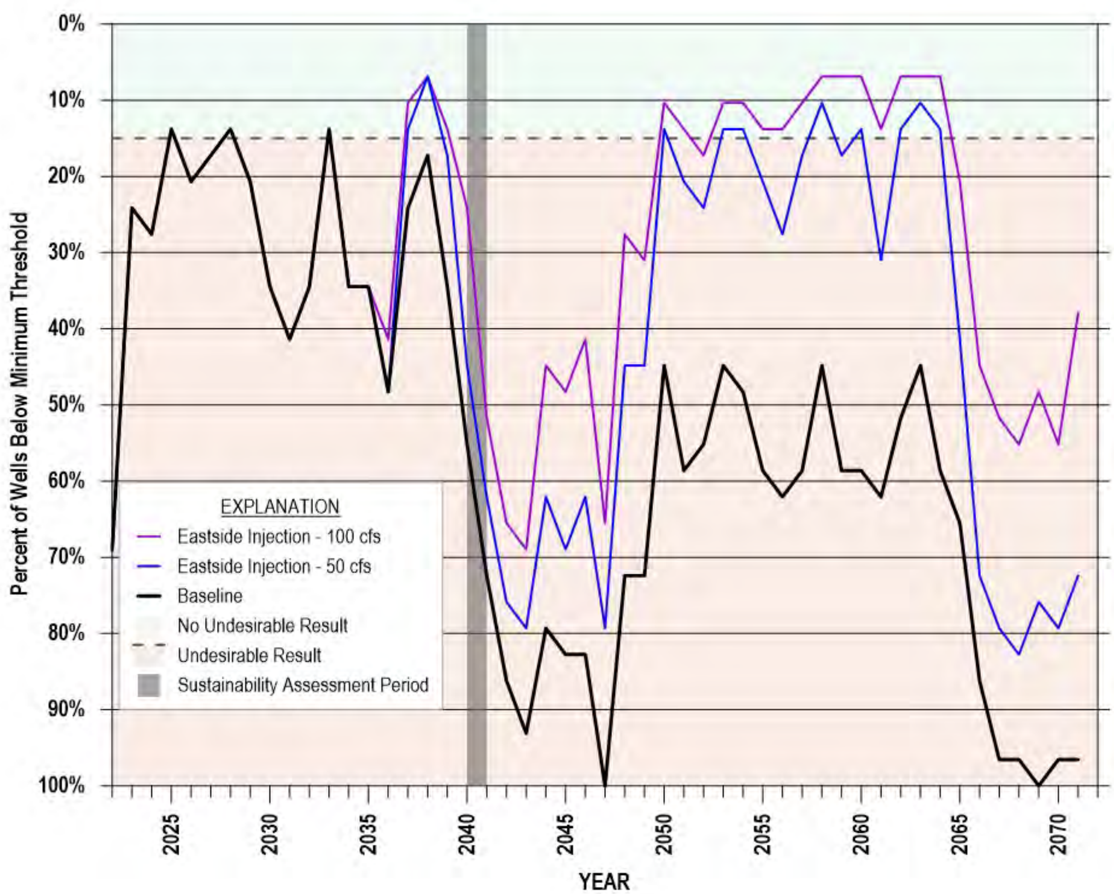



Figure 24. Percentage of RMS Wells with November Water Levels Simulated Below MT (Baseline vs. Northern Eastside Injection Scenarios)

The extent of the project benefit, measured in terms of wells rising above their minimum threshold (and in some cases measurable objective) can be seen in which shows a map of SMC exceedances for the baseline scenario and on Figure 25 and Figure 26, which show the same for the upper eastside injection scenarios.

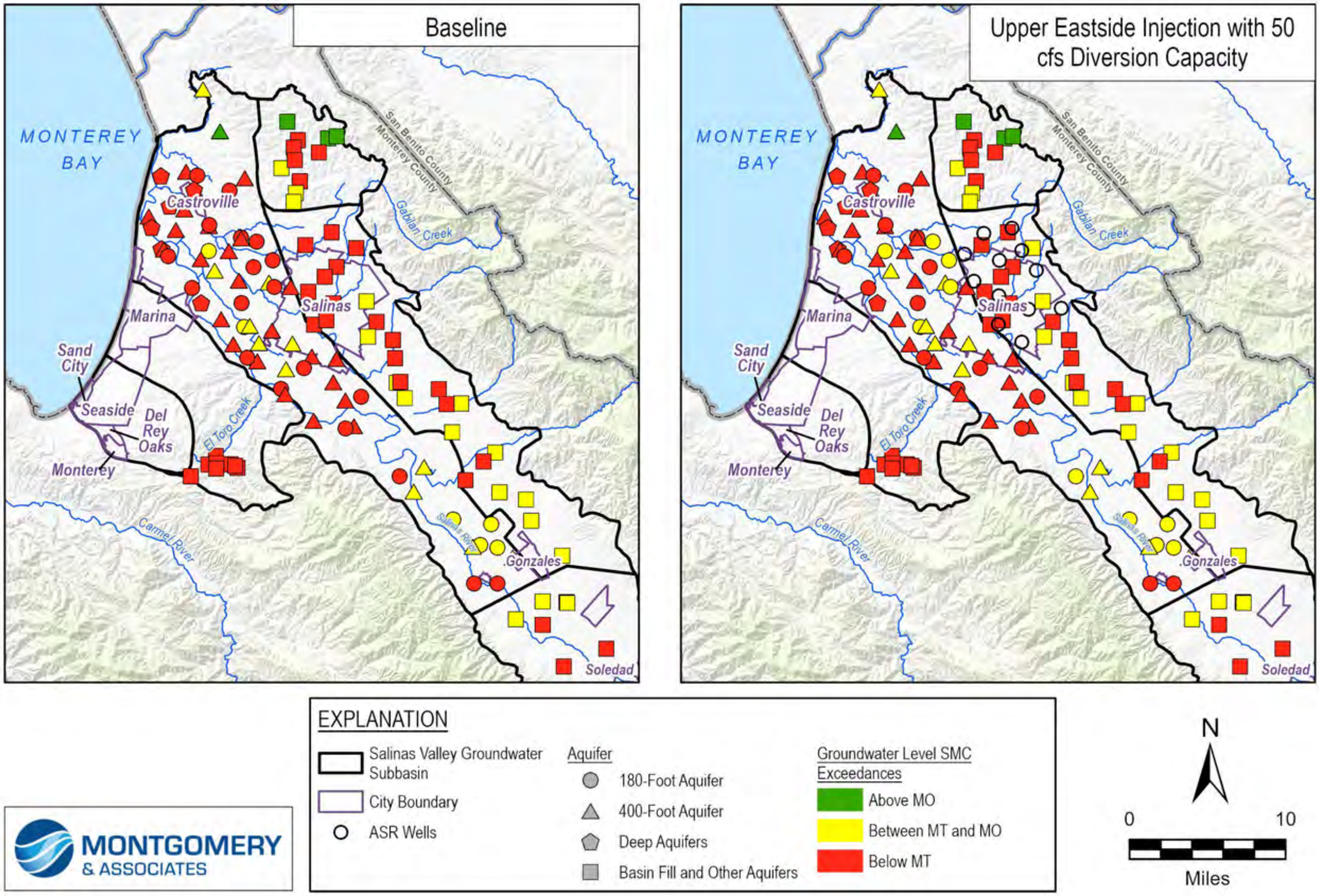



Figure 25. Groundwater Level SMC Exceedances in the Baseline and Eastside Injection Scenario (50 cfs) During 2040-2041 Evaluation Period

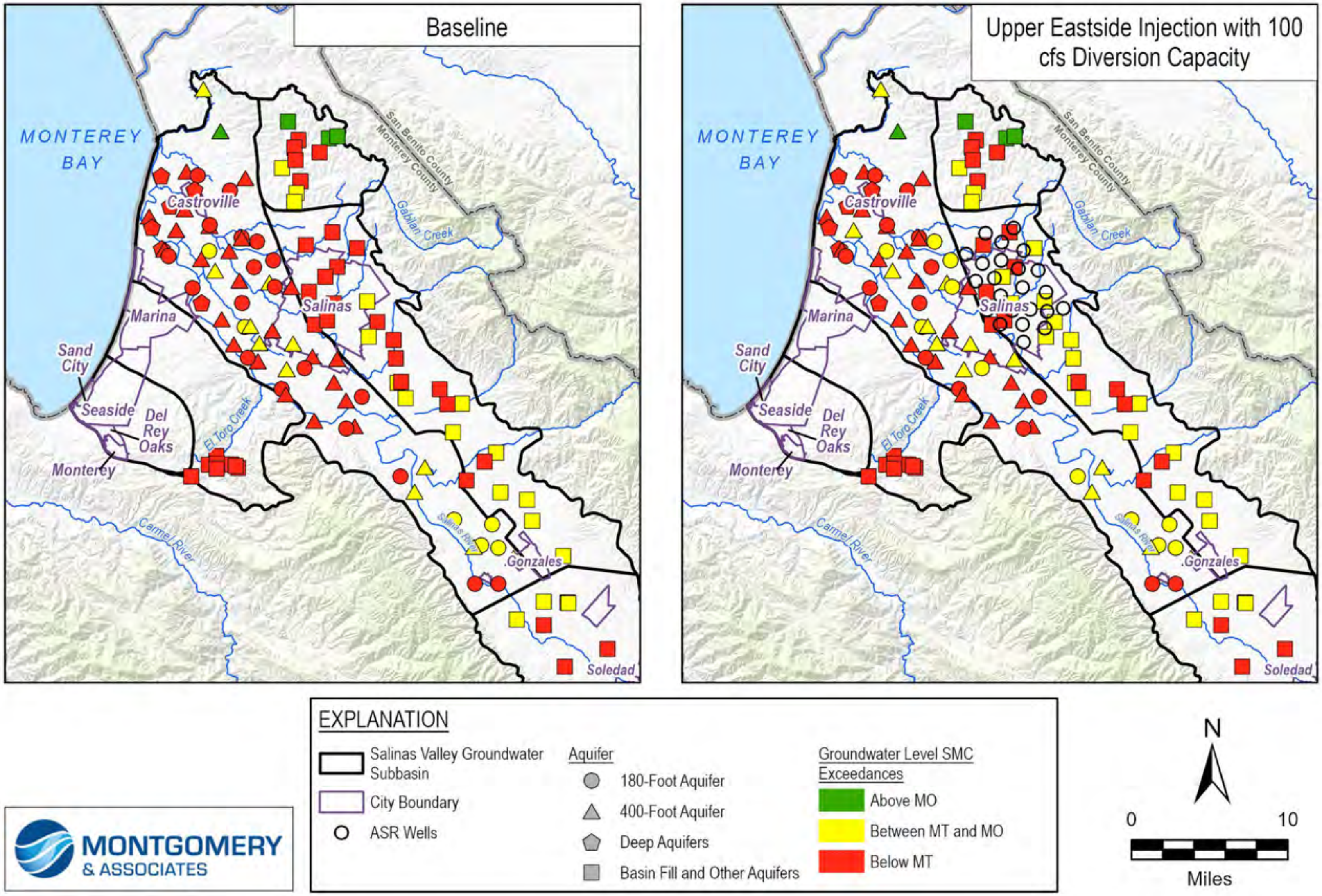



Figure 26. Groundwater Level SMC Exceedances in the Baseline and Eastside Injection Scenario (100 cfs) During 2040-2041 Evaluation Period

## Changes to groundwater pumping, flow, and storage

Groundwater storage results for the Northern Eastside Injection scenarios are included in Table 11 and Table 12. Relative to baseline, the injection scenarios increase modeled storage in the Eastside Subbasin by approximately +1,100 to +2,000 AF/yr, depending on diversion capacity, and redistribute storage gains into adjacent subbasins.

Notably, compared to the recharge basin scenarios, the injection scenarios show a larger share of the model-wide storage increase occurring outside the Eastside Subbasin—particularly in Langley (and, to a lesser extent, other adjacent areas)—reflecting the proximity of injection to subbasin boundaries and the spatial distribution of the injection field. This is consistent with the more localized head increases near the injection field and the resulting redistribution of gradients across adjacent subbasins.

This pattern is also reflected in the model-wide storage response relative to project recharge. For the injection scenarios, the model-wide net storage increase represents approximately 46–48% of average annual project recharge. The distribution of storage gains differs from the recharge basin scenarios: for the injection cases, approximately 45–46% of the model-wide storage increase occurs in the Eastside, with a larger fraction occurring in Langley (16–18%) and 180/400 (about 13%), and smaller fractions distributed among the remaining subbasins.

Little to no change is seen in stream seepage and pumping under the Northern Eastside Injection scenarios.

Table 11. Average Annual Net Storage Change over Model Years 2040-2064, for the Northern Eastside Injection Scenarios

| Scenario | **Eastside** | **180/400** | **Langley** | **Forebay** | **Upper Valley** | **Monterey** | **Seaside** |
|---|---|---|---|---|---|---|---|
| Baseline | -900 | -500 | 600 | -400 | -200 | -7,600 | -2,600 |
| Northern Eastside Injection 50 cfs Scenario | 200 | -200 | 1,100 | -400 | -200 | -7,200 | -2,500 |
| Northern Eastside Injection 100 cfs Scenario | 1,100 | 0 | 1,300 | -300 | -200 | -6,800 | -2,400 |

All values in AFY

Table 12. Relative Storage Increase by Eastside Recharge Basin Scenarios over Baseline for the Northern Eastside Injection Scenarios

| Scenario | Average annual project recharge (AF/year) | Storage increase | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Model-wide average annual increase in storage (AF/year) | Model-wide storage increase as % of project recharge | % in Eastside | % in 180/400 | % in Langley | % in Monterey | % in Forebay | % in Seaside | % in Upper Valley |
| Northern Eastside Injection 50 cfs Scenario | 5,100 | 2,455 | 48% | 45% | 13% | 18% | 18% | 1% | 5% | 0% |
| Northern Eastside Injection 100 cfs Scenario | 9,700 | 4,478 | 46% | 46% | 13% | 16% | 19% | 1% | 5% | 0% |

### Inter-subbasin flow

Inter-subbasin groundwater flows (Table 13) shift under the injection scenarios in a manner consistent with increased heads in the northern Eastside Subbasin. In general, flows from the 180/400 Subbasin to the Eastside decrease as recharge increases, reflecting reduced hydraulic gradients across the subbasin boundary. Smaller changes are also simulated for other inter-subbasin flow components, indicating that project recharge alters regional gradients and redistributes groundwater movement beyond the immediate recharge footprint.

Table 13. Average Annual Inter-subbasin Flow over Model Years 2040-2064, in Acre-Feet per year for the Northern Eastside Injection Scenarios

| Scenario | 180/400 to Eastside | Forebay to Eastside | Langley to Eastside | Forebay to 180/400 | Monterey to 180/400 | Langley to 180/400 | Upper Valley to Forebay |
|---|---|---|---|---|---|---|---|
| Baseline | 41,400 | 6,400 | 4,200 | 29,900 | 21,100 | 500 | 25,600 |
| Northern Eastside Injection 50 cfs Scenario | 38,000 | 6,400 | 3,600 | 29,800 | 20,000 | 500 | 25,600 |
| Northern Eastside Injection 100 cfs Scenario | 34,900 | 6,300 | 3,300 | 29,700 | 19,100 | 600 | 25,600 |

## Coastal Injection

The modeled groundwater benefits for the Coastal Injection Scenario are evaluated using the SWIM. The focus is on seawater intrusion in the 400-Foot Aquifer, as that is the groundwater goal targeted with this scenario. The Seawater Intrusion SMC is represented by the inland position of the 500 mg/L chloride isocontour. In addition, groundwater level changes and changes in groundwater storage and flow are also included.

### Groundwater Level Change

Although the primary purpose of this scenario is addressing seawater intrusion, rather than achieving groundwater level SMC, the modeled mechanism is an increase in heads inland of the intrusion front. Figure 27 shows the difference in simulated groundwater levels during the 2040–2041 evaluation period under the Coastal Injection scenario relative to baseline, for the 180-Foot, 400-Foot, and Deep Aquifers. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. In the 400-Foot Aquifer, groundwater levels in the vicinity of the injection wells increase by approximately 3 to 6 feet relative to baseline, with smaller but more widespread increases extending across parts of the northern 180-Foot and 400-Foot Aquifers and into the northern Eastside Subbasin and southwestern Langley Subbasin.

