Groundwater Sustainability Plan

Monterey Subbasin

Marina Coast Water District Groundwater Sustainability Agency
Salinas Valley Basin Groundwater Sustainability Agency

DRAFT Chapter 9

Projects and Management Actions

September 2021

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9 PROJECTS AND MANAGEMENT ACTIONS

This chapter describes the projects and management actions that will allow the Subbasin to attain sustainability in accordance with §354.42 and §354.44 of the California Sustainable Groundwater Management Act (SGMA) regulations.

The term "projects" generally refers to activities that require infrastructure or physical changes to the environment to support groundwater sustainability. The term "groundwater management actions" generally refers to activities that support groundwater sustainability without infrastructure.

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and Marina Coast Water District (MCWD) are developing an Implementation Agreement that is anticipated to be adopted before completion of this Groundwater Sustainability Plan (GSP). The Implementation Agreement will address the responsibilities of each agency and identify coordination mechanisms to facilitate GSP implementation, including the filling of data gaps, monitoring, and implementation of projects and management actions identified in the GSP. It is anticipated that MCWD will lead the planning and implementation of projects within the Marina-Ord Area, and that SVBGSA will lead the planning and implementation of projects in the Corral de Tierra Area. Several projects identified in this chapter will require multi-basin coordination and will be facilitated by MCWD, SVBGSA, and other relevant parties.

9.1 Goals and Objectives of Projects and Management Actions

Per the GSP Emergency Regulations, GSPs must include projects and management actions to address any existing or potential future undesirable results for the identified relevant sustainability indicators. Therefore, the goal of the projects and management actions discussed herein is to address significant and unreasonable results related to the relevant sustainability indicators in each management area. As discussed in Chapter 8, existing and potential future undesirable results in the Subbasin are identified for the (1) chronic lowering of groundwater levels sustainability indicator in the Marina-Ord and Corral de Tierra Management Areas, and (2) seawater intrusion sustainability indicator in the Marina-Ord Area. In addition, the reduction of groundwater storage indicator is directly correlated with groundwater elevations and seawater intrusion.

Earlier chapters of this GSP highlighted the hydraulic connection between the Monterey Subbasin and both the adjacent critically overdrafted 180/400-Foot Aquifer Subbasin and Seaside Basin. Reaching sustainability and achieving measurable objectives within the Monterey Subbasin will be affected by groundwater conditions and management within these adjacent subbasins and the greater Salinas Valley Basin. Therefore, projects, management actions, and implementation actions will need to be coordinated between subbasins to achieve sustainability. Regional coordination projects and multi-subbasin projects are included when they have the potential to directly benefit this Subbasin. Therefore, the Subbasin Groundwater Sustainability Agencies

(GSAs) have developed a SGMA implementation approach that includes regional coordination actions, participating in regional, multi-basin projects, in addition to implementing local projects and management actions.

This GSP is developed as part of an integrated effort to achieve groundwater sustainability in all six subbasins of the Salinas Valley. Therefore, the projects and actions included in this GSP are part of a larger set of integrated projects and actions for the entire Valley.

9.1.1 Process for Developing Projects and Management Actions

Projects and management actions presented in this chapter were developed through reviews of publicly available information, gathering feedback during public meetings, conducting hydrogeologic analysis, consulting with MCWD and SVBGSA staff, coordinating through the MCWD/SVBGSA Subbasin Technical Committee and the SVBGSA Monterey Subbasin Planning Committee, and meeting with each GSA's governing body members.

Developing projects and management actions for this GSP involved building on, revising, and adding to the projects and management actions developed for the entire Valley as part of the 180/400-Foot Aquifer Subbasin GSP and other draft 2022 Salinas Valley Basin GSPs. The initial list of projects in the 180/400-Foot Aquifer Subbasin GSP was developed with stakeholder input, including a brainstorming workshop for stakeholders to propose and discuss their ideas. The list of projects and actions were then narrowed down for inclusion in the 180/400-Foot Aquifer Subbasin GSP based on feasibility, likelihood of stakeholder acceptance, and ability to address groundwater conditions.

Building off the previously identified projects, the GSAs undertook an iterative process at the subbasin level to develop the projects and management actions in this GSP.

Within the Marina-Ord Area, project planning was built on foundational supply planning efforts conducted by MCWD prior to GSP development. A list of local projects for the Marina-Ord Area were developed by consulting with MCWD staff and reviewing prior MCWD feasibility assessments of water supply augmentation and recharge projects. Inclusion of multi-subbasin projects in this GSP was developed through the Subbasin Technical Committee. MCWD and SVBGSA staff assessed multi-subbasin projects included in the 180/400-Foot Aquifer Subbasin GSP and other draft 2022 Salinas Valley Basin GSPs that could potentially provide supply augmentation to the Monterey Subbasin and tailored those projects for this GSP. After the initial list of local and multi-basin projects were developed, the identified projects and management actions were presented during stakeholder workshops, MCWD Board Meetings, and were discussed with stakeholders.

Within the Corral de Tierra Area, an overview of the purpose and types of projects and management actions was presented by SVBGSA to the Subbasin Planning Committee, and initial ideas were solicited. Committee members completed a survey for feedback and further solicitation of ideas. After these ideas were gathered, a list of potential projects and management

actions specific to the management area was presented to the Subbasin Committee and discussed.

Special workshops and meetings were held with the purpose of considering pumping reductions. Potential projects and management actions were also discussed in terms of meeting the Sustainable Management Criteria (SMCs) outlined in Chapter 8.

9.1.2 Conditions and Assumptions

The projects and management actions included in this chapter outline a framework for achieving sustainability, however, many details must be negotiated before any of the projects and management actions can be implemented. Project costs will be additional to the agreed-upon funding to sustain the operational costs of Subbasin GSAs, and funding needed for monitoring and reporting.

The projects and management actions are based on existing infrastructure and assume continued operation of that infrastructure at current capacity. If current infrastructure is operated differently or other projects are implemented within the Valley that effect groundwater conditions, the GSAs will adapt their consideration of projects and management actions accordingly.

Discussions and decisions regarding specific projects will continue throughout GSP implementation and be part of the adaptive management of the Subbasin. Members of the GSAs and stakeholders in the Subbasin should view these projects and management actions as a starting point for more detailed discussions. Where appropriate, details that must be agreed upon are identified for each project or management action.

The specific design for implementing management actions and projects will provide individual landowners and public entities flexibility in how they manage water and how the Subbasin achieves groundwater sustainability. Not all projects and management actions necessarily need to be implemented. The GSAs will work collaboratively as detailed in the Implementation Agreement to determine which projects and management actions to implement in order to attain sustainability in the Monterey Subbasin.

9.2 Overview of Projects and Management Actions

354.44 (a)(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent.

The projects and management actions for this GSP are summarized in Table 9-1 and include these major categories based on the leading agency and focused area:

- **Multi-subbasin Projects** – Projects that provide supply augmentation to the Monterey Subbasin that require infrastructure or rely on a supply source outside the Monterey Subbasin. These projects are generally identified in multiple Salinas Valley Subbasin GSPs and expand upon how the project would be applied in the Monterey Subbasin.
- **Marina-Ord Area Local Projects and Management Actions** – Projects and management actions to be led by MCWD (or Marina-Ord Area agencies) that will primarily benefit the Marina-Ord Area.
- **Corral de Tierra Area Local Projects and Management Actions** – Projects and management actions to be led by SVBGSA that will primarily benefit the Corral de Tierra Area.

This GSP focuses on the projects that have direct benefits to the basin's water supply or groundwater conditions. However, implementation actions that support GSP implementation in other Salinas Valley subbasins that may benefit the Monterey Subbasin and reduce the need for additional subbasin specific projects and management actions are also identified in Section 9.5.