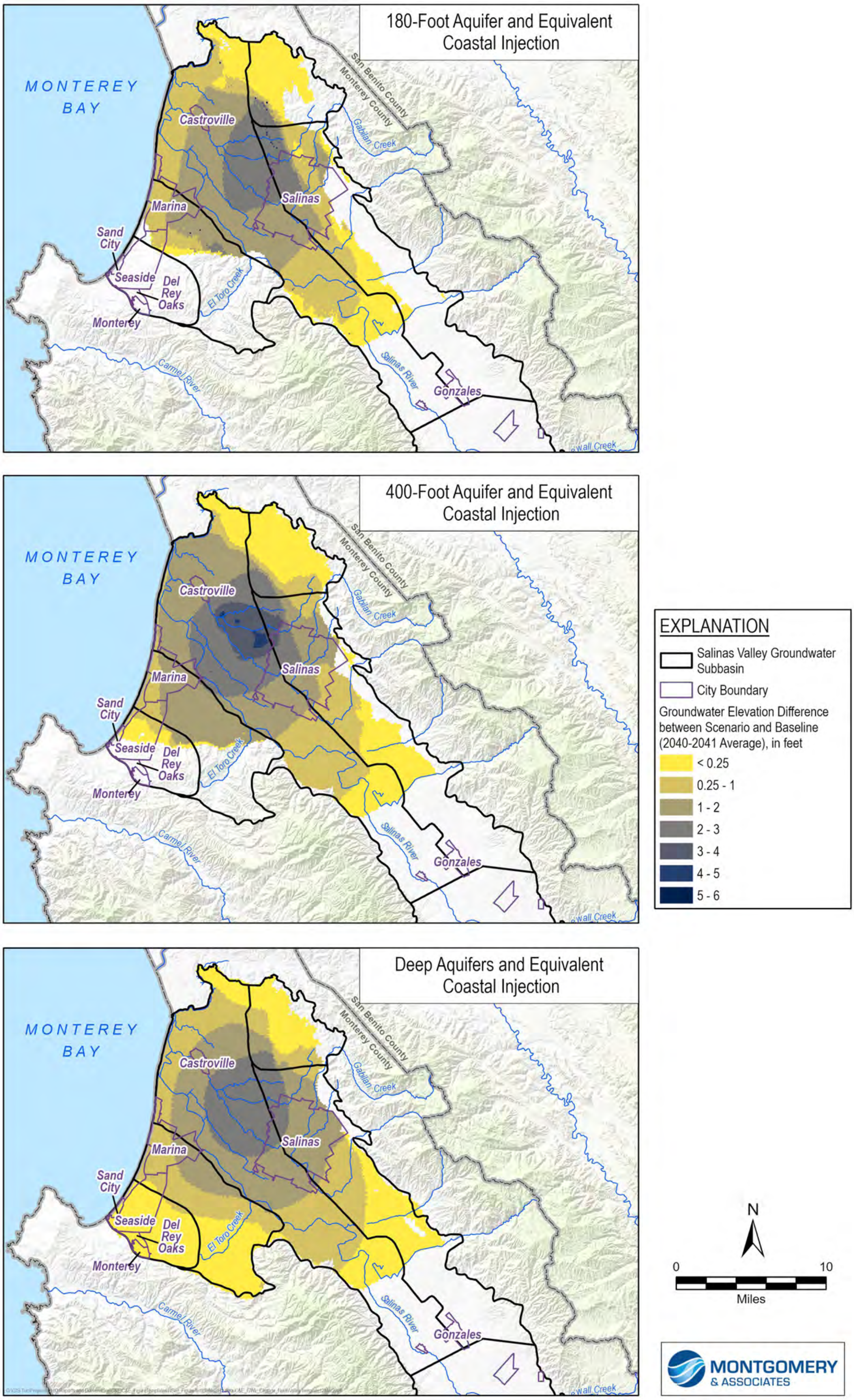



Figure 27. Difference Between Coastal Injection Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers

## Seawater intrusion progression

Only seawater intrusion in the 400-Foot Aquifer is reviewed because the Coastal Injection only injects into the 400-Foot Aquifer, leaving the 180-Foot and Deep Aquifers similar to the Baseline Scenario.

### 400-Foot Aquifer

The Coastal Injection Scenario results in only minor movement of the 500 mg/L isocontour in the 400-Foot Aquifer by 2040, as shown on Figure 28. The 180-Foot and Deep Aquifers, which do not receive injection under this scenario, show very little change in the position of the 500 mg/L isocontour by 2040. Figure 28, however, illustrates that the simulated progression of seawater intrusion in the 400-Foot Aquifer begins to diverge from baseline conditions over time. In later years, the project moderates the advance of several significant seawater intrusion plumes to the northwest, west, and southwest of the City of Salinas. The limited magnitude of this benefit is likely attributable to the relatively small diversion capacity (50 cfs), which results in recharge volumes that are approximately one-half to one-fifth of the highest capacities considered in the northern Eastside injection and Eastside recharge basin scenarios.

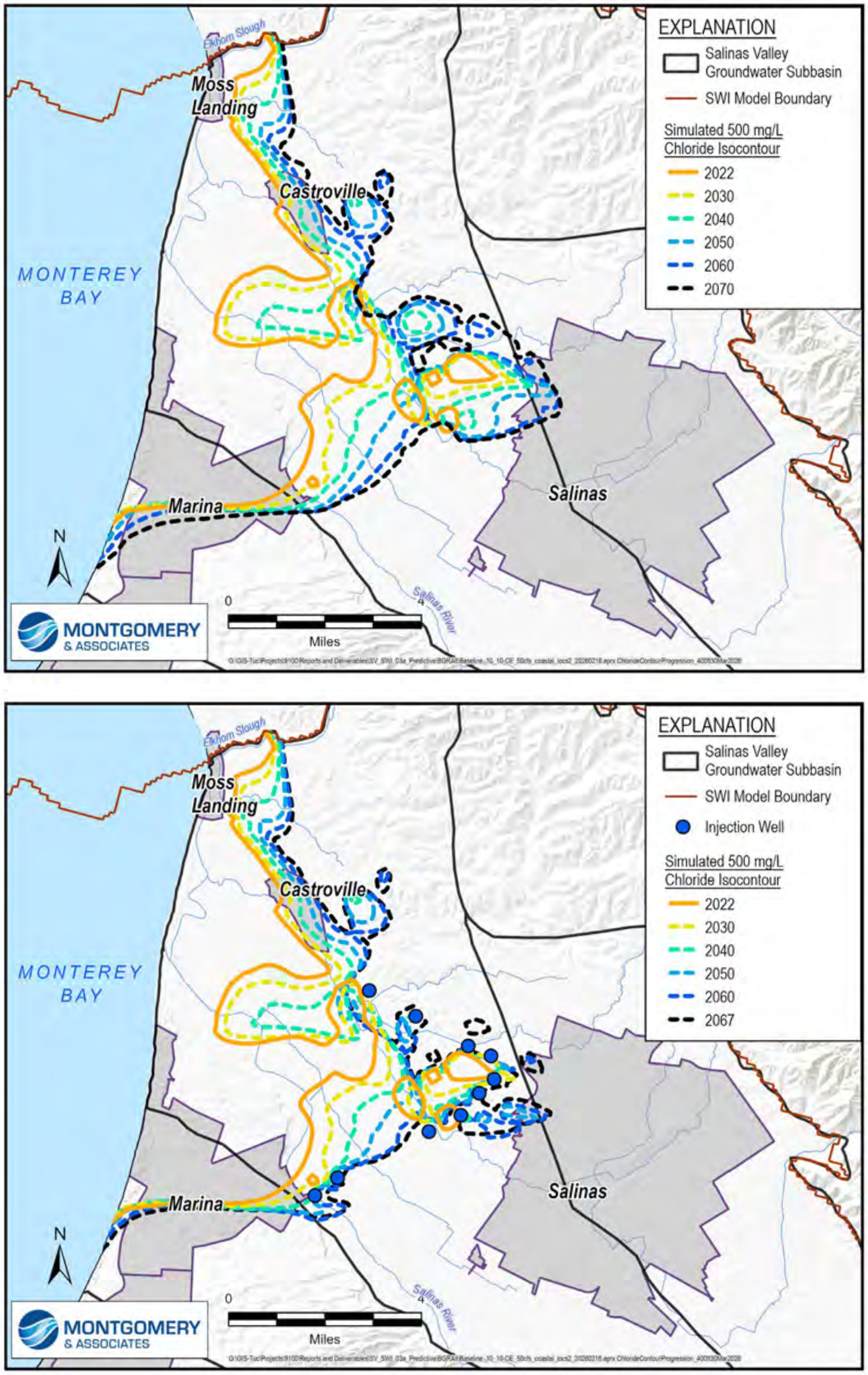
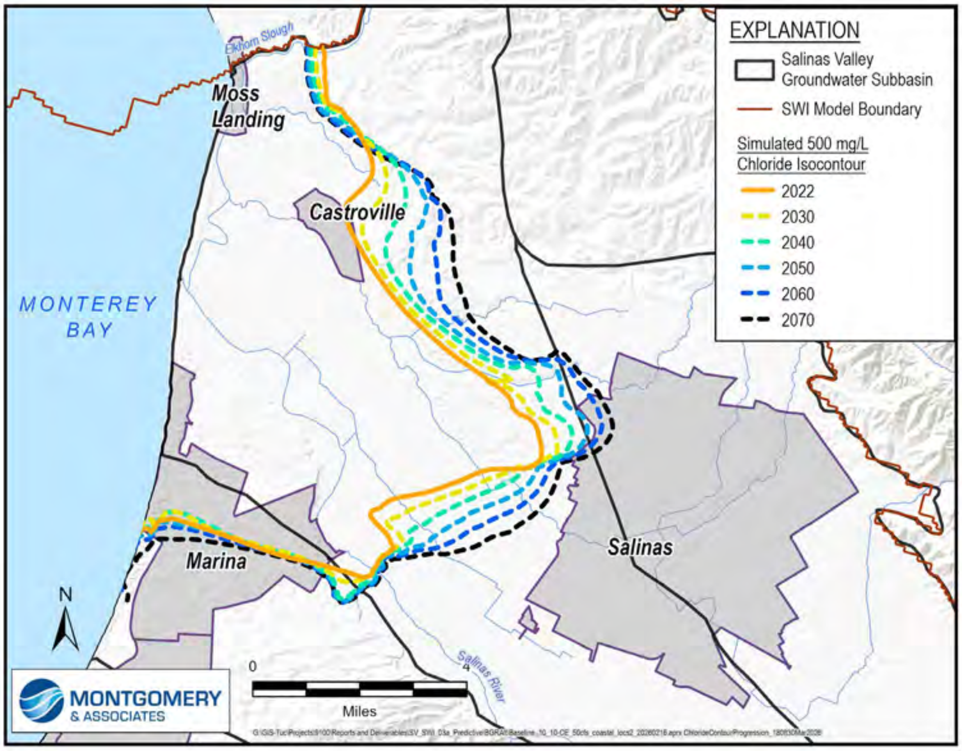



Figure 28. Simulated Progression of Seawater Intrusion in the 400-Foot Aquifer under the Baseline (top) and Coastal Injection Scenarios (bottom)

**180-Foot Aquifer**

While little difference is seen in 2040, the 180-Foot Aquifer shows slightly greater progression of the 500 mg/L isocontour over time (most noticeable after 2040) under the Coastal Injection scenario than under baseline conditions (Figure 33). There is no injection to the 180-Foot Aquifer under this scenario; however, relative head increases in the 400-Foot Aquifer may propagate upward through the Salinas Valley Aquitard into the 180-Foot Aquifer. Given the placement of several injection wells (screened in the 400-Foot Aquifer) upgradient of the seawater-intruded zone in the 180-Foot Aquifer, these relative head changes may locally increase landward gradients and contribute to the observed difference in the modeled 180-Foot Aquifer isocontour position. This result should be interpreted cautiously and highlights the importance of well placement and layer targeting in coastal injection design.



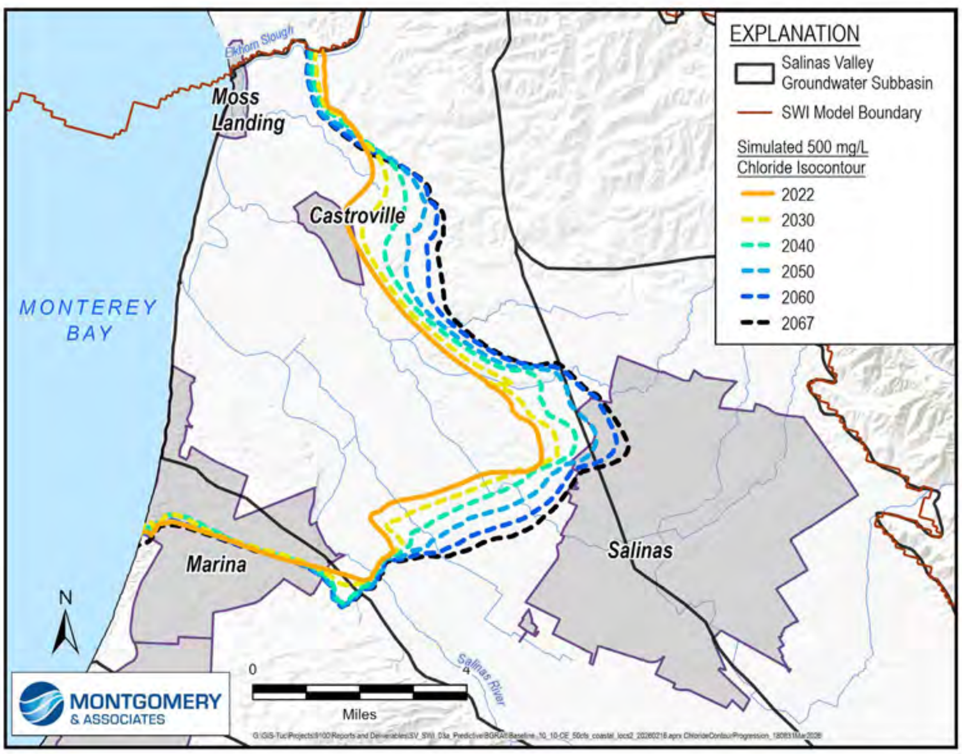




Figure 29. Simulated Progression of Seawater Intrusion in the 180-Foot Aquifer under the Baseline (top) and Coastal Injection Scenarios (bottom)

### Comparison to Seawater Intrusion SMC

The project is anticipated to come online in 2035, giving it only 5 years of operation before the 2040 SGMA sustainability deadline. As shown on Figure 31, by 2040 the seawater intrusion 500 mg/L isocontour is minimally different from the Baseline Scenario. The scenarios diverge more over time.

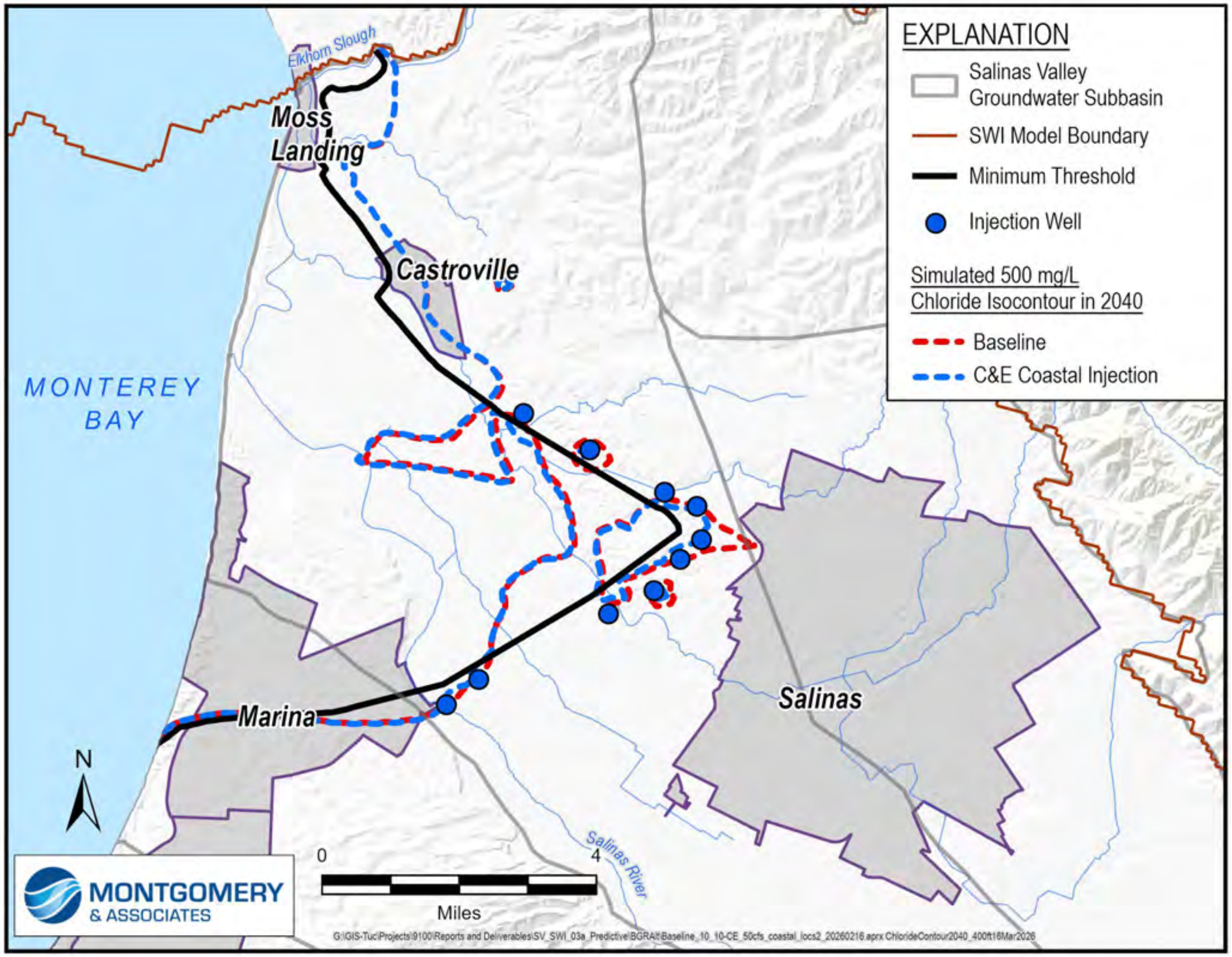



Figure 30. Simulated 500 mg/L Chloride Contour in the 400-Foot Aquifer in 2040
for the Baseline and Coastal Injection Scenari

## NSIP

The modeled groundwater benefits for the NSIP Scenario are evaluated using the SWIM. Because the NSIP scenario targets both groundwater levels in the Deep Aquifers and seawater intrusion across multiple aquifers, results are reviewed for the 180-Foot, 400-Foot, and Deep Aquifers. The Seawater Intrusion SMC is represented by the inland position of the 500 mg/L chloride isocontour. Groundwater level changes and changes in groundwater storage and flow are also summarized.

### Groundwater Level Change

Figure 1 shows the difference in simulated groundwater levels during the 2040–2041 evaluation period under the NSIP scenario relative to baseline for the 180-Foot, 400-Foot, and Deep Aquifers. In the figure, the aquifers shown are based on model layer extents and include stratigraphically equivalent aquifers within the same model layer, even if outside of the delineated extent of that aquifer. After groundwater extraction stops in 2035, groundwater levels rise, the most of which occurs in and near the area where extraction stopped. Relative water level increases exceed 20 feet in both the 180-Foot and 400-Foot Aquifers, with peak values of approximately 27 feet, and range from 1 to 5 feet in the Deep Aquifers. Changes in the Deep Aquifers are comparatively modest given that improved groundwater levels in those aquifers is a stated project goal. The increases are centered on the NSIP area but extend well beyond it, with changes greater than 1 foot reaching nearly to the model boundary near Chualar. Because fixed SWIM boundary conditions derived from the baseline simulation are used, this spatial extent suggests that relative increases farther upvalley may be suppressed, and results are likely most reliable near the NSIP area and coastward.

The largest relative increases in both the 180-Foot and 400-Foot Aquifers are concentrated northwest of the City of Salinas (Figure 1). The 400-Foot Aquifer exhibits the greatest and most widespread changes; the 180-Foot Aquifer shows similar peak values over a slightly smaller area; and the Deep Aquifers show comparatively modest changes. A pronounced step in the spatial pattern of relative increases occurs along the delineated edge of the alluvial fans to the east of the 180/400-Eastside Subbasin boundary, reflecting a transition to lower transmissivity to the east. This contrast appears to concentrate relative water level increases west of that transition, which may intensify the existing hydraulic gradient toward the northern Eastside groundwater depression. However, since groundwater levels to the east of this transition are already very low, the significance of this incremental change is uncertain relative to the pre-existing gradient.

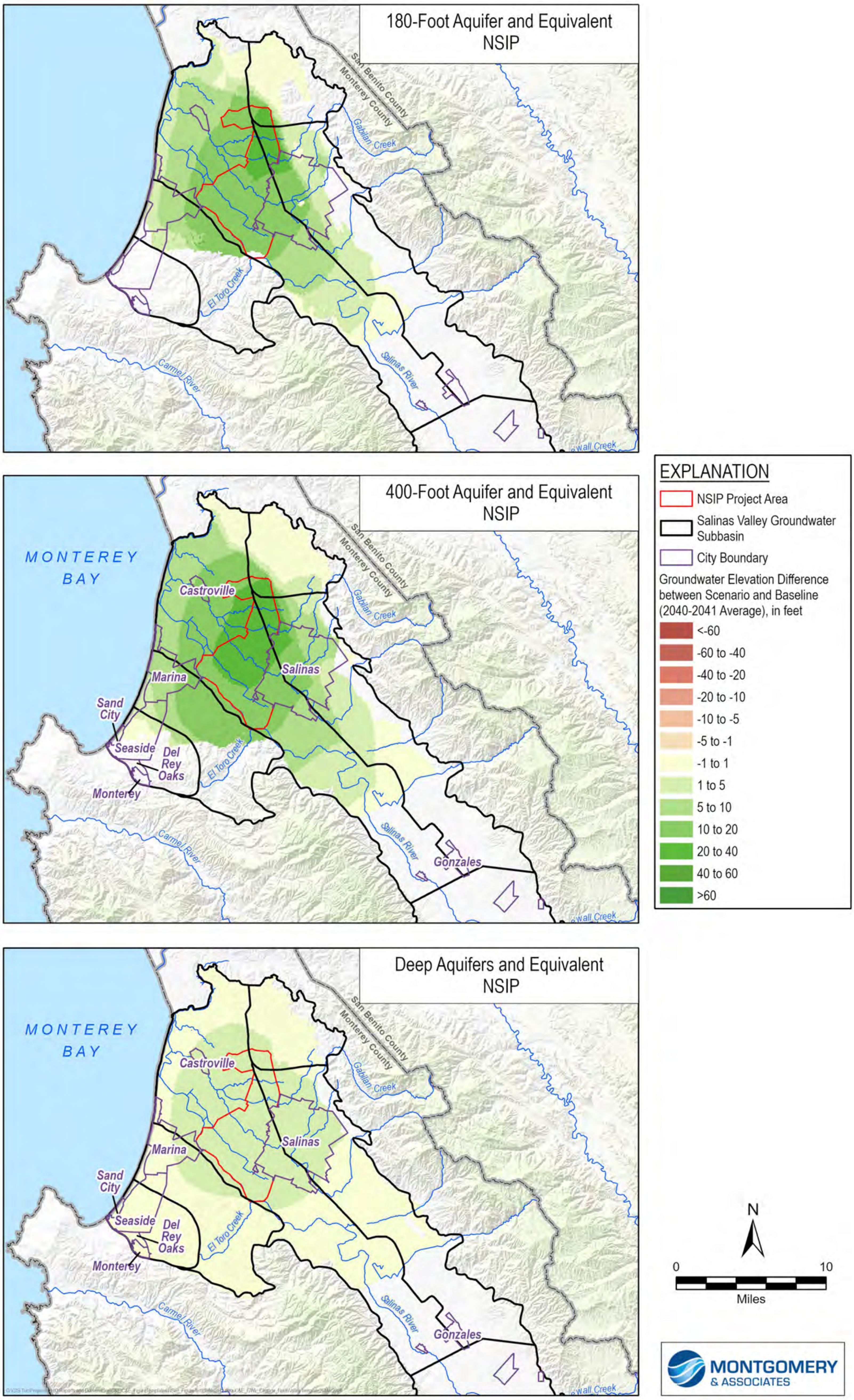


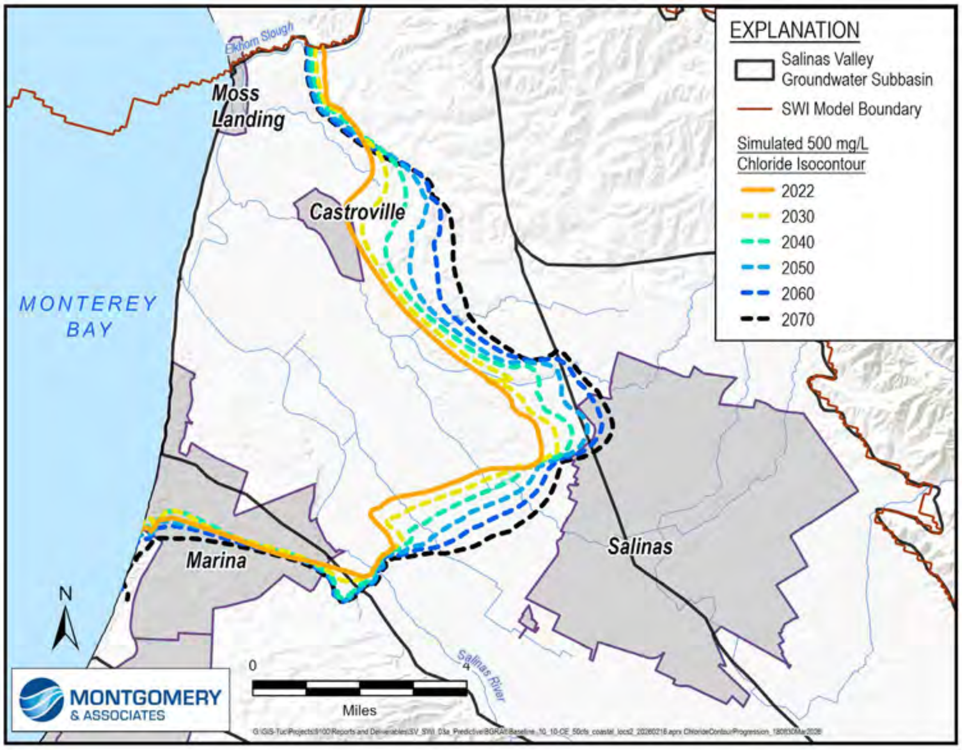

Figure 31. Difference Between Coastal Injection Average November 2040-2041 Water Levels and Baseline Scenario for 180-Foot, 400-Foot, and Deep Aquifers

## Seawater Intrusion Progression

### 180-Foot Aquifer

The NSIP Scenario produces mixed results for seawater intrusion in the 180-Foot Aquifer and is not sufficient for meeting the seawater intrusion minimum threshold. (Figure 2). Along most of the front, seawater progression is modestly slowed relative to baseline, consistent with reduced landward head gradients across the NSIP area. However, the prominent bulge in the 500 mg/L isocontour presently located just west of the City of Salinas advances more rapidly under the NSIP scenario than under baseline conditions. This area lies within and east of the zone of greatest relative groundwater level increase—a region where seawater has already substantially intruded. Where the relative head increase occurs within the intruded zone rather than landward of the front—as seen on Figure 1 where the maximum relative head changes are shown—the effect may be analogous to a relative hydraulic ridge or peak with the potential to drive elevated-chloride water away from it. In this localized area, the inland component of that movement may contribute to the observed additional advance. Notably, the trajectory of this advance is directed toward a cluster of agricultural pumping wells situated within agricultural enclaves inside the urban footprint of the City of Salinas. These wells are represented consistently across all scenarios and are not responsible for the difference in intrusion progression between NSIP and baseline; however, within the model, the pumping at these wells creates a local groundwater low that may draw the simulated intrusion front preferentially toward this area.

This pattern can be contrasted with the Coastal Injection scenario, which produces only a minor increase in 180-Foot Aquifer intrusion relative to baseline. The Coastal Injection scenario injects exclusively into the 400-Foot Aquifer, so any effect on the 180-Foot Aquifer is indirect; head increases in the Deep Aquifers may propagate upward through the overlying aquitard, and it is possible that some upward migration of injected fresh water partially moderates the resulting gradient effect in the 180-Foot Aquifer. The far smaller volume of water involved and the different spatial relationship between the injection location and the existing intrusion front likely account for most of the difference in outcomes between the 2 scenarios in this aquifer.



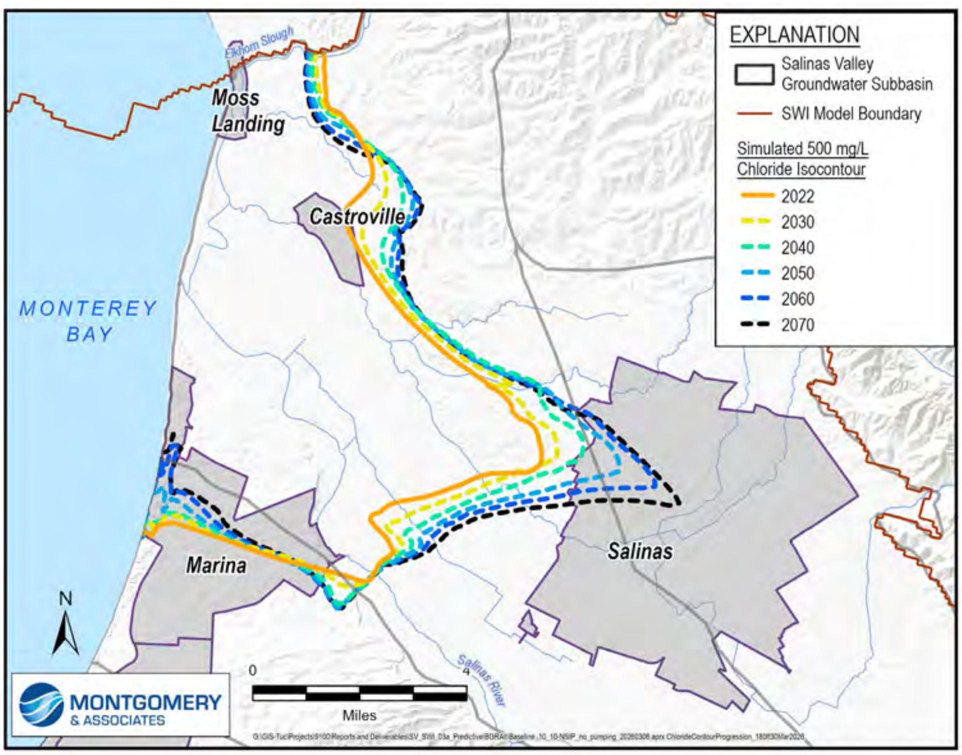




Figure 32. Simulated Progression of Seawater Intrusion in the 180-Foot Aquifer under the Baseline (top) and NSIP Scenarios (bottom)

### 400-Foot Aquifer

Changes in the 400-Foot Aquifer 500 mg/L isocontour under the NSIP scenario are more moderate than in the 180-Foot Aquifer (Figure 3). Differences from baseline are small throughout the simulation period. A slight additional advancement of chloride is apparent near the City of Salinas, consistent with the gradient dynamics described above, but its magnitude is substantially smaller than the corresponding change in the 180-Foot Aquifer.

## Deep Aquifers

Seawater intrusion has not been observed in the Deep Aquifers of the 180/400 Subbasin. Under the NSIP scenario, there continued to be no intrusion in the Deep Aquifers.

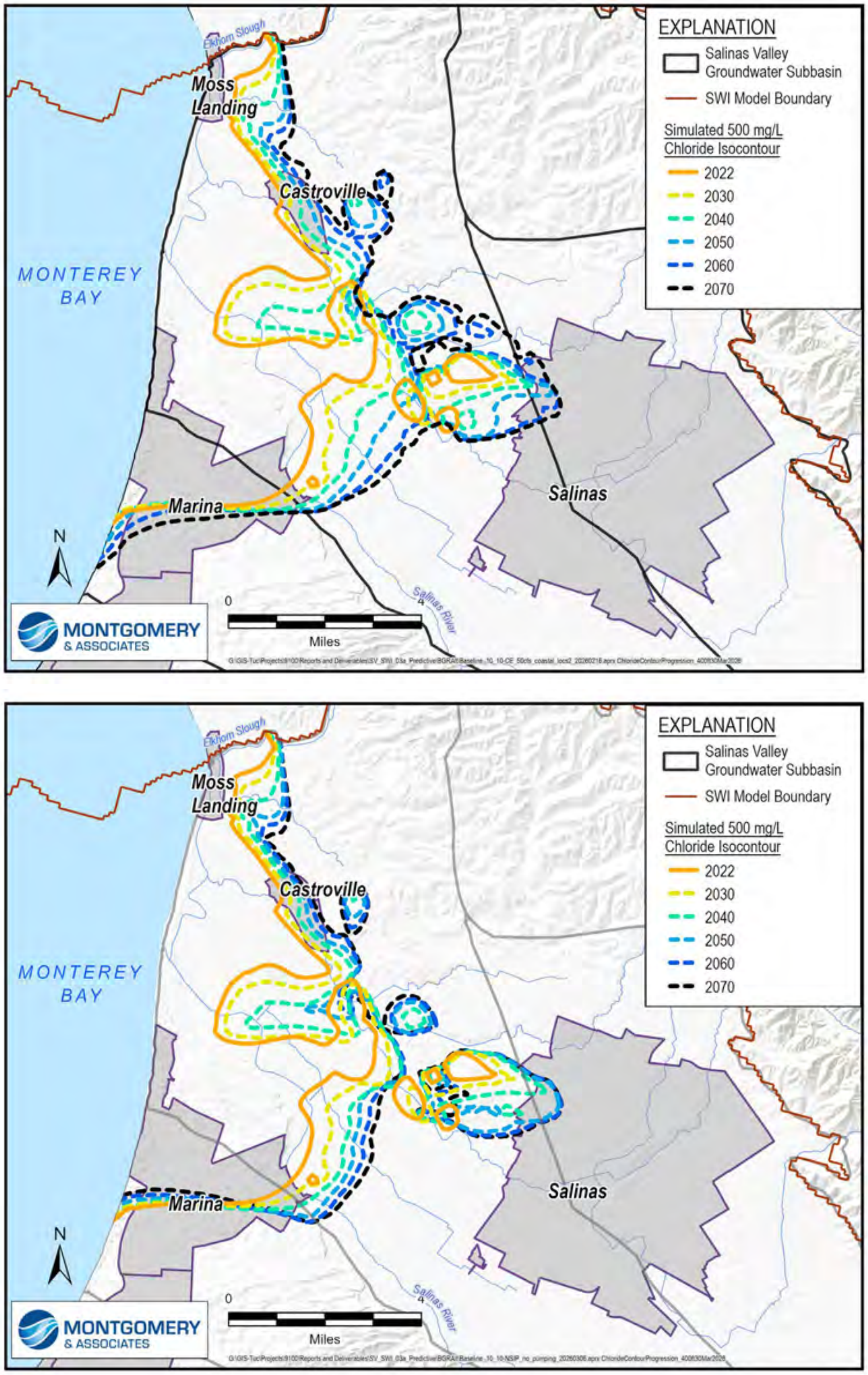



Figure 33. Simulated Progression of Seawater Intrusion in the 400-Foot Aquifer under the Baseline (top) and NSIP Scenarios (bottom)

## Comparison to Seawater Intrusion SMC

The project is anticipated to come online in 2035, giving it only 5 years of operation before the first 2040 SGMA sustainability deadline. As can be seen in the Figure 4 and Figure 5, by 2040 the seawater intrusion 500 mg/L isocontour is minimally different from the Baseline Scenario in the 180-Foot and 400-Foot Aquifers. In both aquifers, the 500 mg/L isocontour is far from the minimum threshold in 2040. The scenarios diverge more over time. No difference is observed in the Deep Aquifers.