Table 9-1. Summary of Projects and Management Actions

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
Multi-basin Projects					
R1	Winter Release with ASR and Direct Delivery	Direct delivery to Marina Ord	Release flows from reservoirs during the winter when there's less water loss to the stream channels. Divert these flows and any additional Permit 11043 water available for diversion at the SRDF during winter months. Flows released during winter will be treated and then injected into the 180/400-Foot Aquifer Subbasin for CSIP users' extraction during the summer and/or delivered for direct municipal use.	Reduced pumping in the principal aquifers resulting in an in-lieu recharge benefit. Potential direct benefit to Marina Ord/ Monterey Subbasin ranges from **1,600 acre-feet per year (AFY) currently up to 4,500 AFY by 2040** based on existing and projected MCWD winter water demands (6 months).	Multi-subbasin Capital Cost: **$172 million** Unit Cost for 12,900 AFY ASR: **$1,450/ acre-foot (AF)** Unit Cost for 3,600 AFY direct delivery: **$1,100/AF** *(distribution of benefits across subbasins will be determined through a benefits assessment)*
R2	Regional Municipal Supply	Direct delivery to Marina-Ord and Corral de Tierra	Build a regional desalination plant that would treat brackish water extracted from the seawater intrusion barrier and supply drinking water to municipalities in the Monterey Subbasin and other subbasins.	Estimated regional production at **15,000 AFY** that will augment groundwater supplies. Portion of this benefiting the Marina-Ord/Monterey Subbasin has yet to be determined.	Multi-subbasin capital cost: **$385 million** Unit cost for 15,000 AFY production: **$2,900/AF** *(capital and unit costs do not include cost of the extraction barrier itself, which adds another **$1,200/AF**)*
R3	Multi-benefit Stream Channel Improvements	Direct recharge to Corral de Tierra	Prune native vegetation and remove non-native vegetation, manage sediment, and enhance floodplains for recharge. Includes 3 components:	Component 1: Multi-subbasin benefits not quantified Component 2:	Component 1 Multi-subbasin Cost: **$150,000** for annual administration and **$95,000** for occasional certification; **$780,000** for the

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
			1. Stream Maintenance Program 2. Invasive Species Eradication 3. Floodplain Enhancement and Recharge	Multi-subbasin benefit of **2,790 to 20,880 AFY** of increased recharge Component 3: Multi-subbasin benefit of **1,000 AFY** from 10 recharge basins	first year of treatment on 650 acres, and **$455,000** for annual retreatment of all acres Component 2 Multi-subbasin Average Cost: **$16,500,000** Unit Cost: **$60 to $600/AF** Component 3 Multi-subbasin Cost: **$11,160,000** Unit Cost: **$930/AF**
Marina-Ord Area Local Projects and Management Actions					
M1	MCWD Demand Management Measures	Management Action	Provides in-lieu recharge through reducing groundwater demands.	Equivalent to a 2,500 AFY in-lieu recharge benefit at the current population.	$350,000 to $450,000 annually
M2	Stormwater Recharge Management	Direct recharge	Existing policies will facilitate and result in additional stormwater catchment and infiltration over time as redevelopment occurs	Under the existing urban development footprint approximately 550 AFY of stormwater is generated and infiltrated west of Highway 1. Groundwater modeling indicates that stormwater recharge catchment and recharge will increase to 1,100 AFY on average as further projected development occurs which will increase net subbasin infiltration rates by 200 AFY to 500 AFY.	No additional cost to implement

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
M3	Recycled Water Reuse Through Landscape Irrigation and Indirect Potable Reuse	Direct and in-lieu recharge	Direct non-potable irrigation use and/or injection of advanced treated water from Monterey One Water (M1W) and extraction using existing MCWD wells or new production wells.	Approximately 2,200 AFY to 5,500 AFY advance treated recycled water available to MCWD based on current and projected wastewater flows.	Investments have already been made to deliver 600 AFY for landscape irrigation by 2022. Addition 827 AFY for landscape irrigation Capital cost: **$5,600,000** Unit cost for: **$1,600/AF** Approximately 2,400 AFY recharge through IPR: Capital cost: **$65 million** Unit cost for **$3,300/AF** Costs per AF would likely decrease at higher production capacities due to economies of scale.
M4	Monitoring Well(s)	Data Gaps Filling	Installation of 400-Foot Aquifer and Deep Aquifer monitoring wells near the Seaside Subbasin boundary.	Would fill critical data gaps on hydrostratigraphy, seawater intrusion, and groundwater recharge mechanisms for the 400-Foot Aquifer and Deep Aquifers. It would also provide critical information for the design of recycled water reuse through IPR as described in M3.	Approximately $1,100,000 includes cost of collection of soil cores and performance of hydraulic and geochemical analyses and bench scale pilot testing associated with the recycled water reuse through IPR as described in M3.

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
Corral de Tierra Area Local Projects and Management Actions					
C1	Pumping Allocation and Control	Management Action	Proactively determine how extraction should be fairly divided and controlled	Decreased extraction; range of potential benefits	$500,000 for establishment of pumping allocations and controls
C2	Check Dams	Direct recharge	Construct check dams to slow surface water to increase recharge	On average, 150 AFY of streamflow recharged	Capital Cost: **$5,143,000** Unit Cost: **$2,830/AF**
C3	Recharge from Surface Water Diversions	Direct recharge	Build a diversion facility(ies) that would divert water for recharge when streamflow is high	On average, 160 AFY of excess streamflow available for recharge.	Capital Cost: **$5,950,000** Unit Cost: **$3,050/AF**
C4	Wastewater Recycling for Reuse	In-lieu recharge	Upgrade existing wastewater treatment plant and pipelines to expand beneficial reuse through irrigation and recharge	232 AFY	Capital Cost: **$28,635,000** Unit Cost: **$11,750/AF**, with potential additional cost savings
C5	Decentralized Residential In-Lieu Recharge Projects	In-lieu recharge	Small-scale projects initiated by homeowners and business owners, including rooftop rainwater harvesting, rain gardens, and graywater systems	If 75 households install 5000-gallon rain barrels, up to 5.3 AFY rainwater harvested, and 0.97 AFY from graywater systems installed by 75 houses	Cost to GSA (not for homeowner implementation or incentives): $50,000 for 5 workshops on rainwater harvesting and $50,000 for 5 workshops on graywater reuse
C6	Decentralized Stormwater Recharge Projects	Direct recharge	Medium scale bioswales and recharge basins on non-agricultural land	If 1% of the Subbasin is converted from an area of runoff to an area of recharge, 182 AFY	Cost to GSA (not for implementation or incentives): $150,000 - $200,000 to encourage projects through outreach, site assessments, and assistance with planning
C7	Increase Groundwater	Direct delivery	Construct extraction well in the Upper Corral de Tierra Valley and	160 AFY	Capital Cost: **$13,275,000**

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
	Production in the Upper Corral de Tierra Valley for Distribution to Lower Corral de Tierra Valley (Artesian Well)		pipe water down to Lower Corral de Tierra for direct use by water system in lieu of current extraction.		Unit Cost: **$6,550/AF**
Implementation Actions					
I1	Support Implementation of the 180/400-Foot Aquifer Subbasin GSP and Seaside Watermaster Actions	Implementation Action			Not estimated at this time
I2	Deep Aquifers Investigation	Data Gaps Filling	Support completion of study of the Deep Aquifers to enable better management of groundwater and seawater intrusion.	Increased understanding of Deep Aquifers	$1,000,000[1]
I3	Support Restrictions on Additional Wells in the Deep Aquifers	Implementation Action	Collaborate and provide input to Monterey County as it finalizes proposed modifications to the well construction ordinance.	Reduce rates of groundwater elevation decline in the Deep Aquifers and prevent potential seawater intrusion	Not estimated at this time
I4	Adopt 2022/2023 Priority Actions for Deep Aquifers in Absence of New Well Construction	Implementation Action	To be determined (TBD). Priority actions will be developed based on findings reported from the Deep Aquifers study.	Reduce rates of groundwater elevation decline in the Deep Aquifers and prevent potential seawater intrusion	Not estimated at this time

[1] Reflects total multi-basin cost

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
	Ordinance if Conditions Threaten Sustainability in Near Term				
I5	Seawater Intrusion Working Group	Implementation Action	Participate in working group that is pulling together the best available science, data, and understanding of local seawater intrusion causes and potential resolutions.	An agreed-to approach for managing seawater intrusion	$50,000 - $75,000[2] per year
I6	Seawater Intrusion Modeling	Implementation Action	Develop seawater intrusion model for the Monterey Subbasin.	Increased ability to understand impact of potential projects and management actions on seawater intrusion	Not estimated at this time
I7	Incorporate Monterey Subbasin Model into the Salinas Valley Integrated Hydrologic Model (SVIHM)	Implementation Action	Refine construction and calibration of the SVIHM in the Monterey Subbasin using inputs developed for the Monterey Subbasin Model.	Produce an analytical tool that is capable of analyzing benefits and impacts of multi-subbasin projects	Not estimated at this time
I7	Well Registration	Implementation Action	Register all production wells, including domestic wells.	Better informed decisions, more management options	Not estimated at this time
I8	Groundwater Extraction Management System (GEMS)	Data Gaps Filling	Update current GEMS program by collecting groundwater extraction data from wells in areas not	Better informed decisions	Not estimated at this time

[2] Reflects total multi-basin cost.