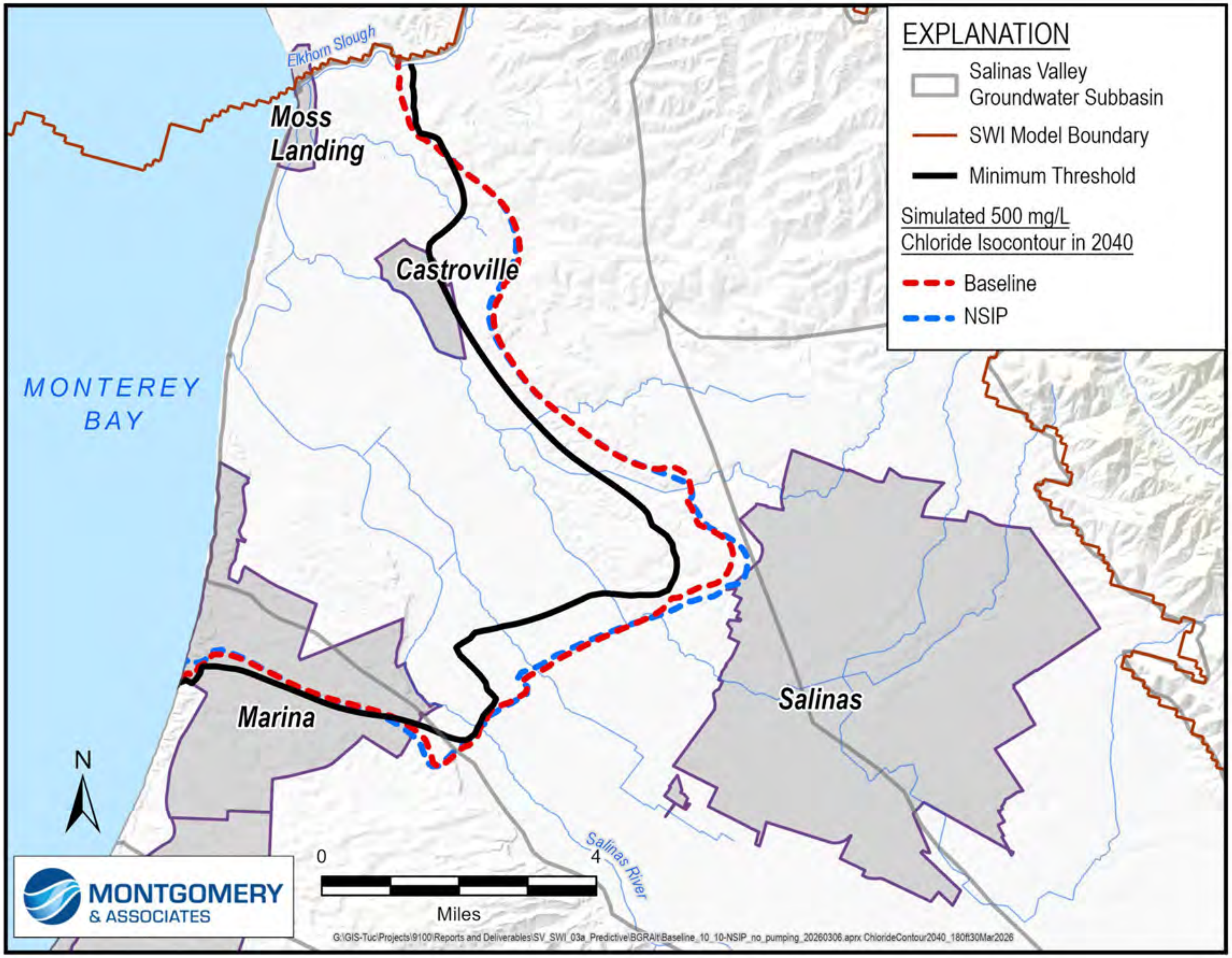



Figure 34. Simulated 500 mg/L Chloride Contour in the 180-Foot Aquifer in 2040 for the Baseline and NSIP Scenarios

MONTGOMERY & ASSOCIATES

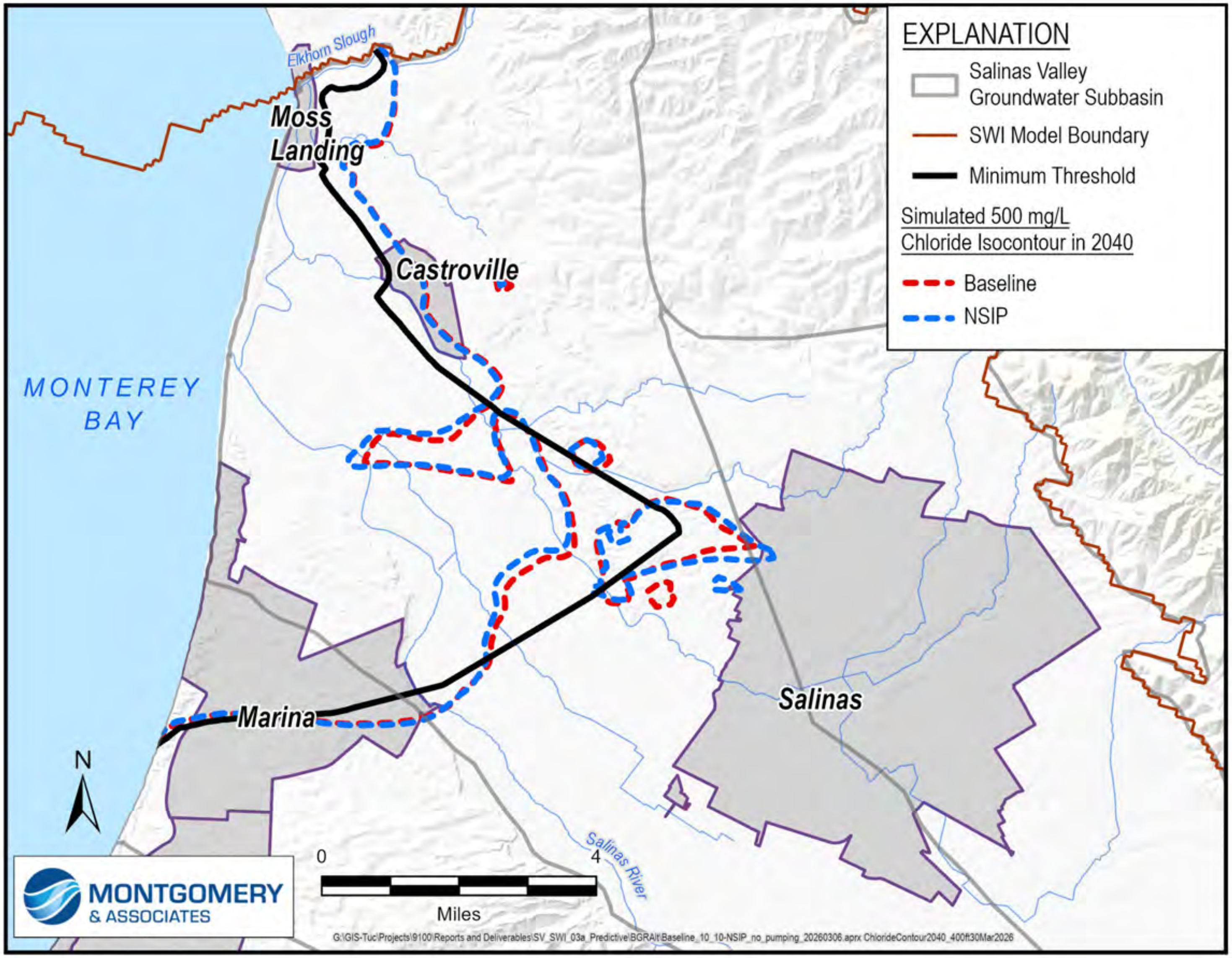



Figure 35. Simulated 500 mg/L Chloride Contour in the 400-Foot Aquifer in 2040 for the Baseline and NSIP Scenarios

# DISCUSSION

The groundwater modeling results illustrate how recharge and injection projects influence groundwater levels, storage, and seawater intrusion under the assumed project configurations. Results are intended to support comparison among scenarios and to document key model behaviors and limitations, rather than to define preferred project outcomes.

**Eastside Recharge Basins**

- Recharge basin scenarios produce the largest and most spatially extensive groundwater level benefits, particularly within the Eastside Subbasin. RMS minimum threshold exceedances during the 2040–2041 evaluation period decline substantially relative to baseline and generally decrease with increasing diversion and recharge volume.
- Benefits vary strongly from year to year due to climate variability but accumulate after project initiation in 2035, with sustained periods of improved conditions evident in the higher-capacity scenarios.
- Recharge benefits are spatially limited in the northern Eastside; only the 400 cfs scenario, which includes more northerly basin placement, raises most northern RMS wells above their minimum thresholds. However, this scenario also produces extreme localized mounding in low-transmissivity areas, raising feasibility concerns and suggesting diminishing practical returns at higher recharge rates.

**Northern Eastside Injection**

- Injection scenarios provide moderate, localized groundwater level increases in the northern Eastside Subbasin and reduce RMS minimum threshold exceedances relative to baseline, but neither scenario achieves sustainability targets by the evaluation period.
- Compared to recharge basins, injection produces more concentrated groundwater elevation increases near the injection field and redistributes a larger share of storage gains to adjacent subbasins.

**Coastal Injection**

- Coastal injection primarily affects seawater intrusion rather than groundwater level SMCs. Modeled movement of the 500 mg/L chloride isocontour is minor by 2040 but diverges from baseline in later years, with localized moderation of intrusion in the 400-Foot Aquifer.
- Groundwater level increases of several feet near injection wells provide context for the intrusion response, but the small diversion volume limits the overall magnitude of

benefit. A slight increase in modeled intrusion in the 180-Foot Aquifer highlights the sensitivity of coastal systems to vertical gradients and well placement.

**NSIP**

- The NSIP scenario appears to produce the largest and most spatially extensive groundwater level increases of any scenario evaluated, with relative increases exceeding 20 feet in the 180-Foot and 400-Foot Aquifers across a broad area northwest of the City of Salinas. The spatial reach of these changes suggests that fixed SWIM boundary conditions may suppress simulated improvements further up-valley, and results are likely most reliable near the NSIP area and coastward. The comparatively modest response in the Deep Aquifers may also warrant consideration in the context of the project's goal of improving groundwater levels in those aquifers.

- Despite generating substantial groundwater level increases, the NSIP scenario appears to produce mixed outcomes for seawater intrusion. While higher groundwater levels may reduce landward gradients along much of the coastal front, relative head increases near the intrusion front locally intensify gradients in ways that drive chloride movement. In areas where intrusion already extends landward of the zone of greatest relative groundwater level increase, the effect may be analogous to a hydraulic ridge or peak forming within the intruded zone—potentially driving elevated-chloride water both seaward and, in this localized context, further inland toward the northern Eastside groundwater depression.

- Comparison with the Coastal Injection scenario suggests that the difference in intrusion outcomes between the 2 scenarios likely reflects both the much smaller scale of relative water level changes under Coastal Injection and the different spatial relationship between each project's footprint and the existing intrusion front, rather than a simple contrast in mechanism.

- The results across scenarios also illustrate a fundamental distinction between groundwater level and seawater intrusion responses to recharge and pumping changes. Groundwater level changes propagate as pressure waves and are approximately additive— from a groundwater level standpoint, injecting a given volume near a pumping well is nearly equivalent to simply reducing pumping by that amount, regardless of source water quality or timing. Chloride concentration responses, however, are driven by flow paths, source water quality, and mixing and spreading processes in ways that are highly sensitive to the configuration and timing of sources (including recharge and pumping reductions) and sinks (continued pumping), meaning scenarios with similar groundwater level effects may produce markedly different chloride outcomes. For interventions specifically targeting seawater intrusion, the details of location, timing, and water quality therefore matter considerably more than they do for groundwater level management.

## LIMITATIONS

The C&E modeling scenarios described in this report help compare relative effects of different recharge and pumping reductions strategies. These simulations represent approximations of future groundwater conditions. In addition to the limitations described in the SVOM Model Update and Projected Baseline Simulation (M&A, 2026b), several scenario-specific assumptions and limitations apply to this phase of demand management modeling:

- Reservoir operations were kept constant at baseline conditions to isolate the effect of recharge and pumping reductions. For the Eastside Recharge Basin scenarios in particular, groundwater levels increase in the shallow sediments may increase baseflow enough that smaller reservoir releases would be needed to meet operational rules.
- Projections are based on a single baseline annual climate data series for estimated future conditions. While it provides an initial platform for assessing potential future conditions, projections are highly dependent on the years used for evaluation. Whether groundwater elevations at a particular RMS well are projected to be below the minimum threshold depends on the specified climate inputs to the baseline model. Further investigations could include the simulation of different potential baseline climate scenarios.
- The model does not simulate impacts of climate change. Future studies should evaluate if climate change could have significant implications.

# Appendix J

# Cost Estimates

## MEMORANDUM

Salinas Valley Basin Groundwater Sustainability Agency
Castroville & Eastside Canals and Alternatives Study
Wallace Group Project No. 1447-0005

**Date**: March 30, 2026

**To:** Salinas Valley Basin Groundwater Sustainability Agency

**From**: Greg Hulburd, P.E., Travis Vazquez, P.E.
Wallace Group

**Subject**: Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study
**Appendix J: Cost Estimates**

This technical memorandum describes the methodology for the development of the planning-level cost estimates for the 8 scenarios in the Castroville and Eastside (C&E) Canals and Alternatives Preliminary Feasibility Study (C&E Study).

The C&E Study is one of several projects being evaluated concurrently through efforts by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA). For this reason, an effort was made to coordinate cost assumptions so that comparisons can be made across the portfolio of projects being considered by SVBGSA on a consistent basis.

## Methodology

Cost estimates presented in this study are classified as Class 5 under the Association for the Advancement of Cost Engineering (AACE) framework. Class 5 estimates apply to projects with the lowest levels of definition and accuracy, while Class 1 estimates correspond to the highest levels of project definition and accuracy. The estimates here reflect a project definition level of roughly 0–2 percent (consistent with AACE Class 5) and are intended for concept screening purposes and preliminary budget considerations.

The estimates rely heavily on developing unit costs and operation and maintenance (O&M) factors for major project components (for example, dollars per cubic feet per second (cfs) for a low-lift river pump station, including the intake structure, pumps, electrical systems, and related facilities) based on comparable projects with known costs. These unit costs are then applied to each project scenario. As the project advances and more detailed design information becomes available, the estimates can be refined using more specific unit costs, material quantities, and other detailed inputs.

### Non-Contract Costs

Capital costs for all project scenarios represent total costs accounting for direct construction costs, non-contract softs costs, and cost escalation; these add-on items are summarized in Table 1. To allow for equal comparison across the portfolio or projects being considered by

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the SVBGSA, the assumptions are equal to those used in the Brackish Groundwater Recovery (BGR) project cost estimates.

*Table 1. Soft cost assumptions and escalation factors.*

| Item | Value[2] |
|---|---|
| Construction contingency | 30% |
| Engineering, planning, and design | 10% |
| Environmental planning and permitting | 2% |
| Administrative and legal | 1% |
| Construction management | 4% |
| Escalation to midpoint of construction [1] | 0.25%/month (3% annual) |

[1]Based on an assumed midpoint construction date of July 2030, consistent with other projects being considered by SVBGSA.
[2]Value expressed as a percentage of Construction Value (hard costs) (except for escalation to midpoint value)

## O&M Costs

Table 2 shows the factors used for estimating annual O&M costs. These values are consistent with the BGR project, except for that of the conventional surface water treatment plant, which was not a component of the BGR project and was developed based on cost data from existing treatment plants.

*Table 2. Assumptions for estimating annual O&M.*

| Item | Value |
|---|---|
| Inflation % | 2.25% |
| Power Costs ($/kWh) | $0.50 |
| ***O&M Factors for Specific Project Components*** | |
| Annual Pipeline O&M Factor | 2% of total capital cost |
| Annual Site Maintenance | 0.5% of total capital cost |
| Pump Motor Lifecycle | 20 years |
| Pipeline Lifecycle | 75 years |
| Pump Station Annual Maintenance | 5% of total capital cost |
| Conventional Surface Water Treatment Plant Annual O&M Cost (Power, Chemicals, O&M) | $350,000 per MGD |

Abbreviations:

kWh = kilowatt-hour MGD = million gallons per day

## Summary of Costs

The capital and O&M costs for each scenario are summarized in Table 3.

*Table 3. Summary of cost estimates for all scenarios.*

| Scenario | Diversion Size, cfs | Capital Cost, Total | Annual O&M Cost, Year 1 (2030) | Avg. Project Yield, AFY |
|---|---|---|---|---|
| 1A | 400 | $1,394,800,000 | $23,853,000 | 26,800 |
| 1B | 200 | $614,700,000 | $11,994,000 | 17,200 |
| 1C | 100 | $284,100,000 | $4,897,000 | 9,700 |
| 1D | 50 | $139,900,000 | $2,450,000 | 5,100 |
| 2A | 100 | $1,016,800,000 | $14,465,000 | 9,700 |
| 2B | 50 | $515,500,000 | $7,488,000 | 5,100 |
| 3A | 50 | $399,800,000 | $5,553,000 | 5,100 |
| 4A | 100 | $1,428,427,000 | $21,561,000 | 25,780 |

Attachment A includes a breakdown of the capital costs for each of the 8 scenarios.