P/MA #	Name	Project Type / Water Supply	Description	Project Benefits / Quantification of Benefits	Cost
	Expansion and Enhancement		currently covered by GEMS and improving data collection.		
I9	Dry Well Notification System	Implementation Action	Develop a system for well owners to notify the GSA if their wells go dry. Refer those owners to resources to assess and improve their water supplies. Form a working group if concerning patterns emerge.	Support affected well owners with analysis of groundwater elevation decline	Not estimated at this time
I10	Water Quality Partnership	Implementation Action	Form a working group for agencies and organizations to collaborate on addressing water quality concerns.	Improve water quality	Not estimated at this time

9.3 General Provisions

This section summarizes general provisions that are applicable to all proposed projects. These general provisions include certain permitting and regulatory processes and public noticing requirements. This section also identifies the methodology used in the GSP to evaluate project benefits and estimate costs. Further project specific details are included within each project description in Section 9.4.

9.3.1 Permitting and Regulatory Processes

Permitting and regulatory requirements vary for the different projects and management actions depending on whether they are infrastructure projects, recharge projects, or demand reduction management actions.

Projects of a magnitude capable of having a demonstrable impact on groundwater within the Monterey Subbasin will require a California Environmental Quality Act (CEQA) environmental review process. Projects will require either an Environmental Impact Report, Negative Declaration, or a Mitigated Negative Declaration. Additionally, any project that coordinates with federal facilities or agencies may require NEPA documentation.

Projects that utilize alternative sources of water to augment groundwater supply may require new permits or changes to existing surface water rights permits (e.g., Permit 11043) administered by the State Water Resources Control Board or by the Central Coast Regional Board regarding stormwater capture or recharge, recycled water use, and waste discharge.

Projects that are related to operations on the Salinas River will require conforming with California Division of Safety of Dams regulations, flow restrictions, and the County's Habitat Conservation Plan (HCP).

There will be a number of local, county and state permits, right of ways, and easements required depending on pipeline alignments, stream crossings, and project type.

Projects with wells will require a Monterey County Department of Health well construction permit.

Specific currently-identified permitting and regulatory requirement for projects and management actions are described in each project description in Section 9.4. Upon implementation, the regulatory and permitting requirements of the project or management action will be re-examined.

9.3.2 Public Noticing

Public notice requirements vary for the different projects and management actions listed above. Some projects that involve infrastructure improvements may not require specific public noticing (other than that related to CEQA and construction). Certain other management actions that

involve, for example, imposition of fees by Subbasin GSAs, may require public noticing pursuant to Proposition 218 or Proposition 26. In general, projects and management actions being considered for implementation will be discussed during regular Board Meetings which are open to the public. Additional stakeholder outreach efforts will be conducted prior to and during project implementation, as required by law.

9.3.3 Evaluation of Benefits

The primary expected benefit of projects and management actions identified herein relate to water quantity, e.g., AFY. The way in which a project or management action benefits are evaluated/quantified depends on its type. The following are the major types of projects and management actions that are included herein to supplement the Monterey Subbasin's groundwater supplies:

- Direct recharge through recharge basins or injection/dry wells
- In-lieu recharge through direct delivery of non-potable or potable water to replace groundwater pumping
- Demand management
- Reoperation of reservoir releases to achieve greater or more regular surface water flows available for recharge or direct delivery

For those projects that involve direct recharge or delivery, the benefit is quantified directly through measurement of those flows. For projects that involve indirect recharge or supply augmentation through, for example, reoperation of reservoir releases and delivery flexibility, quantification of the benefit will require a comparison of the observed water supply condition (e.g., total delivered water) against a hypothetical condition where the project was not in place. For management actions that involve water demand reduction, the benefit will be evaluated by comparison of the observed water demand condition (e.g., reported pumping by municipal systems) against a hypothetical condition where the management action was not in place. Because it is not possible to determine with certainty what the condition without the project or management action would be like, quantification of the benefits is inherently uncertain.

The goals and objectives of projects and management actions implementation are not necessarily to achieve a certain water budget outcome, but rather to ensure that undesirable results for relevant sustainability indicators are avoided by the end of the SGMA implementation period (i.e., by 2042). For this reason, ultimately the success of the collective implementation of projects and management actions will be determined by whether the SMCs are achieved, which will be monitored through the monitoring networks described in Chapter 7.

9.3.4 Cost assumptions used in developing projects

Assumptions used to develop projects and cost estimates are provided in Appendix 9A. Assumptions and issues for each project need to be carefully reviewed and revised during the pre-design phase of each project. Project designs, and therefore costs, could change considerably as more information is gathered.

The cost estimates included for each project are order of magnitude estimates. These estimates were made with little to no detailed engineering data. The expected accuracy range for such an estimate is within +50 percent or -30 percent. The cost estimates are based on the GSAs' perception of current conditions at the project location. They reflect our professional opinion of costs at this time and are subject to change as project designs mature.

For infrastructure projects capital costs include major infrastructure components, such as pipelines, pump stations, customer connections, turnouts, injection wells, recharge basins, and storage tanks. Capital costs also include 30% contingency for plumbing appurtenances, 15% increase for general conditions, 15% for contractor overhead and profit, and 9.25% for sales tax. Engineering, legal, administrative, and project contingencies was assumed as 30% of the total construction cost and included within the capital cost. Land acquisition at $45,000/acre was also included within capital costs.

Annual operations and maintenance (O&M) fees include the costs to operate and maintain new project infrastructure. O&M costs also include any pumping costs associated with new infrastructure. O&M costs do not include O&M or pumping costs associated with existing infrastructure, such as existing Salinas Valley Reclamation Plant (SVRP) costs, because these are assumed to be part of water purchase costs. Water purchase costs are assumed to include repayment of loans for existing infrastructure; however, these purchase costs will need to be negotiated. The terms of such a negotiation could vary widely.

Capital costs were annualized over 25 years and added with annual O&M costs and water purchase costs to determine an annualized dollar per acre-foot $/AF) cost for each project. The cost per acre-foot is the amortized cost of the project divided by the annual yield. It provides a means to compare projects, however, it is not the cost of irrigation nor the domestic cost of drinking water for households on water systems. More refined cost analyses and future benefit analyses will be completed during GSP implementation.

9.4 Projects Descriptions

The projects and management actions that are planned to reach sustainability were the most reliable, implementable, cost-effective, and acceptable to stakeholders. Descriptions of these project and management actions are included below and are not in order of priority. Generalized costs are also included for planning purposes. Components of these projects and actions may change in future analyses, including facility locations, recharge mechanisms, and other details.

Therefore, each of the projects and management actions described in this GSP should be treated as a generalized project representative of a range of potential project configurations. Projects and management actions are to be implemented consistent with the Implementation Agreement between the GSAs.

Multi-subbasin Projects

9.4.1 Winter Releases from Reservoirs

This project entails modifying reservoir releases for the MCWRA's Conservation Program and Salinas River Diversion Facility (SRDF) diversions to maximize annual diversions at the SRDF. Winter release water will be diverted at the SRDF, treated at a new water treatment plant, and (1) injected through Aquifer Storage and Recovery (ASR) injection wells in the winter and later extracted during peak irrigation season demands for use through the CSIP system and/or (2) delivered directly to municipalities as supply augmentation. The winter release and storage will reduce or eliminate the need for Conservation Program summer releases for CSIP and increase annual carryover in the reservoirs, allowing for more consistent winter releases. However, a benefits assessment will be prepared to assess differing levels of benefits.

Some potential project constraints exist including: clarifying water rights, establishing compliant reservoir operation rules, altering the permit from the Division of Safety of Dams to allow the SRDF diversion structure to operate outside its current window of April-October, and possibly modifying the diversion infrastructure to operating during higher flow events. The SRDF is funded by a Proposition 218 Special Assessment that identified special benefits. This zone of benefit covers the majority of the Monterey Subbasin (see Zone 2C under Section 3.2.2.2). Lands within MCWD have been paying Zones 2, 2A and now 2C assessments since the 1990's. Use of this structure will require additional analysis of rights and technical operations.

ASR in the 180/400-Foot Aquifer Subbasin

Under the ASR component, water released from Nacimiento and San Antonio Reservoirs will be diverted from the Salinas River using the existing SRDF at a maximum flow rate of 36 cubic feet per second (cfs) during winter months. Water will then be pumped to a 23 million gallons per day (MGD) surface water treatment plant where it will be treated during winter months to meet the water quality standards necessary for groundwater injection, and conveyed to new injection wells in the 180/400-Foot Aquifer Subbasin. If operated at full capacity for 6 months such a plant could generate up to 12,900 AFY. The existing SRDF facilities have a maximum diversion flow of 36 cfs, or 16,000 gpm. Based on an injection rate of 1,000 gpm per injection well, 16 new injection wells will be installed. New injection well facilities will include wells completed in both the 180- and 400-Foot Aquifers, back-flush facilities including back wash pumps and percolation basins for water disposal into the vadose zone, electrical and power distribution, and motor control facilities.

Direct Delivery for Municipal Use

In addition to an ASR component, winter releases could be used for direct delivery for municipal supply. Under direct delivery use, this water would act as in-lieu recharge by reducing the need for winter pumping from municipal wells, resulting in less winter groundwater demand. The water not pumped by municipal wells during the winter and left in the aquifers through this in-lieu recharge would aid the Monterey Subbasin and other subbasins in achieving SMCs. As with ASR injection, winter released surface water would need to be treated prior to delivery for municipal uses. However, direct delivery of winter releases would likely be a less expensive option to utilize surface water because no construction or operation of injection or extraction wells would be necessary.

A more expansive version of this direct delivery for municipal use option was described in MCWRA's 2008 filing by its attorneys, Downey Brand, with the SWRCB seeking an extension of the time to put water under Permit 11043 to beneficial use (RMC, 2008). MCWD now owns the vacant parcel on the Armstrong Ranch property within one mile of the SRDF, where a regional surface water treatment plant could be constructed to treat winter release water and any additional Permit 11043 water available for diversion at the SRDF. Treated water would be conveyed through pipelines to the municipal users, e.g., MCWD, Castroville and the City of Salinas. This treatment plant could serve as a joint treatment plant for both ASR and directly delivery operations. Based on existing and projected water demands, approximately 1,600 to 4,500 AFY of MCWD's water demand between January and June could be met through direct delivery.

9.4.1.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- **Groundwater elevation measurable objective** - The project releases more water in dry years than under current reservoir operations. These dry-year releases will add more water to the shared principal aquifers in the Monterey and 180/400-Foot Aquifer Subbasins, and help maintain adequate groundwater elevations during dry years.
- **Groundwater storage measurable objective** - The project releases more water in dry years than under current reservoir operations. These dry-year releases will add more water to the principal aquifers in dry years, increasing the amount of groundwater in storage throughout the greater Salinas Valley Basin. In-lieu recharge and/or injection through ASR wells will directly increase storage in the shared principal aquifers as well.
- **Seawater intrusion measurable objective** – Increasing both groundwater elevations and groundwater storage will help re-establish natural hydraulic gradients and reduce or reverse seawater intrusion.

- **Interconnected surface water measurable objective** - Increasing winter releases from the reservoirs will be adding more surface water in the river during the winter, when environmental flow needs are the greatest. While it may not decrease the annual rate of ISW depletion from groundwater extraction, the additional winter surface water flows will better support environmental surface water users during the periods of the year when they need water.

9.4.1.2 Expected Benefits and Evaluation of Benefits

Groundwater storage benefits are in the process of being estimated for the Monterey Subbasin using the Salinas Valley Integrated Hydrologic Model (SVIHM). Subbasin-specific estimates will be refined during preparation of the Habitat Conservation Plan (HCP). While the HCP is not scoped to estimate groundwater recharge, this project does need to work in accordance with the HCP.

The main groundwater-related benefits for the Monterey Subbasin include:

- Reduced pumping in the principal aquifers including the 180-Foot, 400-Foot, and Deep Aquifers. This reduced pumping will leave more water in the aquifers, thereby reducing the decline of groundwater elevations and storage.

In addition, this project provides regional groundwater improvements for the 180-Foot, 400-Foot, and Deep Aquifers such as:

- Improve the ability to maximize annual diversions at the SRDF. Diversions at the SRDF no longer rely on large summer reservoir releases, of which less than 10% get to the SRDF. Winter releases can be coordinated with environmental releases.
- More water available for CSIP and/or other beneficial users. The consistent diversions under the ASR component provide a more reliable supply to CSIP. Under the direct delivery component, reduced municipal pumping during the winter should benefit CSIP pumping during the summer from the same principal aquifers.
- A reduction in, or reversal of, seawater intrusion. Providing more water for extractors reduces seawater intrusion. The groundwater from natural recharge that occurs in addition to the injection and/or in-lieu recharge may be able to mitigate seawater intrusion by minimizing native groundwater extraction and altering the hydraulic gradients to reverse inland flow of saline waters.

The main groundwater-related expected benefits for the greater Salinas Valley Basin include:

- Increased annual carryover in the reservoirs, allowing for more consistent winter releases. Eliminating most summer reservoir releases will allow more water to be retained in Nacimiento and San Antonio reservoirs. This increased amount of water in the

reservoirs can be used to ensure more consistent annual winter releases during droughts, with higher volume releases as a result of increased storage.

- Reduced summer water supporting invasive species in riparian zones. Eliminating most summer reservoir releases will result in less shallow water supporting invasive species such as arundo or tamarisk.

The intended benefit of this project for the Salinas Valley Basin is reservoir reoperation that allows for more regular, annual releases, including during dry years. Initial simulations are being run to quantify the regular annual releases and their respective groundwater recharge benefits to the Basin as well as the Monterey Subbasin. This simulation reduces summer releases in order to increase carryover in the reservoirs for subsequent regular winter release.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater levels will be measured with a network of wells that is monitored by MCWRA. Land subsidence will be measured using InSAR data provided by the Department of Water Resources. When data gaps are filled, interconnected surface waters will be measured through shallow groundwater wells and river flow.

9.4.1.3 Circumstances for Implementation

If selected, this project will be implemented in coordination with MCWRA and will require agreements between MCWRA and SVBGSA under the ASR component and between MCWRA and the municipal water agencies under the direct delivery component.

This project will likely be subject to new flow restrictions and reservoir operations resulting from the planned HCP. This project will not proceed until the water rights and flow prescriptions from the HCP have been determined.

9.4.1.4 Permitting and Regulatory Process

This project requires close coordination with the MCWRA to modify reservoir releases and SRDF diversions. Permits that might be required for diverting winter reservoir releases at the SRDF include:

State Water Resources Control Board (SWRCB) –A modification to MCWRA's existing water right or re-diversion permit may be necessary. MCWRA's Licenses 7543 and 12624 and Permit 21089, storage water rights, were amended in 2008 to authorize Zone 2C as the authorized place of use, to add Underground Storage, and to add the SRDF as an authorized point of rediversion. However, MCWRA's Permit 11043 is a direct diversion right on the Salinas River. MCWRA could petition the SWRCB to add the SRDF as an additional point of diversion, to designate the entire Zone 2C as the authorized place of use of water, and to authorize underground storage under the permit. Water used under Permit 11043 for diversion at the SRDF could be made subordinate to the

two existing projects described in the permit. However, diversion of water at the SRDF under Permit 11043 if implemented first would enable MCWRA to show the SWRCB that it is putting water under Permit 11043 to beneficial use to avoid revocation of the permit.

Division of Safety of Dams (DOSD) – The existing DOSD permit may need to be modified to allow the SRDF diversion structure to operate outside its current window of April-October.

National Marine Fisheries Service (NMFS) – Projects that potentially affect flows in any surface water under NMFS jurisdiction must get approval from NMFS. NMFS may set conditions that will be included in the State Water Resources Control Board water rights.