## Infrastructure Cost Development and Assumptions

This section provides the basis of conceptual design used for determining the infrastructure required and cost estimates for each scenario. These details are provided so that as one or more of the projects progress, the assumptions made in this study can be re-evaluated; the estimates developed for the C&E study are intended for concept screening purposes only.

### Unit Costs Common Across Scenarios

Unit costs were determined for the various components and applied to each scenario where applicable. Table 4 summarizes these unit costs.

*Table 4. Cost estimate assumptions common across several scenarios.*

| Item | Value |
|---|---|
| Property Acquisition – Valley farmland[1] | $80,000/acre |
| Property Acquisition – Rangeland[1] | $10,000/acre |
| Low Lift River Pump Station Unit Cost, per cfs[2] | $250,000/cfs |
| High Lift Pump Station Unit Cost, per hp[2] | $3,000/hp |
| Conventional Surface Water Treatment Plant unit cost[2] | $7,667,000 /MGD |
| Injection Wells, each[3] | $1,700,000 |
| Recharge Basin – 40 acres, each[4] | $8,000,000 |

[1]Property cost based on current property listings.
[2]Unit cost based on engineering judgement and comparable projects of similar scale and scope.
[3]Unit cost consistent with the BGR project.
[4]Unit cost for recharge basins based on estimated earthwork quantities and typical earthwork unit costs.

## Pump Stations

Pump stations were split into two categories:

- Low lift river pump station
- High lift pump station

All scenarios analyzed include both a low lift river pump station for the initial river diversion as well as a high lift pump station as the transfer pump station to convey the water to its destination (recharge basins or storage reservoir).

### Low Lift River Pump Station

The low lift river pump station (diversion facility) consists of a pumped direct diversion which would include a fish screen, pump station forebay, low lift pump station, sedimentation basin, and high-lift transfer pump station.

Fish screening criteria (NMFS, 2022) would drive the design of intake facilities with several configurations such as cone screens and plate screens possible. Generally, the fish screens must limit approach velocity to less than 0.33 foot per second (fps), and the sweeping velocity (bypass water parallel to the screen) must be 2 times the approach velocity. The footprint of the facility would vary across the scenarios based on the diversion flow rate and would depend on the minimum river stage targeted for diversion. For this reason, detailed site-specific studies are needed to develop rating curves for the river flow/stage relationship. For example, if a minimum river depth of 2 feet is assumed at the maximum scale of 400 cfs, the minimum required length of vertical flat-plate fish screens would be about 680 feet, with some additional length of the structure needed to account for pier widths, flushing bays, and redundancy. The series of fish intake screens would be installed along a concrete wall constructed along the right bank of the river separating river flows from the forebay of the low-lift pump station. The low lift pump station transfers the screened, diverted river flow to the sedimentation basins located adjacent to the diversion facility. Figure 1 shows a conceptual layout of the low lift river pump station.

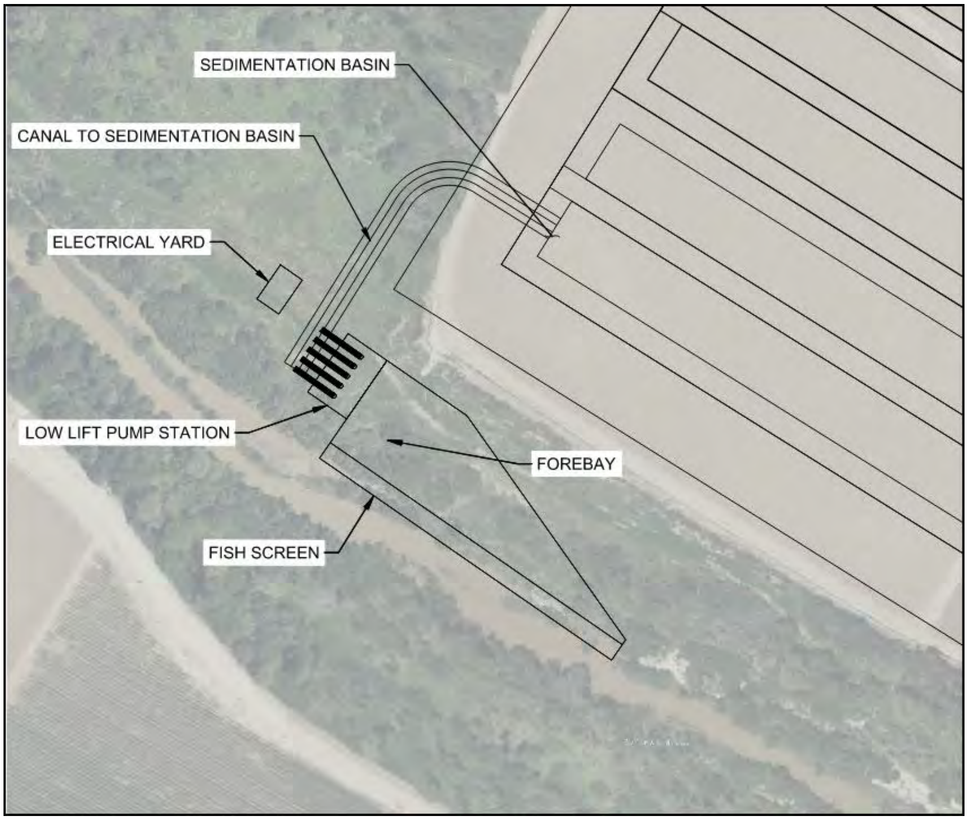


*Figure 1. Conceptual layout for the low lift river pump station.*

The overall diversion structure footprint and size of the facility will correlate with the structure's flow rate capacity. For this reason, a unit cost based on flow rate ($/cfs) was developed based on known costs of existing projects and applied to each scenario.

**High Lift Pump Station**

For purposes of this study, high lift pump stations are distinguished from the low lift river pump stations in that they generally operate under much higher head requirements and do not involve pumping from the natural river (which simplifies construction and operation). Being that several of the scenarios involve pump stations with significantly high power requirements (21,500 hp for Scenario 1A), the cost of the high lift pump stations will have better correlation to pumping power requirements rather than flow rate. Estimates for the high lift pump stations were developed using a unit cost for overall pump station power requirements ($/hp) based on known costs of existing projects.

## Pipelines

Pipelines were conceptually sized based on industry best practice regarding velocity and friction loss. The pipelines conveying pumped water were generally designed at a lower velocity to allow for less friction loss and therefore reduced pumping head and power costs.

Many of the pipelines will be operating under high pressure; therefore, velocity for all pipelines was kept below 7 feet/sec to mitigate against transient/water hammer concerns. The velocity targets used for preliminary design are below:

- Pumped pipelines: 4-5 ft/sec
- Gravity pipelines: <7 ft/sec

Pipeline unit costs are provided in Table 5. To provide for equal comparison across the portfolio or projects being considered by the SVBGSA, the unit costs for pipe diameters 72 inches and below are equal to those used in the BGR project cost estimate (pipeline diameters > 72 inches were not considered in the BGR project). Additionally, estimated cost for the property acquisition that will be needed for easements was added to the base pipeline unit cost.

*Table 5. Pipeline unit costs.*

| Pipe Diameter, inches | Unit Cost, $/LF | Pipeline Unit cost + easement, $/LF |
|---|---|---|
| 4 | $100 | $140 |
| 6 | $110 | $150 |
| 8 | $130 | $170 |
| 10 | $155 | $195 |
| 12 | $180 | $220 |
| 14 | $200 | $240 |
| 16 | $220 | $260 |
| 18 | $250 | $290 |
| 24 | $375 | $415 |
| 30 | $550 | $590 |
| 36 | $725 | $775 |
| 42 | $800 | $850 |
| 48 | $975 | $1,025 |
| 54 | $1,125 | $1,175 |
| 60 | $1,275 | $1,325 |
| 66 | $1,350 | $1,400 |
| 72 | $1,500 | $1,550 |
| 78 | $1,875 | $1,925 |
| 90 | $2,625 | $2,685 |
| 96 | $3,000 | $3,060 |
| 132 | $7,950 | $8,025 |

## Recharge Basins

Project Concept 1 utilizes recharge basins (also known as spreading basins, percolation ponds, infiltration basins, etc.) at 4 different project scales. The number of recharge basins proposed for each scenario was based on an assumed infiltration rate (0.5 feet/day, provided by Montgomery & Associates) and area required to infiltrate at the same flow rate as the river diversion. To estimate costs, a conceptual grading design was performed to obtain approximate earthwork quantities for a single 40 acre basin. Preliminary design elements used in this recharge basin grading exercise are illustrated in Figure 2 and include:

- Maximum embankment/levee height will be 6-feet, to avoid being under the jurisdiction of the Division of Safety of Dams (DSOD).
- Anticipated maximum water depth: 4 feet
- Minimum freeboard: 1 foot
- Top of levees will include a 15-foot wide access road around the perimeter of each basin

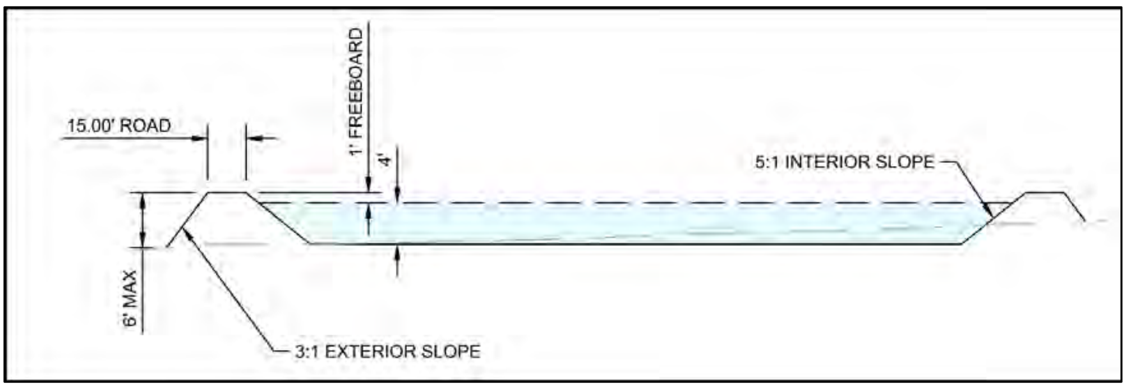


*Figure 2. Conceptual cross section of the proposed recharge basin.*

To conceptually display the area required for each scenario, the recharge basins in the C&E study exhibits (1A-1D) are drawn as simple 40-acre squares. However, the final layout of recharge basins would be based on the site-specific terrain and optimized to reduce the amount of earthwork required. The Arvin Edison Water District spreading facilities provide an example of a recharge basin layout conforming to local topography. Figure 3 shows the 650-acre Sycamore Spreading Works facility. As the image shows, the basin shapes are irregular and driven by the terrain, generally following the alignment of elevation contours.


*Figure 3. Aerial image of the Sycamore Spreading Works, an Arvin-Edison Water Storage District facility, an example of what the final layout may look like for a large recharge basin facility.*

## Storage Reservoir

Two reservoir sites are proposed as part of this project – the Gabilan Range Reservoir and Merritt Lake. Details regarding these reservoirs are discussed in the main C&E study report and Appendix G, *Surface Storage Locations Considered.*[1]

### Gabilan Range Reservoir

To estimate the cost of the Gabilan Range reservoir, a preliminary grading design was conducted to calculate the fill volume for the conceptual earthen dam. Assumptions and results of the grading exercise include:

- Approximate dam crest elevation – 570 feet
- Approximate dam maximum height – 260 feet
- Approximate dam crest length – 2,300 feet
- Embankment slope, each way: 2.5:1
- Dam crest width: 40 feet
- Approximate volume of dam fill: 8,000,000 cubic yards

Table 6 shows the assumptions for estimating the cost of the Gabilan Range Reservoir. These assumed costs are based on projects of similar size.

*Table 6. Assumptions for estimating the cost of the Gabilan Range Reservoir.*

| Item | Value |
|---|---|
| Earthwork, unit cost for dam fill, $/CY: | 35 |
| Additional infrastructure costs, as percentage of earthwork costs | 25% |
| Property acquisition cost (grazing land), $/ac | $ 10,000 |

### Merritt Lake

The 1998 Salinas Valley Water Project (SVWP) Project Plan Report[2] provided preliminary design and cost estimates for the proposed Merritt Lake reservoir. The cost estimate provided from the 1998 report was escalated to 2025 dollars using construction cost index factors for earth dams provided by the United States Bureau of Reclamation (USBR).

## Treatment

Project concepts involving underground injection assume the need to treat diverted water prior to injection, as typically required for conventional ASR projects. The level of treatment required by the regulating Regional Water Quality Control Board would be determined

---

[1] Wallace Group, 2026. *Castroville & Eastside Canals Study Phase 2, Appendix G: Surface Storage Locations Considered,* Technical Memorandum. Prepared for Montgomery and Associates. March 2026.

[2] Montgomery Watson, 1998. *Salinas Valley Water Project: Project Plan Report Prepared for the Monterey County Water Resources Agency*.

following source water characterization and development of project-specific Waste Discharge Requirements (WDRs). For general guidance, it may be assumed that the same injected water limitations from the State Water Resources Control Board's Water Quality Order 2012-0010 *General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater* (ASR General Order) would apply meaning that injected water would have to meet primary and secondary maximum contaminant levels (MCLs) and Basin Plan water quality objectives dependent on the aquifer's beneficial uses. The General Order allows projects to meet background groundwater quality in cases where the aquifer's water reflects concentrations in exceedance of drinking water MCLs. Water quality objectives are not established at this time; however, given that the proposed injection wells are in areas with known domestic water supply wells, it is safe to assume that treatment to drinking water standards will be required. An analysis of existing river water quality shows more sampling would be required to identify the type and size of treatment plant needed; however, preliminary evaluation suggests the diversion location proposed near Chualar exhibit a higher level of water quality than locations further downstream with more direct influence from the City of Salinas and regional storm and agricultural drainage systems.[3] While water quality sample results collected near the SRDF and downstream diversion location proposed under C&E study scenario (3A and 4A) indicate higher levels of salts (total dissolved solids), nitrates, and metals, we assume that conventional water treatment would be provided in this evaluation. The higher Salinas River flows eligible for Permit 11043 diversion could introduce a diluting effect lowering concentrations of the constituents of concern; however, such trends will have to be investigated further if the project advances.

Any water injected into an aquifer serving domestic users would need to be treated to Title 22 drinking water standards beforehand. Assuming conventional surface water treatment, treatment processes would include:

- Screening
- Pre-treatment (pH adjustment and pre-oxidation)
- Clarification (coagulation/rapid mix, flocculation/sedimentation)
- Media filtration
- Disinfection
- Treated water storage and distribution facilities
- Solids management and wash water recovery systems
- Ancillary systems including chemical storage and feed, electrical power, instrumentation, and controls.

The size of the proposed conventional water surface treatment plant varies depending on project scenario. The cost was based on the size of the plant; an average unit cost in $/MGD

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[3] Life Cycle Geo, "Technical Memorandum 3: Surface Water Quality Assessment and Sampling Plan." *Preliminary Feasibility Study Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion,* Montgomery & Associates, January 2025.

was developed based on capital costs reported for existing water treatment plants of similar size; the unit cost is listed in Table 4.

## New Seawater Intrusion Project

The C&E study includes a project concept that overlaps with ongoing SVBGSA efforts under the New Seawater Intrusion Project (NSIP). To improve groundwater levels in the Deep Aquifers and the seawater-intruded zone, NSIP is incorporated into Scenario 4A as an alternative water supply option. The NSIP scenario extends beyond the use of Permit 11043 water to include additional water sources that are being evaluated separately in the forthcoming NSIP feasibility study including the collection, conveyance, storage, and treatment of these waters. As a result, Scenario 4A combines cost information from the NSIP feasibility study with the diversion and conveyance cost estimates for Permit 11043 developed in this analysis. These NSIP-related costs are identified in the Scenario 4A cost summary table (Attachment A).