California Department of Fish and Wildlife (CDFW) – Any project that diverts water from a river, stream, or lake, or that has the potential to affect fish and wildlife resources, must obtain a Land and Streambed Alteration Agreement from CDFW.

The project will require a CEQA review process. Additionally, any project that coordinates with federal facilities or agencies may require NEPA documentation.

There will be a number of local, county, and state permits, right of ways, and easements required depending on pipeline alignments, stream crossings, and project type, such as:

State Water Resources Control Board (SWRCB) – Construction that disturbs one acre of more of land and that discharges stormwater requires a General Construction Stormwater Permit (Water Quality Order No. 2009-0009-DWQ)

City of Marina – An encroachment permit is required when working within the City of Marina right-of-way or on City of Marina property. This may be needed if pipelines are required in roadways to connect to MCWD's distribution system.

ASR in the 180/400-Foot Aquifer Subbasin

Permits that might be required for the ASR component include:

Environmental Protection Agency (EPA) – All ASR projects must register with the EPA's Underground Injection Control program.

State Water Resources Control Board (SWRCB) – All ASR projects must submit an Underground Storage Supplement as part of the application to receive either a Temporary Permit, a Standard Permit, or a Streamlined Permit from SWRCB.

Regional Water Quality Control Board (RWQCB) – General Waste Discharge Requirements paperwork must be filed with RWQCB to comply with its General Order that governs the injection of water to recharge aquifers.

Monterey County Health Department (MCHD) – Well construction permits must be obtained from MCHD.

Direct Delivery for Municipal Use

Permits that might be required for the direct delivery component include:

State Water Resources Control Board (SWRCB) – A permit to operate a public water system is required from SWRCB's Division of Drinking Water. For existing water systems, such the MCWD public water system, an amendment to the existing permit is required for addition of a new water source.

9.4.1.5 Implementation Schedule

If this project is selected, the annual implementation schedule after initial agency agreements and any permitting or water rights alterations is presented on Figure 9-1.

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5	Annually
Phase I – Agreements, CEQA, Permitting						
Phase II – Treatment Facilities, Pipeline, and/or ASR well Construction						
Phase III – Winter Releases						

Figure 9-1. Implementation Schedule for Winter Releases from Reservoirs

9.4.1.6 Legal Authority

The GSAs has the right to divert and store water once it has to the right to utilize the appropriate water rights. Section 10726.2 (b) of the California Water Code (CWC) provides GSAs the authority to, "Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency" (CWC, 2014). MCWRA is the legal authority for some of this project's facilities, therefore the GSAs will work collaboratively to use existing structures and water rights.

MCWRA operates the dams at Nacimiento and San Antonio pursuant to the terms and conditions of the permits and licenses for the two dams, and the flow prescriptions required by NMFS.

9.4.1.7 Estimated Cost

Costs for the injection and/or direct delivery of winter flows from the SRDF were estimated based upon the assumption that the diversion will take advantage of the existing SRDF facilities at an original calculated rate of 12,900 AFY.

ASR in the 180/400-Foot Aquifer Subbasin

Capital costs are estimated to be $181,134,000 for construction of an ASR injection well field consisting of 16 wells, construction of a 4-mile conveyance pipeline between the SRDF site and the injection well system, and a surface water treatment plant that includes filtration and disinfection. These costs include engineering, overhead, and contingencies. Most of the costs associated with the ASR component are for the construction of the injection wells.

Annual O&M costs are estimated at $5,223,000 for the operation of the surface water treatment plant and the ASR injection well field, including a 20% contingency. Total annualized cost is $19,393,000. Based on the calculated project yield of 12,900 AFY, the unit cost of water for ASR is $1,500/AF. This unit cost does not include additional benefits received from recharge from the Salinas River within the Salinas Valley. This unit cost is not the cost of the project to stakeholders in the Monterey Subbasin as it focuses on delivery of water to CSIP water users within the 180/400 Foot Subbasin. As part of this project, benefits analysis will be undertaken to determine the zones of benefit and assessments.

Direct Delivery for Municipal Use

For cost estimating purposes, it is assumed that approximately 3,600 AFY of the project capacity will be delivered to MCWD to meet winter municipal demands. Unit capital and operating costs of surface water treatment for direct delivery are assumed to be similar to those estimated for the ASR option above. A conveyance pipeline between the SRDF site and the treatment plant, and a conveyance pipeline between the treatment plant and the MCWD water distribution system will be constructed. Should, for example, the City of Salinas and Castroville participate in the project, then cost for the conveyance pipelines needed to serve them would be determined.

Capital plus soft costs for direct delivery at an assumed 3,600 AFY of delivery to MCWD are estimated to be approximately $42,700,000. Annual O&M costs are estimated at $500,000. Based on the assumed delivery to MCWD, the unit cost of water for direct delivery is $1,100/AFY. These costs include engineering, overhead, and contingencies. Depending upon the municipal participants, this Project would directly benefit water users within the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin. As part of this project, benefits analysis will be undertaken to determine the zones of benefit and assessments.

9.4.1.8 Public Noticing

Stakeholder engagement is a critical aspect of developing a successful and implementable project. Key coordinating agencies and stakeholders for this project include the MCWRA, CSIP water users, municipalities receiving water from the project, as well as the public. The MCWD GSA and SVBGSA intends to engage stakeholders early in project development.

Before any project initiates construction, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board and the MCWRA Board in publicly noticed meetings. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project and to approve an agreement with MCWRA on the use of MCWRA's water rights and SRDF, and notify the public if approved via an announcement on the SVBGSA website and mailing lists. The boards will work cooperatively moving forward with this project.

The permitting and implementation of change to releases from the reservoirs will require notification of stakeholders, beneficiaries, water providers, member lands adjacent to the river, and subbasin committee members as well as all permit and regulatory holding agencies such as DWR, CEQA, NOAA, USACE, and others.

9.4.2 Regional Municipal Supply Project

This project is not a stand-alone project but rather a potential supplement to the seawater intrusion extraction barrier project. This project would construct a regional desalination plant to treat the brackish water extracted from the proposed seawater intrusion barrier in the 180/400-Foot Aquifer Subbasin (Priority Project 6 in Chapter 9 of the 180/400-Foot Aquifer GSP). It delivers water for direct potable use to municipal systems in the Monterey Subbasin and other subbasins within Salinas Valley. This project provides in-lieu recharge to the groundwater system through reduced extraction by municipal systems. If the plant produced more water than could be used for direct potable use, excess water could be used for irrigation or reinjected into the 180-Foot or 400-Foot Aquifer. This water will be available year-round.

Further analysis and scoping are needed to determine the exact location of the desalination plant, end uses, and desalination technology. Depending on the desalination plant selected, the source water pipeline would consist of approximately 11 miles of source water pipeline to convey up to 22,000 gpm (32 mgd or 35,500 AFY) of flow to the plant from the seawater intrusion extraction barrier. The pipeline would range from 18" to 36" in diameter. The plant will produce approximately 15,000 AFY of potable water for use. The distribution of that water is yet to be determined. Rough estimates of piping and needed pump stations to provide water to the main municipal areas are included in the cost estimate and will be refined during GSP implementation.

9.4.2.1 Relevant Measurable Objectives

The measurable objectives benefiting from the desalination plant include:

- **Groundwater elevation measurable objective** - By reducing groundwater extraction through in-lieu recharge, there will be more water left in the principal aquifers. This will either raise groundwater elevations or reduce the rate of groundwater elevation decline over time.
- **Groundwater storage measurable objective** - Using desalinated water reduces groundwater extraction, which will either increase groundwater storage or reduce the rate of storage loss.
- **Land subsidence measurable objective** - Increasing both groundwater elevations and groundwater storage will have the benefit of reducing any potential for land subsidence caused by groundwater depletion.
- **Seawater intrusion measurable objective** – Seawater intrusion has advanced a few miles inland in the Monterey Subbasin. Providing water for in-lieu use will reduce the pumping-induced gradient that drives seawater intrusion.