# Attachment A – Scenario Cost Estimates

| SCENARIO 1A - 400 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| Item # | Description | Unit | Quantity | Unit Cost | Total Cost |
| 1 | 400 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $100,000,000 | $100,000,000 |
| 2 | Sedimentation Basin | LS | 1 | $8,000,000 | $8,000,000 |
| 3 | Pump Station to Recharge Basins, 21500 HP | LS | 1 | $64,500,000 | $64,500,000 |
| 4 | Transmission Pipelines: 30”-132" | LS | 1 | $339,700,000 | $339,700,000 |
| 5 | Recharge Basin, 40 acres | EA | 40 | $8,000,000 | $320,000,000 |
| | **Subtotal** | | | | **$832,200,000** |
| | Construction Contingency | | | 30% | $249,660,000 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $110,266,500 |
| | **Construction Cost Subtotal** | | | | **$1,192,126,500** |
| | Engineering, Planning, and Design | | | 10% | $119,212,650 |
| | Environmental Planning and Permitting | | | 2% | $23,842,530 |
| | Administrative and Legal | | | 1% | $11,921,265 |
| | Construction Management | | | 4% | $47,685,060 |
| | **Soft Costs Subtotal** | | | | **$202,661,505** |
| | **GRAND TOTAL** | | | | **$1,394,800,000** |

| SCENARIO 1B - 200 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| Item # | Description | Unit | Quantity | Unit Cost | Total Cost |
| 1 | 200 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $50,000,000 | $50,000,000 |
| 2 | Sedimentation Basin | LS | 1 | $4,000,000 | $4,000,000 |
| 3 | Pump Station to Recharge Basins, 10500 HP | LS | 1 | $31,500,000 | $31,500,000 |
| 4 | Transmission Pipelines: 30”-96" | LS | 1 | $121,240,000 | $121,240,000 |
| 5 | Recharge Basin, 40 acres | EA | 20 | $8,000,000 | $160,000,000 |
| | **Subtotal** | | | | **$366,740,000** |
| | Construction Contingency | | | 30% | $110,022,000 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $45,693,950 |
| | **Construction Cost Subtotal** | | | | **$525,355,050** |
| | Engineering, Planning, and Design | | | 10% | $52,535,505 |
| | Environmental Planning and Permitting | | | 2% | $10,507,101 |
| | Administrative and Legal | | | 1% | $5,253,551 |
| | Construction Management | | | 4% | $21,014,202 |
| | **Soft Costs Subtotal** | | | | **$89,310,359** |
| | **GRAND TOTAL** | | | | **$614,700,000** |

| SCENARIO 1C - 100 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| **Item #** | **Description** | **Unit** | **Quantity** | **Unit Cost** | **Total Cost** |
| 1 | 100 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $25,000,000 | $25,000,000 |
| 2 | Sedimentation Basin | LS | 1 | $2,000,000 | $2,000,000 |
| 3 | Pump Station to Recharge Basins, 3200 HP | LS | 1 | $9,600,000 | $9,600,000 |
| 4 | Transmission Pipelines: 48"-66" | LS | 1 | $52,900,000 | $52,900,000 |
| 5 | Recharge Basin, 40 acres | EA | 10 | $8,000,000 | $80,000,000 |
| | **Subtotal** | | | | **$169,500,000** |
| | Construction Contingency | | | 30% | $50,850,000 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $22,458,750 |
| | **Construction Cost Subtotal** | | | | **$242,808,750** |
| | Engineering, Planning, and Design | | | 10% | $24,280,875 |
| | Environmental Planning and Permitting | | | 2% | $4,856,175 |
| | Administrative and Legal | | | 1% | $2,428,088 |
| | Construction Management | | | 4% | $9,712,350 |
| | **Soft Costs Subtotal** | | | | **$41,277,488** |
| | **GRAND TOTAL** | | | | **$284,100,000** |

| SCENARIO 1D - 50 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| **Item #** | **Description** | **Unit** | **Quantity** | **Unit Cost** | **Total Cost** |
| 1 | 50 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $12,500,000 | $12,500,000 |
| 2 | Sedimentation Basin | LS | 1 | $1,000,000 | $1,000,000 |
| 3 | Pump Station to Recharge Basins, 1600 HP | LS | 1 | $4,800,000 | $4,800,000 |
| 4 | Transmission Pipelines: 48" | LS | 1 | $25,140,000 | $25,140,000 |
| 5 | Recharge Basin, 40 acres | EA | 5 | $8,000,000 | $40,000,000 |
| | **Subtotal** | | | | **$83,440,000** |
| | Construction Contingency | | | 30% | $25,032,000 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $11,055,800 |
| | **Construction Cost Subtotal** | | | | **$119,527,800** |
| | Engineering, Planning, and Design | | | 10% | $11,952,780 |
| | Environmental Planning and Permitting | | | 2% | $2,390,556 |
| | Administrative and Legal | | | 1% | $1,195,278 |
| | Construction Management | | | 4% | $4,781,112 |
| | **Soft Costs Subtotal** | | | | **$20,319,726** |
| | **GRAND TOTAL** | | | | **$139,900,000** |

| SCENARIO 2A - 100 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| Item # | Description | Unit | Quantity | Unit Cost | Total Cost |
| 1 | 100 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $25,000,000 | $25,000,000 |
| 2 | Sedimentation Basin | LS | 1 | $2,000,000 | $2,000,000 |
| 3 | Pump Station to 25K AF Reservoir, 8100 HP | LS | 1 | $24,300,000 | $24,300,000 |
| 4 | Pipeline to Reservoir, 66" | LF | 36,300 | $1,400 | $50,820,000 |
| 5 | 25K AF reservoir (Gabilan Range) | LS | 1 | $355,000,000 | $355,000,000 |
| 6 | Surface WTP, 13 MGD | LS | 1 | $84,000,000 | $84,000,000 |
| 7 | Injection Well Distribution Pipelines: 6”-24” | LS | 1 | $26,450,000 | $26,450,000 |
| 8 | Injection Wells | EA | 23 | $1,700,000 | $39,100,000 |
| | **Subtotal** | | | | **$606,670,000** |
| | Construction Contingency | | | 30% | $182,001,000 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $80,383,775 |
| | **Construction Cost Subtotal** | | | | **$869,054,775** |
| | Engineering, Planning, and Design | | | 10% | $86,905,478 |
| | Environmental Planning and Permitting | | | 2% | $17,381,096 |
| | Administrative and Legal | | | 1% | $8,690,548 |
| | Construction Management | | | 4% | $34,762,191 |
| | **Soft Costs Subtotal** | | | | **$147,739,312** |
| | **GRAND TOTAL** | | | | **$1,016,800,000** |

| SCENARIO 2B - 50 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| Item # | Description | Unit | Quantity | Unit Cost | Total Cost |
| 1 | 50 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $12,500,000 | $12,500,000 |
| 2 | Sedimentation Basin | LS | 1 | $1,000,000 | $1,000,000 |
| 3 | Pump Station to 13K AF Reservoir, 700 HP | LS | 1 | $2,100,000 | $2,100,000 |
| 4 | Pipeline to Reservoir, 48" | LF | 79,000 | $1,025 | $80,975,000 |
| 5 | 13K AF reservoir, Merritt Lake site | LS | 1 | $117,000,000 | $117,000,000 |
| 6 | Surface WTP, 6.5 MGD | LS | 1 | $46,000,000 | $46,000,000 |
| 7 | Treated water pump station, 500 HP | LS | 1 | $1,500,000 | $1,500,000 |
| 8 | Injection Well Distribution Pipelines: 6”-18” | LS | 1 | $26,060,000 | $26,060,000 |
| 9 | Injection Wells | EA | 12 | $1,700,000 | $20,400,000 |
| | **Subtotal** | | | | **$307,535,000** |
| | Construction Contingency | | | 30% | $92,260,500 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $40,549,638 |
| | **Construction Cost Subtotal** | | | | **$440,543,888** |
| | Engineering, Planning, and Design | | | 10% | $44,054,389 |
| | Environmental Planning and Permitting | | | 2% | $8,810,878 |
| | Administrative and Legal | | | 1% | $4,405,439 |
| | Construction Management | | | 4% | $17,621,756 |
| | **Soft Costs Subtotal** | | | | **$74,892,461** |
| | **GRAND TOTAL** | | | | **$515,500,000** |

| SCENARIO 3A - 50 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| Item # | Description | Unit | Quantity | Unit Cost | Total Cost |
| 1 | 50 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $12,500,000 | $12,500,000 |
| 2 | Sedimentation Basin | LS | 1 | $1,000,000 | $1,000,000 |
| 3 | Pump Station to 13K AF Reservoir, 600 HP | LS | 1 | $1,800,000 | $1,800,000 |
| 4 | Pipeline to Reservoir, 48" | LF | 30,600 | $1,025 | $31,365,000 |
| 5 | 13K AF reservoir, Merritt Lake site | LS | 1 | $117,000,000 | $117,000,000 |
| 6 | Surface WTP, 6.5 MGD | LS | 1 | $46,000,000 | $46,000,000 |
| 7 | Treated water pump station, 400 HP | LS | 1 | $1,200,000 | $1,200,000 |
| 8 | Injection Well Distribution Pipelines: 6”-18” | LS | 1 | $14,020,000 | $14,020,000 |
| 9 | Injection Wells | EA | 8 | $1,700,000 | $13,600,000 |
| | **Subtotal** | | | | **$238,485,000** |
| | Construction Contingency | | | 30% | $71,545,500 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $31,599,263 |
| | **Construction Cost Subtotal** | | | | **$341,629,763** |
| | Engineering, Planning, and Design | | | 10% | $34,162,976 |
| | Environmental Planning and Permitting | | | 2% | $6,832,595 |
| | Administrative and Legal | | | 1% | $3,416,298 |
| | Construction Management | | | 4% | $13,665,191 |
| | **Soft Costs Subtotal** | | | | **$58,077,060** |
| | **GRAND TOTAL** | | | | **$399,800,000** |

| SCENARIO 4A - 100 CFS DIVERSION | | | | | |
|---|---|---|---|---|---|
| **Item #** | **Description** | **Unit** | **Quantity** | **Unit Cost** | **Total Cost** |
| 1 | 100 CFS river diversion (fish screen, forebay structure, low lift pump station) | LS | 1 | $25,000,000 | $25,000,000 |
| 2 | Sedimentation Basin | LS | 1 | $2,000,000 | $2,000,000 |
| 3 | Pump Station to 13K AF Reservoir, 800 HP | LS | 1 | $2,400,000 | $2,400,000 |
| 4 | Raw Water Pipeline to Reservoir, 66" | LF | 30,600 | $1,400 | $42,840,000 |
| 5 | Potable Water Distribution Transmission Mains* | LS | 1 | $52,828,000 | $52,828,000 |
| 6 | Raw Water Transmission Cost (non-11043 sources)* | LS | 1 | $7,506,000 | $7,506,000 |
| 7 | Raw Water Pump Station (non-11043 sources)* | LS | 1 | $4,480,000 | $4,480,000 |
| 8 | Recycled Water Delivery System Costs* | LS | 1 | $14,264,000 | $14,264,000 |
| 9 | Individual Well Connection Costs* | LS | 1 | $57,411,000 | $57,411,000 |
| 10 | Potable Water Booster Pump* | LS | 1 | $13,440,000 | $13,440,000 |
| 11 | Storage Costs* | LS | 1 | $123,100,000 | $123,100,000 |
| 12 | Water Treatment Plant Costs* | LS | 1 | $507,000,000 | $507,000,000 |
| | **Subtotal** | | | | **$852,269,000** |
| | Construction Contingency | | | 30% | $255,680,700 |
| | Escalation to Midpoint (0.25% per month to July 2030) | | | 13.3% | $112,925,643 |
| | **Construction Cost Subtotal** | | | | **$1,220,875,343** |
| | Engineering, Planning, and Design | | | 10% | $122,088,000 |
| | Environmental Planning and Permitting | | | 2% | $24,418,000 |
| | Administrative and Legal | | | 1% | $12,209,000 |
| | Construction Management | | | 4% | $48,836,000 |
| | **Soft Costs Subtotal** | | | | **$207,551,000** |
| | **GRAND TOTAL** | | | | **$1,428,427,000** |
| *Cost provided by Carollo Engineers as part of the New Seawater Intrusion Project (NSIP). | | | | | |

# Appendix K

# Alternatives Preliminary Feasibility Study – Permitting Analysis

**Denise Duffy & Associates, Inc.**

PLANNING AND ENVIRONMENTAL CONSULTING

# MEMORANDUM

**DATE:** March 31, 2026

**TO:** Abby Ostovar, Ph.D., MONTGOMERY & ASSOCIATES

**CC:** Emily Gardner, Salinas Valley Basin Groundwater Sustainability Agency
Stephen Hundt, MONTGOMERY & ASSOCIATES
Tim Leo, MONTGOMERY & ASSOCIATES
Staffan Schorr, MONTGOMERY & ASSOCIATES
Travis Vasquez, PE, Wallace Group
Greg Hulburd, PE, Wallace Group

**FROM:** Tyler Potter, J.D., AICP, Project Director
Matt Johnson, Senior Environmental Scientist/Senior Project Manager
Oliviya Wyse, Project Manager

**SUBJECT:** Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study – Permitting Analysis

## I. Introduction

Denise Du y and Associates ("DD&A") prepared this memorandum to provide a high-level evaluation f the regulatory approvals and potenti l permits that may be required to implement the project concepts under consideration or the Castroville and Eastside Canals and Alternati es Preliminary Feasibility Study (the "Project"). The memorandum is intended to support project planning and ini al decision-making by identi ying the applicable regulatory requirements and related resource agency permitti that could apply to the concepts currently under considera on.

The Project is being evaluated through a set of disti ct project concepts, each of which may trigger di erent permitti requirements based on site-specifi factors (e.g., loca on, construc on methods, operational characteristic , resource impacts, jurisdicti nal boundaries, etc.). This memorandum does not constit te a nal permit strategy or a nal determinati n of permit applicability. Rather, this memorandum provides an overview of antic pated permitti needs based on the conceptual descriptions of the concepts available at this ti e.[1] Given the conceptual level of project-detail, it is generally assumed that each of the regulatory requirements identifi in this permitti

[1] As project design and concept development continue to evolve, applicable permitting requirements may change, and additional approvals may ultimately be required.

memorandum could apply. However, the extent and complexity of associated permitti may vary signifi antly depending on nal project design and antic pated environmental impacts.

The memorandum is organized as follows. *Section 2* summarizes the concepts evaluated for purposes of this analysis, including relevant assumpti ns used to inform the permitti discussion. *Section 3* describes the applicable regulatory background, including the primary federal and state statutory requirements.[2] *Section 4* presents a discussion of antic pated permitti requirements. *Section 5* provides concluding observations, inc uding overarching permitti considera ons and issues that may warrant further evaluation as the Project advances and a preferred concept is identifi .

## II. Description

This section summarizes the range of concepts evaluated for purposes of this memorandum. The descriptions provided below are intended to establish a preliminary baseline and project assumptions used to identify potentially applicable regulatory requirements. The level of detail is commensurate with the preliminary nature of the concepts and is not intended to reflect final design or engineering.

The Project concepts[3] represent different approaches to support the beneficial use of Water Right Permit 11043. Each concept varies with respect to factors such as site location, location of diversion, construction methods, operational characteristics, etc. Each concept is described below at a conceptual level. The summaries focus on features most relevant to permitting considerations. For a

[2] This memorandum is focused on federal and state regulatory requirements. A detailed evaluation of local permitting requirements is not included at this stage due to the conceptual level of design and siting information. Depending on the final location of improvements, additional discretionary and ministerial permits may be required from the City of Salinas and/or Monterey County (e.g., encroachment permits, use permits, etc.). Local permitting requirements would be evaluated in greater detail as project design advances and a preferred concept is identified.

[3] Each project concept evaluated in this memorandum consists of a new river intake diversion with associated infrastructure that would have direct permitting implications regarding compliance with applicable state and federal environmental regulations (e.g., Clean Water Act, Porter Cologne Water Quality Control Act, Cal. Fish and Game Code Section 1602, etc.). A new diversion is a surface diversion method utilizing a screened pump intake and pump station on the bank of the river without the use of a diversion dam or control structure across the river channel to manipulate water levels or create an impoundment. This type of diversion would result in less permitting complexity compared to an instream diversion structure (e.g., diversion dam) but would still result in the development of project infrastructure (i.e., fish screen, pump station forebay, low lift pump station, sedimentation basin, and transfer pump station) that could result in potential environmental effects subject to the review of state and federal resource agencies. While permitting would likely be less procedurally complex than a traditional surface diversion, any new diversion would warrant substantial regulatory oversight.

With respect to subsurface diversions, these types of diversions may avoid certain direct instream structural impacts (e.g., physical barriers, fish passage constraints, channel modification), but they would still raise similar environmental issues (e.g., streamflow depletion, hydraulic connectivity, and potential effects on fisheries and riparian habitat) that would need to be addressed through the regulatory compliance process. In other words, the procedural process may differ in complexity and, in some cases, may be less controversial than an instream diversion structure; however, the relevant resource agencies would still evaluate potential impacts to surface flows and associated biological resources. As a result, the overall scope of environmental review is not inherently reduced. That said, from a comparative standpoint, subsurface systems are often viewed more favorably than new direct instream diversion structures because they may be environmentally superior from an impact perspective, depending on site-specific conditions.

complete description of each of the project concepts and related infrastructure, please refer to *Draft Summary Report for Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study.*

- **Concept 1 – Eastside Basin Recharge:** The Eastside Recharge Basins concept would involve diversion of surface water from the Salinas River near the Castroville Canal Intake permitted location south of Salinas. Water would subsequently be conveyed to a series of surficial recharge basins located within the Eastside Subbasin. Four diversion flow scenarios are contemplated to evaluate a range of project scales and operational strategies, with diversion rates of 50, 100, 200, and 400 cubic feet per second (cfs). The diversion facility would consist of a river intake diversion system, including fish screens, a pump station forebay, low-lift pump station, sedimentation basin, and conveyance pump station. Diverted water would be conveyed via approximately 4 miles of transmission main (ranging from 48-inch to 132-inch diameter depending on diversion capacity) routed along private agricultural roads and public rights-of-way to distributed recharge basin sites. Depending on the diversion scenario and associated storage requirements, up to forty (40) 40-acre recharge basins could be developed within the Eastside Subbasin, for a total potential recharge footprint of approximately 1,600 acres. The basins would allow diverted water to percolate through native soils to augment groundwater storage and improve basin conditions.