9.4.2.2 Expected Benefits and Evaluation of Benefits

The proposed plant would produce up to 15,000 AFY of desalinated water for the Salinas Valley. A portion of that would go to the Monterey Subbasin. This would reduce groundwater extraction by that amount, increase the Subbasin's groundwater storage (or lessen the decline), and reduce the risk of seawater intrusion. This will benefit all groundwater users in the Subbasin to some degree. If desalinated water is delivered to the City of Marina, the pumping reductions and groundwater elevation benefits would occur in the locations of MCWD's production wells. Specific quantification of the groundwater benefit for the Monterey Subbasin is unable to be determined prior to determining the distribution of available desalinated water.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Benefits to groundwater storage will be monitored using delivery volumes measurements as well as calculations with groundwater elevations measurements. Land subsidence will be measured using InSAR data provided by the Department of Water Resources. Seawater intrusion will be measured using select Representative Monitoring Sites wells. A direct correlation between providing desalinated water to the Subbasin and changes in groundwater levels, subsidence, or seawater intrusion will depend in part on the suite of management actions and projects implemented concurrently in the Subbasin.

9.4.2.3 Circumstances for Implementation

This project is not a stand-alone project, but is a potential supplement to the seawater intrusion extraction barrier project. This project will only be implemented if and when a brackish water extraction barrier is built to control seawater intrusion. A more detailed cost/benefit analysis will be completed before any work begins on this project. Further analysis and comparison of desalination technologies, stakeholder deliberations on the distribution of desalinated water, and identification of project sites still need to be completed. This project will only be implemented if it is cost effective and politically feasible when compared to other projects.

9.4.2.4 Permitting and Regulatory Process

Permits from the following government organizations that may be required for this project include:

- ***Monterey Bay National Marine Sanctuary (MBNMS)*** – All Regional Water Quality Control Board (RWQCB) 404 permits, Section 10 permits, and National Pollutant Discharge Elimination System (NPDES) permits must be reviewed by MBNMS.
- ***United States Fish and Wildlife Service (USFWS)*** – A Migratory Bird Treaty Act Permit (16 U.S. Code § 703-711) may be required from the USFWS. Other federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with Section 7 of the Endangered Species Act. Interagency coordination is also required by the Fish and Wildlife Coordination Act (16 U.S. Code § 661-667e).
- ***National Oceanic & Atmospheric Administration (NOAA)*** – Section 7 of the Endangered Species Act requires other federal agencies to consult with NOAA's National Marine Fisheries Service (NMFS) if threatened or endangered species could be affected by this project. NMFS also monitors compliance with Section 305b of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S. Code § 1855b) which protects essential fish habitats.
- ***United States Army Corps of Engineers (USACE)* –** Under the Rivers and Harbor Act, a Section 10 permit (33 U.S. Code § 403) is required for the construction of any structure in or over any navigable water of the United States. Under the Clean Water Act, a Section 404 permit (33 U.S. Code § 1341) is required to discharge dredge or fill materials into waters of the United States.
- ***State Water Resources Control Board (SWRCB)*** – A permit to operate a public water system is required from SWRCB's Division of Drinking Water. Construction that disturbs one acre or more of land and that discharges stormwater requires a General Construction Stormwater Permit (Water Quality Order No. 2009-0009-DWQ). Certification to discharge dredged or fill material is required by Section 401 of the Clean Water Act and by the Porter-Cologne Water Quality Control Act (California Water Code § 13000 *et seq.*).

Discharge of brine or other pollutants requires a National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the Clean Water Act (33 U.S. Code § 1342).

- ***California Department of Fish and Wildlife (CDFW)*** – Projects that may result in the take of a threatened or endangered species require an Incidental Take Permit (California Endangered Species Act Title 14, § 783.2). A Streambed Alteration Agreement (California Fish and Game Code Section 1602) is required if the project may substantially adversely affect fish and wildlife resources.
- ***California Coastal Commission (CCC)*** – Construction within the Coastal Zone requires a Coastal Development Permit (Public Resources Code 30000 *et seq.*). Under the Coastal Zone Management Act (16 U.S.C. §1456), the CCC will ensure that federal authorized work is consistent with the enforceable policies of California's Coastal Management Program. Consistency between federal and state laws in coastal areas is also required by the Federal Consistency Regulations (15 Code of Federal Regulations, Part 930, Subpart D). The County may have initial jurisdiction to issue any required permit, but that would be appealable to the full Commission.
- ***California Department of Transportation (Caltrans)*** – Work that may obstruct a State highway requires an Encroachment Permit.
- ***California Department of Toxic Substances Control (DTSC)*** – If the project encroaches into the Fort Ord area, there will be hazardous waste management and disposal requirements concerning Soluble Threshold Limit Concentrations and Total Threshold Limit Concentrations (22 California Code of Regulations § 66261.24).
- ***California State Lands Commission (CSLC)*** – A New Land Use Lease is required for the subsurface slant wells located below mean high tide and an Amended Land Use Lease for use of the Monterey One Water outfall and diffuser (California Public Resources Code § 1900).
- ***California Department of Parks and Recreation*** – If the project encroaches into Fort Ord Dunes State Park, an easement, right of entry, and/or lease negotiation is required. Federal agencies involved in this project are required to consult with the Department of Parks and Recreation's State Historic Preservation Officer in accordance with Section 106 of the National Historic Preservation Act (16 U.S. Code § 470).
- ***California Public Utilities Commission (CPUC)*** – A Certificate of Public Convenience and Necessity (California Public Utilities Code § 1001 *et seq.*) is required to show that the project will benefit society.
- ***Various Entities with Jurisdiction on the Former Fort Ord*** – If the project encroaches into the Fort Ord area, it must comply with any applicable land use regulations of the entities with jurisdiction on the former Fort Ord.

- ***Monterey County*** – If the project encroaches onto any county-maintained road, an Encroachment Permit (Monterey County Code Chapter 14.04) is required from the County. Removal of 3 or fewer trees can be handled by a standalone Tree Removal Permit (Monterey County Code Chapter 16.60). Removal of more than 3 trees should be included in a County Use Permit and/or Coastal Development Permit.
- ***Monterey County Health Department*** – If there will be 55 gallons (liquid), 500 pounds (solid), or 200 cubic feet (compressed gas) of hazardous materials on site at any one time, a Hazardous Materials Business Plan and a Hazardous Materials Inventory Statement (California Health and Safety Code Chapter 6.95) must be submitted to the Monterey County Health Department's Environmental Health Bureau. Other required permits include a Well Construction Permit (Monterey County Code Chapter 15.08) and permits to construct and operate a desalination treatment facility (Monterey County Code Chapter 10.72).
- ***Monterey County Department of Planning and Building Services*** – The project will require a Coastal Development Permit, which may be submitted to Monterey County Department of Planning and Building Services. If the project will extend inland beyond the Coastal Zone, a Use Permit (Monterey County Code (MCC) Chapter 21.72 Title 21) is also required. A Grading Permit (MCC Code Chapter 16.08) is required if total disturbance on site equals or exceeds 100 cubic yards. If the project encroaches on the Fort Ord area, an excavation permit is required for disturbances that equal or exceed 10 cubic yards (Monterey County Code Chapter 16.10). An erosion control plan (Monterey County Code Chapter 16.12) is required if there is risk of accelerated (human-induced) erosion that could lead to degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, or increased danger from flooding.
- ***Monterey One Water*** – A Sewer Connection Permit is required to connect to the regional sewer system.
- ***Monterey Bay Air Resources District (MBARD)*** – If the project may release or control air pollutants, an Authority to Construct and Permit to Operate is required (MBARD Rule 200).
- ***Monterey Peninsula Water Management District (MPWMD)*** – An expansion/extension permit is required to expand the current water system (MPWMD Ordinance 96).
- ***CalAm, CalWater, Alco, and other local water agencies*** – The project will require contracts with local water agencies that plan to buy and deliver the desalinated water.
- ***Transportation Agency for Monterey County (TAMC)***– An easement for access to and use of the project site may need to be negotiated with TAMC.

- ***Seaside Groundwater Basin Watermaster*** – A permit may be needed to inject and/or extract groundwater.
- ***Local jurisdictions*** – Permits may also be required by a local jurisdiction depending on location of desalination plant, including but not limited to: land use permits, building permits, public health permits, public works permits, tree removal permits, and encroachment permits.

9.4.2.5 Implementation Schedule

If this project is selected, the implementation schedule is presented on Figure 9-2. This project would take approximately 11 years to implement, assuming the seawater intrusion barrier is already in place.

Task Description	Year: 1	2	3	4	5	6	7	8	9	10	11
Agreements/ROW											
CEQA											
Permitting											
Design											
Bid/Construct											

Figure 9-2. Implementation Schedule for Regional Municipal Supply Project

9.4.2.6 Legal Authority

Pursuant to California Water Code sections 10726.2 (a) and (b), the SVBGSA has the right to acquire and hold real property, appropriate and acquire surface water or groundwater, acquire water rights, and to divert and store water once it has acquired any necessary real property or appropriative water rights. Some right in real property (whether fee title, easement, license, leasehold or other) may be required to implement the project.

9.4.2.7 Estimated Cost

An initial estimate analyzed the cost to treat 15,000 AFY and deliver that desalinated water to municipalities throughout the coastal region of the Salinas Valley Basin, including the Monterey Subbasin. The estimated capital cost for the pipeline from the wells to the desalination plant and desalination plant is $309,387,000. The estimated capital cost for the distribution network ranges from $65,257,000 to $84,315,000 depending on how many communities receive water. Annual operations and maintenance are projected to cost about $13,300,000. If the total cost of the project is annualized over a 25-year term, and if production is 15,000 AFY, the unit cost for the desalination plant and distribution network is approximately $2,900/AF.

It should be noted that this cost does not include cost of constructing and operating the seawater intrusion extraction barrier, which is a precursor to this project. The cost of the seawater intrusion barrier is equivalent to $1,200/AF when divided by this project's estimated capacity at 15,000 AFY.

9.4.2.8 Public Noticing

Before SVBGSA initiates construction on this project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board will notice stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project.

In addition to the public noticing detailed above, all projects will follow the public noticing requirements required by CEQA. In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA.

After approval, SVBGSA will provide annual notification via an announcement on the SVBGSA website and mailing lists.

9.4.3 Multi-benefit Stream Channel Improvements

Over the past half a century, the Salinas River has been impacted by the construction of the San Antonio and Nacimiento Dams and flood control levees intended to move water away from agricultural fields. These have changed natural river geomorphology, resulting in sediment build up and vegetation encroachment on the historically dynamic channels of the River. This alteration of natural floodplains and geomorphology has increased flood risk, decreased direct groundwater recharge, and contributed to increased evapotranspiration through vegetation build-up. Targeted, geomorphically-informed stream maintenance and floodplain enhancement can improve stream function both morphologically and biologically.

This project takes a three-pronged approach to stream channel improvements. First it removes dense vegetation and reduces the height of sediment bars that impede streamflow in designated maintenance channels. Second, the project removes the invasive species *Arundo donax* (arundo) and *Tamarix sp.* (tamarisk) throughout the Salinas River watershed. Third, it enhances the recharge potential of floodplains along the Salians River.

This three-pronged approach increase flows by removing dense native and non-native vegetation, provide vegetation free channel bottom areas for infiltration, stabilize stream banks and earthen levees by reducing downstream velocities, and reduces flood risk. This program's activities also benefit native species throughout the river ecosystem by removing competition from encroached non-native species. Invasive species such as arundo can take up to four times as much water as native riparian species thereby negatively impacting both river flows as well as infiltration in to the subsurface through the streambed (Cal-IPC, 2011). Infiltration through the streambed accounts for a significant portion of the groundwater budget (Cal-IPC, 2011). River maintenance activities enhance groundwater recharge efforts through the streambed by providing additional open channel bed for infiltration, and floodplain enhancement can further recharge potential of high flows. By improving geomorphological function through vegetation and sediment removal activities, the coordinated efforts allow native species to reestablish in areas where invasive species have become dominant.

Surface water flows, and notably flood flows, can be impacted by the density of vegetation and whether the vegetation is comprised of native or non-native species. Native riparian species allow for dynamic action that scours the riverbed and resorts sediment in a manner that encourages natural infiltration and conveyance of flood waters in the broader active flood terraces in the river. This wider use of the floodplain by flood waters slows velocities and distributes flood waters over a broader spatial area of the river channel.

Stream channel vegetation removes water from the river through evapotranspiration (ET). Water loss through ET from invasive species such as arundo can take up between 3.1 and 23.2 AFY per acre, whereas ET from native vegetation can take up to 4 AFY per acre (Melton and Hang, 2021; Cal-IPC, 2011). This illustrates the difference in water consumption between vegetation types and how these water consumptions can have major impacts on water in the river (Cal-IPC, 2011). The Salinas River is characterized by a braided channel in some areas of the floodplain and a confined channel in other areas. Plants can take root in channel locations that adversely impact the flow of water, resulting in either a channelized river or in creating directional velocities that can cause localized damages including levee failure. Poorly functioning sedimentation can also negatively impact water flow in drought and flood conditions, as well as impeded proper infiltration to the subsurface. Geomorphological processes are important to managing a natural riverbed and floodplain to enhance recharge, groundwater levels, and groundwater storage.

This program is not meant to restore the Salinas River to historical conditions, but rather to enhance geomorphological function through targeted maintenance sites for flood risk reduction and floodplain enhancement for increased recharge. The Monterey County Water Resources

Agency (MCWRA) has developed a science-based approach to river management that recognizes the value of critical habitat, environmental resources, cost to landowners, and coordination among stakeholders (MCWRA, 2016). A key feature of this modified management approach is providing protection for critical habitats and water quality (MCWRA, 2016). One of the important functions of a river is to provide habitat for native species. In a poorly functioning river, invasive species have more opportunities to crowd out native species and in turn, further degrade the river conditions. Therefore, this program will result in flood risk reduction, increased recharge, and a multitude of benefits that address critical functions of the Salinas River.

This program includes four main types of tasks: vegetation maintenance, non-native vegetation removal, sediment management, and floodplain enhancement and recharge.

- **Vegetation Maintenance** – Vegetation, both native and non-native, will be removed within designated maintenance areas using a scraper, mower, bulldozer, excavator, truck or similar equipment to remove the vegetation above the ground and finishing by ripping roots to further mobilize the channel bottom. Vegetation maintenance includes pruning up to 25 percent of canopy cover and removing dead mass. Maintenance activities will not include disturbance of emergent wetland vegetation that provides suitable habitat for threatened California red-legged frogs or for the endangered tidewater gobies. In instances where native vegetation needs to be removed for site-specific conditions or tie-ins, these impacts can be compensated with replanting and revegetation in other areas as a form of mitigation offset for stream channel maintenance. Native trees will be planted during the rainy season to enhance their rate of success.
- **Non-Native Vegetation Removal –** Non-native vegetation removal primarily focuses on the arundo present in the region but may include tamarisk shrubs as well. Arundo is a grass that was introduced to the Americas in the 1800s for construction material and for erosion control purposes (Cal-IPC, 2011). In 2011, the California Invasive Plant Council determined that the Salinas Watershed had the second largest invasion with approximately 1500 infested acres. While arundo thrives near water, such as wetlands and rivers, it grows in many habitats and soil types. It requires a substantial amount of water, previously estimated making it one of the thirstier plants in a given region and outpacing the water demands of native vegetation. To manage this invasive species, arundo biomass is typically sprayed, sometimes mowed or hand cut if needed, and then treated with multiple applications of herbicide over several years. Permits allow arundo removal in the entire riparian corridor, including along the low-flow channel.
- **Sediment Management** – Sediment management includes channel bed grading and sediment removal. Sediment grading and removal may occur exclusively, or after vegetation maintenance activities described above. Sediment removal and grading activities help reestablish proper gradients to allow for improved drainage downstream, encourage preferential flow into and through secondary channels, and minimize

resistance to flow (until dunes form) (MCWRA, 2016). Sediment removal will follow best practices to protect native species while producing maximum benefit for flood reduction and groundwater recharge.

- **Floodplain Enhancement and Recharge** – Floodplain enhancement restores areas along the River, creeks, and floodplains to slow and sink high flows and encourage groundwater recharge. Restored floodplain and riparian habitat can slow down the velocity of the River and creeks and encourage greater infiltration. Due to agricultural and urban encroachment, streams have become more highly channelized, and flow has increased in velocity, particularly during storm events. This flow has resulted in greater erosion and loss of functional floodplains. Floodplain restoration efforts could be focused on lands directly adjacent to creeks, so as to not interfere with active farming. In addition, efforts to restore creeks and floodplains could be extended to the foothills to slow water closer to its source.