- **Concept 2 – North Eastside Injection:** The North Eastside Injection concept would involve diversion of surface water from the Salinas River near the Castroville Canal Intake permitted location south of Salinas and conveyance to a new surface storage reservoir, followed by treatment and distribution to a network of groundwater injection wells within the northern Eastside Subbasin. Two diversion flow scenarios are contemplated to evaluate a range of project scales, with diversion rates of 50 and 100 cfs. The type of diversion facility and associated infrastructure would be the same as the Eastside Basin Recharge concept. Diverted water would be conveyed via transmission mains (approx. 7 miles for 100 cfs scenario and approx. 15 miles for 50 cfs scenario) to a surface storage reservoir, which could be located either at the Merritt Lake or within the Gabilan Range/Alisal Creek watershed, depending on final site selection. Stored water would be treated to meet groundwater recharge and injection standards prior to distribution through a pipeline network (approx. 25 miles) to multiple injection well sites. The injection wells would introduce treated water directly into the aquifer to augment groundwater storage, increase groundwater elevations, and improve basin conditions within the northern Eastside Subbasin.

- **Concept 3 – Coastal Injection:** The Coastal Injection concept would involve diversion of up to 50 cfs of surface water from the Salinas River near and upstream of the existing Salinas River Diversion Facility ("SRDF") location, conveyance to a surface storage reservoir at Merritt Lake (approximately 12,600 acre-feet capacity), treatment at a 6.5-mgd water treatment plant adjacent to the reservoir, and distribution of treated water to a network of injection wells located within the seawater intrusion area. This concept would include approximately 12 miles of distribution pipeline. The point of diversion for this concept is located further downstream than the Eastside Recharge Basins and North Eastside Injection concepts and is situated within a more defined and perennial reach of the Salinas River. The type of diversion facility and associated infrastructure would be the same as the previous concepts. Following treatment, water would be delivered through transmission mains and a coastal distribution pipeline network to injection well sites to increase groundwater elevations along the coast and limit seawater intrusion.

- **Concept 4 – New Castroville Seawater Intrusion Project ("NSIP"):** The NSIP concept would involve diversion of up to 100 cfs of surface water from the Salinas River near and upstream of the existing SRDF using a river intake diversion. The type of diversion facility and associated infrastructure would be the same as the previous concepts. Diverted water would be conveyed via a 5.8-mile, 96-inch diameter transmission main to surface storage at Merritt Lake, followed by treatment at a proposed water treatment plant. Treated water would then be delivered through a proposed NSIP distribution system serving groundwater users within the seawater intrusion area east of the existing Castroville Seawater Intrusion Project ("CSIP") system. The transmission main would require two (2) crossings beneath drainage channels tributary to Tembladero Slough.

The descriptions above are provided solely for purposes of identifying potential permitting pathways and do not reflect a preferred concept. Refinements to the concepts, including changes to design, siting, or construction sequencing, may affect the applicability or scope of specific permits discussed below.

## III. Regulatory Background

This sec on provides an overview of the key federal and state regulatory requirements that may be relevant from an environmental permitti perspecti e. The discussion is intended to iden fy the primary regulatory framework that could a ect project implementation, and to provide general context regarding the type of regulatory approvals that may be required. The regulatory background is presented for informational urposes only and is not intended to constit te a comprehensive or exhausti e inventory of all potenti lly applicable regulatory requirements.

The regulatory frameworks summarized in this secti n apply broadly to projects of the type and scale contemplated under the concepts discussed above.

### Federal[4]

*Federal Clean Water Act ("CWA")*

The CWA (1972) provides a framework for regulati g discharge of pollutants into Waters of the United States ("WOTUS") and establishes water quality standards for pollutants in surface waters (EPA,

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[4] In addition to the federal permitting requirements discussed in this memorandum, certain federal wildlife protection statutes may apply during Project implementation, including the Migratory Bird Treaty Act ("MBTA"). The MBTA prohibits the take of

2025). The CWA regulates discharges into WOTUS and surface waters through implementation f pollution ontrol programs such as the National Pollutant Discharge Elimination ystem (“NPDES”) permit program, which requires the State Water Resources Control Board (“SWRCB”) and the applicable Regional Water Quality Control Board (“RWQCB”) to issue NPDES permits for point-source discharges into navigable waters. In addi on, activi es that result in the discharge of dredged or ll material into wetlands or other waters of the United States are subject to regulation u der Sections 01 and 404 of the CWA.

Secti n 404 requires that a project Applicant obtain a permit from U.S. Army Corps of Engineers (“USACE”) for any discharge of dredged or ll material into WOTUS, including jurisdicti nal wetlands, streams, and other aquatic features. The USACE regulates discharges of dredged or ll material into WOTUS under Secti n 404 of the Clean Water Act. Section 01 requires that the Applicant also obtain a Water Quality Cer cation from the applicable RWQCB verifying that the proposed acti ity will comply with state water quality standards. Impacts regulated under the CWA generally include the placement of soil, concrete, rock, or other material into jurisdicti nal waters, as well as excava on, grading, or other modifi ations that alter the physical, chemical, or biological integrity of these features.

*Federal Endangered Species Act (“ESA”)*

The ESA (1973) (16 United States Code [“USC”] 1532 et seq., as amended) protects federally listed threatened or endangered species and their habitats from unlawful take. Listed species include those for which proposed and nal rules have been published in the Federal Register. The U.S. Fish and Wildlife Service (“USFWS”) and NOAA’s National Marine Fisheries Service (“NMFS”) administers the ESA. In general, NMFS is responsible for the protec on of ESA-listed marine species and anadromous sh, such South-Central California Coast steelhead (*Oncorhynchus mykiss irideus*), whereas other listed species are under USFWS jurisdic on.

Secti n 9 of ESA prohibits the take of any sh or wildlife species listed under ESA as endangered or threatened. Take, as de ned by ESA, is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or a empt to engage in any such conduct.” Harm is “any act that kills or injures the sh or wildlife…including signifi ant habitat modifi a on or degradation that signifi antly impairs essenti l behavioral pa erns of sh or wildlife.” Addi onally, Sec on 9 prohibits removing, digging up, and maliciously damaging or destroying federally listed plants on sites under federal jurisdic on. Secti n 9 does not prohibit take of federally listed plants on sites not under federal jurisdicti n. If there is the

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protected migratory bird species but does not establish a project-specific permitting program comparable to those discussed in this analysis. Compliance with the MBTA is typically achieved through avoidance and minimization measures (e.g., seasonal work windows, pre-construction surveys, nest buffers) incorporated into project design and construction specifications. The potential applicability of such requirements, and the need for specific avoidance or mitigation measures, would be determined based on project-level design, construction timing, and site-specific biological conditions.

potenti l for incidental take of a federally listed sh or wildlife species, take of listed species can be authorized through either the Sec on 7 consulta on process for federal acti ns or a Sec on 10 incidental take permit process for non-federal ac ons. Federal agency acti ns include activi s that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits).

*National Environmental Policy Act ("NEPA")*

NEPA was signed into law in 1970 to address growing public concern regarding human impacts on the environment. NEPA requires federal agencies to assess the environmental e ects of their proposed ac ons prior to making decisions. This law covers a broad range of actions hat include permit applications, ederal land management acti ns, and construc on of publicly-owned facili es. NEPA requires federal agencies to incorporate environmental considera ons in their planning and decision-making processes and disclose the environmental impacts associated with federal acti ns. NEPA also encourages an interdisciplinary approach to environmental review and requires public par cipation i the review and decision-making processes. Any acti n taken by a federal agency, receives federal funding, or occurs on federal lands is subject to NEPA.

*National Historic Preservation Act (NHPA)*

The NHPA (54 U.S.C. § 300101 et seq.) establishes the federal framework for the identification, evaluation, and consideration of historic properties in connection with federal undertakings. Section 106 requires federal agencies to consider the effects of their undertakings on properties listed in or eligible for listing in the National Register of Historic Places ("NRHP"). Historic properties include archaeological sites, historic-era structures, cultural landscapes, and traditional cultural properties that meet NRHP eligibility criteria.

Section 106 review is triggered when a project involves a federal undertaking, such as issuance of a permit, license, or approval by a federal agency (e.g., a CWA Section 404 permit issued by the USACE). In such cases, the lead federal agency is responsible for initiating consultation with the State Historic Preservation Officer ("SHPO"), federally recognized tribes, and other consulting parties, as appropriate. The Section 106 process includes identification of the Area of Potential Effects ("APE"), cultural resource investigations to identify historic properties within the APE, evaluation of NRHP eligibility, assessment of project effects, and, where necessary, development of measures to avoid, minimize, or mitigate adverse effects.

In the absence of a federal nexus, Section 106 does not apply. For project components that involve federal authorization, coordination with the appropriate federal agency would be required to define the APE, conduct cultural resource studies, and complete the Section 106 consultation process prior to permit issuance. The duration and complexity of Section 106 review depend on the presence of historic properties within the APE, the potential for adverse effects, and the extent of required tribal consultation and mitigation measures.

**State[5,6]**

*California Endangered Species Act*

The California Endangered Species Act (“CESA”) (Fish and Game Code § 2050 et seq.) provides for the conservation protecti n, and recovery of species that are listed as threatened or endangered under state law. CESA generally prohibits the “take” of any species listed as threatened or endangered, where “take” is de ned to include acti ns that hunt, pursue, catch, capture, or kill, or a empt to do so. Courts have interpreted “take” under CESA to include habitat modifi a on or degradation hat results in the death or injury of a listed species.

CESA is administered by the California Department of Fish and Wildlife (“CDFW”). Project activiti that have the potenti l to result in take of a CESA-listed species generally require authorizatio from CDFW prior to implementation, u less a statutory or regulatory exemption applies. The applicability of CESA and the need for authoriza on depend on the presence of listed species, the nature and location of project ac vi es, and the potenti l for those ac vi es to directly or indirectly result in take.

**Section 2081 Incidental Take Permits**

Fish and Game Code secti n 2081 authorizes CDFW to issue an Incidental Take Permit (“ITP”) to allow the incidental take of a state-listed species resulti g from an otherwise lawful activi y. An ITP may be issued only if CDFW makes specifi statutory ndings, including that: 1) the take is incidental to an otherwise lawful ac vity; 2) the impacts of the authorized take are minimized and fully mi gated; 3) the mi gation easures are roughly propor onal in extent to the impact of the take and are capable of successful implementa on; 4) the issuance of the permit will not jeopardize the conti ued existence of

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[5] In addi on to the speci c permi g requirements described in this analysis (e.g., California Endangered Species Act, Fish and Game Code Sec on 1602, etc.), various provisions of the California Fish and Game Code protect na ve birds and wildlife. For example, Fish and Game Code Sec on 3503 and 3503.5 prohibit the take, possession, or destruc on of bird nests and birds-of-prey; Sec on 3511 provides addi onal protec ons for “Fully Protected” species; Sec on 3513 protects migratory nongame birds designated under the federal Migratory Bird Treaty Act; and Sec on 3800 prohibits take of nongame birds. “Fully Protected” species represent an early statutory classi ca on intended to a ord heightened protec on to rare species, and such species generally may not be taken or possessed except under very limited circumstances (e.g., scien c research or speci ed reloca on ac viti s). These statutory requirements do not establish a separate discre onary permi g program for most rou ne development ac viti s. Rather, compliance is typically achieved through project design, avoidance and minimiza on measures (e.g., seasonal work windows, pre-construc on surveys, biological monitoring, and protec ve bu ers), and incorpora on of mi ga on measures into environmental documenta on prepared pursuant to CEQA. The applicability of these requirements and any associated avoidance or mi ga on measures would be evaluated based on site-speci c biological condi ons.

[6] Certain native plant species are protected under the California Native Plant Protection Act. State-listed rare or endangered plant species may require authorization from the CDFW if project activities would result in take and impacts cannot be avoided. Other special-status plant species, while not formally listed under state law, are typically evaluated pursuant to CEQA and may require avoidance, minimization, or compensatory mitigation measures. These requirements do not generally involve a separate discretionary permit but would be addressed through project-level biological surveys and associated environmental review.

the species; and, 5) adequate funding is ensured for implementation f the mi gation easures and permit compliance.

ITPs typically require preparation f a mi ga on and monitoring plan that identifi measures to avoid, minimize, and compensate for impacts to the listed species. Mi ga on may include habitat restoration, p eservation, enhancement, or the purchase of mi gatio credits at an approved mi gation bank, depending on the species and nature of impacts. CDFW also typically requires repor ng, monitoring, and adap ve management provisions as condi ons of permit approval.

*California Environmental Quality Act ("CEQA")*

CEQA requires state and local agencies to identi y and disclose signifi ant environmental impacts of their ac ons and to avoid or mi gate those impacts, if feasible. A public agency must comply with CEQA when it undertakes an acti ity requiring discreti nary approval (i.e., the agency has authority to approve or deny the requested ac on), which may cause either a direct physical change, or a reasonably foreseeable indirect change, in the environment. If a lead agency determines that there is no potenti l for a signi cant environmental impact, then either an Ini al Study Nega ve Declaration "IS/ND") or an Ini al Study Mi gated Negati e Declara on ("IS/MND") may be appropriate. If a lead agency determines that a project would have a potenti lly signi cant impact on the environment and mi gation easures would not reduce potenti l impacts to less than signi cant, then a lead agency shall prepare an EIR.

*California Fish and Game Code – 1602*

Fish and Game Code secti n 1602 requires no cati n to the CDFW prior to undertaking any activi y that may substanti lly divert or obstruct the natural ow of a river, stream, or lake; substanti lly change or use any material from the bed, channel, or bank of a river, stream, or lake; or deposit debris, waste, or other material where it may pass into a river, stream, or lake. These requirements apply to both perennial and intermi ent watercourses, as well as to certain ephemeral features, depending on site-speci c condi ons and hydrologic func on.

If CDFW determines that a proposed ac vity may substanti lly adversely a ect existi g sh and wildlife resources, CDFW may require the project proponent to enter into a Lake or Streambed Alteration Agreement ("LSAA"). An LSAA establishes condi ons intended to protect sh and wildlife resources during project implementation an typically includes measures related to constructi n methods, ti ing restric ons, erosion and sediment control, habitat protecti n or restora on, monitoring, and repor ng.

Ac vi es that may trigger the need for an LSAA include, but are not limited to, channel modifi ations bank stabilization, i stalla on of crossings or culverts, diversion structures, grading within or adjacent to watercourses, or vegeta on removal a ecti g riparian areas. The applicability of Sec on 1602 depends on the presence of a jurisdic onal feature and the extent of proposed acti i es that could a ect the bed, bank, or channel.

*Porter-Cologne Water Quality Control Act ("Porter-Cologne Act")*

The Porter-Cologne Act was enacted in 1969 to help protect California's surface and groundwater resources and maintain their bene cial uses for drinking water, recreation, an wildlife habitat. The Porter-Cologne Act established the SWRCB and nine (9) RWQCBs with primary responsibility for administration an enforcement of water quality regulation i California. The Porter-Cologne Act establishes statewide policies, requires development of regional water quality control plans ("Basin Plans"), and requires issuance of waste discharge permits to control discharge of pollutants into state waters, including both surface and groundwaters. Basin Plans must establish water quality objecti es necessary for protec on of surface and ocean waters.

## IV. Discussion

This sec on discusses the potenti l permitti requirements applicable to the project concepts based on the regulatory framework summarized in *Section 3*. This discussion identifi how each regulatory requirement could apply, in concept, at a programmatic l vel given the conceptual detail available at the ti e DD&A prepared this analysis, rather than make de ni ve determinations egarding permit applicability or approval outcomes for each individual concept. Following the narrati e discussion, **Table 1** provides a consolidated summary of antic pated permitti and approval requirements.

## Federal

*Clean Water Act*

Ac vi es that result in the discharge of dredged or ll material into wetlands or other waters of the United States are subject to regulation u der Secti ns 401 and 404 of the CWA. Sec on 404 requires that a project Applicant obtain a permit from USACE for any discharge of dredged or ll material into WOTUS, including jurisdic onal wetlands, streams, and other aquatic eatures. Secti n 401 requires that the Applicant also obtain a Water Quality Cer cation from the RWQCB verifying that the proposed activi y will comply with state water quality standards. Impacts regulated under the CWA generally include the placement of soil, concrete, rock, or other material into jurisdicti nal waters, as well as excavation, g ading, or other modifi a ons that alter the physical, chemical, or biological integrity of these features.

The Project Area[7] includes potenti l wetlands and other jurisdic onal features that may be regulated as WOTUS under the CWA. Each of the four (4) concepts could result in unavoidable ll of some jurisdic onal wetlands or WOTUS depending on nal design – especially in connec on with the si ng of the proposed river intake diversion. Any project-related acti i es that could result in the discharge of ll material into a jurisdic onal feature would require a Secti n 404 permit from the USACE and a Secti n 401 Water Quality Cer cation from the RWQCB to ensure compliance with the CWA. Site-specifi technical studies, including a formal wetland delineation onducted in accordance with USACE protocols, would be required to con rm the extent of jurisdic onal features. Impacts that cause a loss of jurisdic onal wetlands require an approved wetland mi gation an monitoring plan, accompanied by an adapti e management plan and long-term maintenance plan. A formal wetland delineation i recommended where each of the concepts could cross a potenti l wetland, and for those areas where ditches (potenti l WOTUS) occur. Wherever ground disturbing work would occur below the ordinary high-water mark of a stream crossing, a delinea on and 404 permit would also be required.

Depending on the scope and federal nexus, such permitti could also trigger project-level review under NEPA. Early identi ation of jurisdic onal resources and coordination ith USACE will be essenti l to minimize impacts and streamline the permitti process. Moreover, as part of CWA permitti , the USACE and the Central Coast RWQCB may require project-speci c mi gation easures, including pre-construc on surveys, best management practices to avoid discharge, construc on-phase monitoring, and compensatory mi ga on such as habitat restoration or creatio to o set impacts to jurisdic onal waters. The requirements of the CWA would primarily be applicable to the construc on of any new diversion facili es and construc on-related activitie occurring in or near jurisdic onal features. Permitti associated with the CWA would generally take approximately twelve to eighteen months.

*Endangered Species Act*

Activities that may affect species listed as threatened or endangered under the ESA are subject to regulation under Sections 7 and 10 of the ESA. Section 7 applies to actions that involve a federal nexus — such as the issuance of a federal permit or the use of federal funding — and requires consultation with the USFWS and/or NMFS to determine whether the action may affect listed species or their designated critical habitat. This consultation process may result in the issuance of a Biological Opinion that includes required conservation measures. For actions without a federal nexus, or when a non-federal entity seeks authorization for incidental take of listed species, an Incidental Take Permit ("ITP") under Section 10(a) must be obtained, typically supported by a Habitat Conservation Plan ("HCP") that outlines avoidance, minimization, and mitigation strategies.

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[7] For purposes of this memorandum, the "Project Area" is broadly defined to encompass the Salinas Valley, including the City of Salinas, the Salinas River corridor, and surrounding agricultural lands located primarily within unincorporated Monterey County. This broad geographic area reflects the regional nature of the project concepts and is intended to capture the range of potential siting locations and resource conditions that may influence permitting requirements. The Project Area description is conceptual and provided solely for purposes of evaluating potential regulatory requirements at a general level; final permitting would be based on the specific location and footprint of selected project improvements.

The Project Area includes potential habitat for one (1) or more federally listed species, including California tiger salamander (*Ambystoma californiense*) and South-Central California Coast steelhead (*Oncorhynchus mykiss irideus*). As such, implementation of each of the concepts would likely result in direct or indirect impacts to listed species or their habitats necessitating compliance with either Section 7 or Section 10 of the ESA. Where such activities require a federal permit (e.g., a CWA Section 404 permit), Section 7 consultation would be required to address potential effects. For projects without a federal nexus, compliance with ESA may still require a Section 10 ITP and preparation of an HCP. Because future improvements could affect federally listed species, project-specific technical analysis will be required to: 1) determine the presence or potential presence for listed species, and, 2) assess the level of impact.

Early consultation with USFWS and NMFS is recommended to clarify permitting requirements and identify appropriate avoidance or mitigation measures. As part of Section 7 consultation or issuance of a Section 10 ITP, the USFWS and NMFS may require pre-construction surveys, biological monitoring during construction, and compensatory mitigation to avoid, minimize, and offset adverse effects on federally listed species or their critical habitat. Compliance with the requirements of the ESA would apply to all project-related activities that have the potential to directly or indirectly affect listed species and their associated habitat. Section 7 consultation typically takes approximately twelve to eighteen months whereas a Section 10 ITP can take at least two (2) years.

*National Historic Preservation Act*

As discussed above, Section 106 of the NHPA requires federal agencies to evaluate the effects of federal undertakings on historic properties listed in or eligible for listing in the NRHP and to complete consultation with the SHPO and federally recognized tribes prior to permit issuance. Section 106 review is triggered only where a federal nexus exists (e.g., issuance of a federal permit).

Implementation of the project concepts evaluated in this memorandum would involve substantial ground disturbance, including construction of diversion facilities, transmission pipelines, recharge basins, reservoirs, treatment infrastructure, and injection wells. Where a federal permit is required (e.g., Clean Water Act Section 404 authorization), Section 106 consultation would be triggered for those components of the undertaking within the APE. Cultural resource investigations would be required to identify and evaluate archaeological sites, historic-era resources, and tribal cultural resources that may be present within construction footprints and associated staging or access areas.

If historic properties are identified within the APE, the lead federal agency would assess whether the undertaking would result in an adverse effect. Avoidance and minimization measures may be required where feasible; otherwise, mitigation measures (e.g., data recovery, monitoring, or other treatment measures) may be formalized through a Memorandum of Agreement (“MOU”). In the absence of a federal nexus, Section 106 would not apply; however, cultural resource review would remain required under applicable state law.

**State**

*California Endangered Species Act*

Activities that may affect species listed as threatened or endangered under the CESA are subject to regulation by the CDFW. Projects that could result in the "take" of a state-listed species - defined to include actions such as killing, harming, or harassing - must obtain a state ITP pursuant to Section 2081(b) of the Fish and Game Code. Issuance of an ITP requires CDFW to determine that the take is incidental to an otherwise lawful activity, that impacts are minimized and fully mitigated, that mitigation is roughly proportional in extent to the impact of the take and capable of successful implementation, and that the permit will not jeopardize the continued existence of the species.

The Project Area includes habitat for species listed under CESA (e.g., California red-legged frog [*Rana draytonii*], California tiger salamander [*Ambystoma californiense*], etc.), some of which may also be listed under the federal ESA. Depending on the final siting, footprint, and construction methods, implementation could result in both direct impacts (e.g., ground disturbance resulting in mortality or injury) and indirect impacts (e.g., habitat modification, fragmentation, hydrologic alteration, or construction-related disturbance). Under CESA, habitat modification that results in death or injury to a listed species may constitute take. As a result, permanent or temporary loss of occupied or suitable habitat may require authorization under Section 2081 where such effects cannot be fully avoided.

Where habitat loss or degradation is anticipated, compensatory mitigation is typically required to offset impacts and to ensure that the impacts of take are fully mitigated. Compensatory mitigation may include, but is not limited to: 1) permanent preservation of suitable habitat through conservation easements; 2) restoration or enhancement of degraded habitat; 3) establishment of mitigation lands at specified ratios relative to the acreage or functional value of impacted habitat; or 4) purchase of credits at an approved conservation or mitigation bank, where available. Mitigation ratios and performance standards are generally determined based on species-specific considerations, habitat quality, level of impact (temporary vs. permanent), and the conservation status of the species. In addition to habitat-based mitigation, CDFW may require measures such as pre-construction surveys, worker environmental awareness training, biological monitoring during construction, seasonal work restrictions, and adaptive management provisions.

Because the concepts evaluated in this memorandum are conceptual in nature, project-specific biological surveys and habitat assessments will be necessary to determine the presence or absence of listed species, the extent and quality of suitable habitat, and the potential for take. Consultation with CDFW would be required to confirm the need for an ITP and to establish appropriate avoidance, minimization, and compensatory mitigation measures based on the characteristics of the selected alternative. Compliance with the requirements of the CESA would apply to all project-related activities that have the potential to directly or indirectly affect listed species and their associated habitat. A 2081 ITP generally takes approximately twelve to twenty-four months to obtain.

*Porter-Cologne Water Quality Control Act*

The Porter-Cologne Act is the primary state law governing water quality in California. Under the Porter-Cologne Act, the SWRCB and nine (9) RWQCBs have broad authority to regulate discharges to "waters of the State," a term that includes wetlands, streams, and other surface waters — regardless of whether they fall under federal jurisdic on as WOTUS. For projects that involve dredge, ll, or other discharges to waters of the State, the applicable RWQCB (in this instance the Central Coast RWQCB) may require the issuance of Waste Discharge Requirements ("WDRs") to ensure that activiti comply with state water quality objecti es and bene cial use protecti ns.

If a project also requires a federal permit – such as a USACE Sec on 404 permit – the RWQCB will typically issue a Water Quality Certi a on under Secti n 401 of the CWA in lieu of separate WDRs for the dredge or ll discharge, provided the cer ca on incorporates all necessary state requirements. However, in the absence of a federal nexus, the RWQCB retains independent authority under the Porter-Cologne Act to regulate discharges through the WDR process.

The Project Area includes wetlands and other aquati features that may be regulated as waters of the State, including features that do not meet the federal de ni on of jurisdictional aters. Accordingly, any project-related ac vity that involves grading, excavation, ll placement, or other activiti resul ng in discharge of material to waters of the State may require WDRs or a Sec on 401 Water Quality Cer cation Site-speci c technical studies, including a formal wetland delineation prepared in accordance with applicable USACE and SWQCB wetland delineation rocedures, would be necessary to con rm the extent and regulatory status of these features. Note, injecti n well facili es would require enrollment under the State Water Resources Control Board's Water Quality Order No. 2012-0010-DWQ (General Waste Discharge Requirements for Groundwater Recharge Projects). Coordination ith the Central Coast RWQCB would be required to con rm the appropriate regulatory pathway and to establish avoidance, minimization, a d compensatory mi ga on measures for any unavoidable impacts to waters of the State. Permitti requirements would apply to all project-related activiti that have the potenti l to a ect waters of the state, including the constructi n of new diversion facili es. Permitti generally takes approximately twelve to eighteen months.

*California Fish and Game Code – 1602*

California Fish and Game Code Secti n 1602 requires that any person, public agency, or entit noti y the CDFW before initi ti g any ac vity that may substanti lly divert or obstruct the natural ow of, or substanti lly change or use any material from the bed, channel, or bank of, any river, stream, or lake. This requirement applies to both perennial and ephemeral watercourses, including streams that support riparian vegetatio or exhibit de nable bed and bank features, regardless of federal jurisdic onal status. If CDFW determines that the proposed ac vity may substanti lly a ect sh or wildlife resources, the Applicant must enter into a Lake or Streambed Altera on Agreement ("LSAA") with CDFW before proceeding with the project.

The Project Area contains stream features and drainages that may be subject to regulation u der Secti n 1602. As a result, the constructi n and operation of project-related improvements (e.g., proposed diversion facili es, pipelines, storage facili es, etc.) would likely result in modifi ation to streambeds or banks, triggering the requirement for an LSAA. Project-speci c technical analysis would be required to map and characterize these features and determine whether proposed acti i es fall within CDFW's jurisdicti n. Early coordination ith CDFW is recommended to con rm noti a on requirements and ensure appropriate measures are developed to avoid or minimize impacts to aquatic a d riparian resources where feasible.

An LSAA typically establishes condi ons intended to protect sh and wildlife resources during project implementa on. These condi ons may include pre-construc on biological surveys, worker environmental awareness training, biological monitoring during in-stream or near-stream work, seasonal ti ing restric ons, erosion and sediment control measures, and site restoration requirements. Where permanent impacts to streambeds, banks, or associated riparian habitat cannot be avoided, CDFW may require compensatory mi gation, which may include habitat restora on, riparian revegetation or preserva on of o -site habitat at ra os commensurate with the extent and functional alue of impacted resources.

Because the concepts evaluated in this memorandum are conceptual in nature, the need for an LSAA and the scope of associated avoidance, minimization, an mi ga on measures would depend on the nal si ng and design of project improvements. Permitti requirements would primarily apply to the construc on and operation f new diversion facilities b t may also apply to other project components that could a ect the bed, channel, or bank of, any river, stream, or lake. LSAA permitti generally takes approximately twelve months.

## V. Conclusion

As summarized in this memorandum, implementation of the concepts described above would be subject to a range of federal and state regulatory requirements (e.g., Clean Water Act, federal Endangered Species Act, California Endangered Species Act, etc.). While many of these requirements would apply broadly across all concepts, the extent of potential permitting requirements - and the scope and complexity of associated procedural requirements - would vary depending on more refined site design, including site-specific resource evaluations.

It is also important to recognize that several of the identified authorizations involve substantial agency review timelines. In particular, a Section 10 ITP under the federal Endangered Species Act can require preparation of a HCP, compliance with the NEPA, public review, and interagency coordination, often resulting in a multi-year process from application submittal to permit issuance. Other federal and state permits (e.g., Clean Water Act Section 404/401 authorizations, Section 2081 ITP, and LSAA) may also involve extended review periods. The timeframes typically associated with these permits reflect agency review periods following submission of a complete application and do not account for the time and effort necessary to conduct biological surveys, prepare technical studies, develop mitigation plans, assemble application materials, or respond to agency comments. Accordingly, early coordination with resource agencies will be critical to inform realistic project scheduling assumptions.

The permitting considerations identified in this memorandum are based on conceptual descriptions of the project concepts. As project design advances and concepts are refined, additional regulatory requirements may be identified based on project-specific and site-specific technical analysis, and the applicability or level of effort associated with certain approval may change.

**TABLE 1**
**ANTICIPATED PERMITS AND APPROVALS**

| Agency or Department | Approval or Permit | Discussion |
|---|---|---|
| **Federal Regulatory Requirements** | | |
| U.S. Army Corp of Engineers ("USACE") | Permit under Sec on 404 of the Clean Water Act (33 U.S. Code Sec on 1344). | ▪ Projects that would discharge dredged or fill material into waters of the United States, including wetlands, require a USACE permit pursuant to the Clean Water Act Section 404. |
| U.S. Fish and Wildlife Service ("USFWS")/Na onal Marine Fisheries Service ("NMFS") | Federal Agency Consulta on pursuant to Endangered Species Act Sec on 7 (16 U.S. Code Sec on 1537). | ▪ The Endangered Species Act requires federal agencies to consult with USFWS and NMFS before implementing actions that may affect a federally listed species under their jurisdiction or may adversely modify designated critical habitat. Federal agencies must consult with USFWS and NMFS to determine whether the proposed action of issuing permits and authorizations for a proposed project is likely to adversely affect a federally listed terrestrial or freshwater animal or plant species under USFWS' jurisdiction, or that species' designated critical habitat; is likely to adversely affect a federally listed marine species under NMFS's jurisdiction, or that species' designated critical habitat; jeopardize the continued existence of species that are proposed for listing under the Endangered Species Act; or adversely modify proposed critical habitat. To support USFWS' and NMFS' determination, a federal agency must prepare a Biological Assessment to initiate "formal consultation." USFWS and NMFS will issue a Biological Opinion concerning the effects of a project. If USFWS and NMFS find that a project may jeopardize the species or destroy or modify critical habitat, reasonable and prudent alternatives to the action must be considered. |
| U.S. Fish and Wildlife Service ("USFWS") | Incidental Take Permit ("ITP") under the Endangered Species Act Sec on 10 (16 U.S. Code Sec on 1539). | ▪ A project may apply for an ITP pursuant to the Endangered Species Act Section 10(a)(1)(B) when a non-federal entity believes their otherwise lawful activities may cause the take of an endangered or threatened species. A project must provide a Habitat Conservation Plan ("HCP") along with the application for an ITP. |
| State Historic Preserva on O ce and the Na onal Historic Preserva on Act ("NHPA") | Consulta on with State Historic Preserva on O cer ("SHPO") or Tribal Historic Preserva on O cer ("THPO") under Sec on 106 of the NHPA (16 USC Sec on 470 et seq.). | ▪ The NHPA requires federal permitting agencies to "take into account" the effects of a federal undertaking, or a proposed project, on properties included in the National Register of Historic Places or that meet National Register criteria, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. |

**TABLE 1**
**ANTICIPATED PERMITS AND APPROVALS**

| Agency or Department | Approval or Permit | Discussion |
|---|---|---|
| **State Regulatory Requirements** | | |
| California Department of Fish and Wildlife (“CDFW”) | Incidental Take Permit under the California Endangered Species Act (California Fish and Game Code Sec  on 2081). | ▪ CDFW may permit the take of any endangered, threatened, or candidate species if said take is incidental to an otherwise lawful activity and if the impacts of the authorized take are minimized and fully mitigated. No permit may be issued if the activity would jeopardize the continued existence of the species. Permittees must implement species-specific minimization and avoidance measures, and fully mitigate the potential impacts of the Project pursuant to California Fish and Game Code Section 2081(b) and California Code of Regulations Title 14 Sections 783.2-783.8). |
| California Department of Fish and Wildlife (“CDFW”) | Streambed Altera  on Agreement (California Fish and Game Code Sec  on 1602). | ▪ California Fish and Game Code Section 1602 requires project proponents to notify CDFW prior to engaging in activities that may divert or obstruct the natural flow of a river, stream, or lake; change the bed, channel, or bank of a river, stream, or lake, use material from any river, stream or lake; or deposit or dispose of material into a reiver, stream, or lake. Rivers, streams, and lakes that are dry for periods of time may also be subject to Section 1602. CDFW and a project proponent will agree to a Lake or Streambed Alteration Agreement |
| State Water Resources Control Board (“SWRCB”)/Central Coast Regional Water Quality Control Board (“Central Coast RWQCB”) | Waste Discharge Requirements pursuant to Sec  on 401 of the Clean Water Act (40 Code of Federal Regula  ons 121) and the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Sec  on 13000 et seq.). | ▪ Clean Water Act Section 401 certification verifying compliance with the California’s water quality standards for activities requiring a federal permit (i.e., actions resulting in potential discharge into waters of the United States).<br>▪ SWRCB and the Central Coast RWQCB issue waste discharge requirements for discharges of dredged or fill material into waters of the state under the Porter Cologne Water Quality Control Act. |
| Note: This table is not intended to provide an exhaustive list of all permits, approvals, or authorizations that may be required to construct, operate, or maintain potential water supply facilities. Rather, it identifies anticipated resource agency permitting requirements related specifically to environmental resource considerations and compliance with applicable state and federal environmental regulations. The permits identified in this table are based on conceptual-level information. As project design, siting, and operational details are refined, additional permits or approvals may be identified, and the regulatory pathways described may change accordingly. | | |