Program Components

This multi-benefit stream channel improvements program is implemented through various program components. These build off existing programs and permits to undertake the four main types of tasks. During GSP implementation, these components may be modified as needed to most efficiently accomplish the program goals.

Component 1: Stream Maintenance Program

The first component continues the Salinas River Stream Maintenance Program (SMP), which maintains the river corridor to reduce flood risk and minimize bank and levee erosion, while maintaining and improving ecological conditions for fish and wildlife consistent with other priorities for the Salinas River (MCWRA, 2016). It is a coordinated Stream Maintenance Program that includes MCWRA, the Resource Conservation District of Monterey County (RCDMC), and the Salinas River Management Unit Association currently representing approximately 50 landowner members along the river corridor. Project benefits include increased water availability, flood risk reduction, reduced velocities during high flows to lessen bank and levee erosion, and enhanced infiltration by managing vegetation and sediment throughout the river and its tributaries.

The Salinas River Stream Maintenance Program occurs along the area of the Salinas in Monterey County. The 92-miles of the river in Monterey County is broken into seven River Management Units from San Ardo in the south to Highway 1 in the north. The management activities are focused on the secondary channels of the Salinas River located outside of the primary low flow channel and are preferentially aligned with low-lying undeveloped areas that are active during times of higher flow (MCWRA, 2016). The SMP includes three main activities as part of stream maintenance: vegetation maintenance, non-native vegetation removal, and sediment management.

Component 2: Invasive Species Eradication

The second Component supports and/or undertakes removal of arundo and tamarisk done by the Resource Conservation District of Monterey County (RCDMC). RCDMC is the lead agency on an estimated 15 to 20-year effort to fully eradicate arundo from the Salinas River Watershed, working in a complementary manner with the SMP. This project focuses on removal of woody invasive species such as arundo, tamarisk, and tree tobacco (Nicotiana glauca) along the Salinas River, as well as retreatments needed to keep it from coming back. It includes three distinct phases: initial treatment, re-treatment, and ongoing monitoring and maintenance treatments. As of April 2021, estimated arundo under treatment was 850 acres. Original mapped acreage had expanded by 20%, leaving 900 arundo acres remaining to be treated. The initial treatment phase includes mechanical and/or chemical treatment in all areas of the river that have yet to be treated. The re-treatment phase includes re-treatment of the approximately 850 acres that have already had an initial treatment and re-treatment of the remaining 900 acres done in stages, with each area treated over a three-to-five-year period following initial treatment. The final phase is the ongoing monitoring and maintenance treatment phase. This phase requires monitoring for regrowth of the invasive species or new invasive species and chemical treatment every three to five years.

Component 3: Floodplain Enhancement and Recharge

The third component complements the first two by enhancing and restoring floodplains to enable high flows to be slowed and directed toward areas where it can infiltrate into the ground. For this component, SVBGSA will partner with the Integrated Regional Water Management (IRWM) Group, Central Coast Wetlands Group, and other organizations that are already undertaking creek and floodplain restoration efforts and encourage inclusion of features that would enhance recharge.

Restored floodplain and riparian habitat along creeks can slow down the velocity of creeks and encourage greater infiltration. Due to agricultural and urban encroachment, streams have become more highly channelized, and flow has increased in velocity, particularly during storm events. This flow has resulted in greater erosion and loss of functional floodplains.

9.4.3.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- **Groundwater elevation measurable objective -** Removing the invasive species, better managing streams, and directing high flows into restored floodplains will facilitate more water infiltrating and percolating into the subsurface to raise groundwater elevations. This has the effect of adding water to the principal aquifers. Adding water to the principal aquifers will ultimately increase groundwater elevations or decrease their decline.

- **Groundwater storage measurable objective -** Adding water to the principal aquifers will ultimately have the effect of increasing groundwater in storage.
- **Land subsidence measurable objective -** Increasing both groundwater elevations and groundwater storage will have the added benefit of preventing any potential land subsidence. Maintaining and adding water in the subsurface will keep pore spaces saturated with positive pressure and inhibit land surface collapse associated with groundwater depletion.
- **Interconnected surface water measurable objective -** By removing vegetation pathways for evapotranspiration, less interconnected groundwater and less surface water will be depleted, leaving more water available in the river for flows as well as for connection to the principal aquifers.

9.4.3.2 Expected Benefits and Evaluation of Benefits

The groundwater-related expected benefits are increased groundwater elevations in the vicinity of the river channel due to increased infiltration and percolation to the principal aquifers, increased groundwater in storage, decreased depletion of interconnected surface water, and protection against any potential land subsidence due to groundwater extractions. In addition, the project reduces flood risk.

Increased storage of flood waters can increase groundwater elevations in the vicinity of the Salinas River. This typically will be seen as groundwater mounding subparallel to the river corridor. However, as more water infiltrates into the subsurface, more water will flow laterally, thereby expanding the zone of influence from the river outward and raise groundwater elevations laterally. Additionally, water stored underground is not subject to evapotranspiration in the same way water stored above ground is. With annual removal of arundo, evapotranspiration will decrease over time, allowing for more water to remain in the system. Arundo removal is coupled with identified native species removal where native species have encroached in high flow channels where they may not typically grow; however, there is significant uncertainty in the recharge benefits, as arundo and many native species draw both surface and groundwater.

Removal of arundo on 900 acres along the Salinas River will decrease evapotranspiration by 2,790 to 20,880 AFY throughout the Salinas Valley. This will enhance recharge from the Salinas River within its reached in the Monterey Subbasin and leave more water in the River to get down to the Castroville Seawater Intrusion Project, where surface water is used in lieu of groundwater to help address seawater intrusion and declining groundwater elevations. With this reduction of non-productive water consumption, less water may be released from the reservoirs to get the same amount of water downstream, which results in indirect recharge as removal reduces groundwater use by the plants. It also increases the Valley's overall sustainable yield and drought resilience.

Component 3 of this project includes various floodplain enhancement features and restoration activities. Preliminary project scoping includes the development of 10 recharge basins within the greater Salinas Valley Basin, each with a recharge capacity of about 100 AFY. However, greater analysis is needed to determine the exact number, size, and type of features. The combined benefit of the four recharge basins is expected to be 1,000 AFY in increased recharge.

This program will also enhance stream flow by returning patterns of flow to a more natural state. Arundo infestation decreases the natural channel migration and complexity of sandy-bottomed streams by confining the channel to an armored, single stem with faster flowing water, which then becomes susceptible to erosion and incision. A narrowing channel with reduced capacity also heightens flood risk. Removing arundo will allow greater normalization of natural geomorphic processes and sediment transport by de-armoring low-flow channel banks and adjacent floodplain areas to enable channel migration and braiding.

Stream channel improvements will provide many additional ecosystem benefits, including:

Habitat restoration: This project will help restore riparian habitat. Results from four years of plant community monitoring of arundo sites initially treated in 2016 show that diversity and abundance of native plants have increased over this time period and this trend is expected to continue. Field biologists conducting pre-activity surveys have also observed increased wildlife activity post-arundo removal.

Increased connectivity for wildlife: Within the Central Coast region there are several mountain ranges, coastal areas, valley floors, and upland habitats that need to be connected to allow for the wildlife movement necessary for gene flow and healthy populations (Thorne *et al.*, 2002). The Salinas River riparian area is an important linkage for wildlife movement between upland habitat via tributaries. Removal of dense arundo stands will reduce physical impediments to movement for wildlife species such as mountain lion, bobcat, deer, and American badger. RCDMC has documented this through wildlife camera monitoring, which has shown increased detections of large mammals such as deer, bobcat, and coyote after arundo removal. This project will promote habitat use and movement of wildlife by increasing availability of food and nesting resources.

Flood risk reduction: Stream maintenance has the societal benefit of reducing flood risk to neighboring lands, which are mostly agricultural fields. Arundo's dense structure creates increased surface roughness, thus backing up water and causing flooding during high flow events. When agricultural fields are flooded with river water, farmers lose crops and thus considerable income, and must leave their fields fallow for months after flooding due to food safety concerns. Flooding can also damage levees which then have to be repaired and bring weed seeds and propagules (including arundo) into fields which then have to be controlled.

Enhanced Conveyance and Infrastructure Protection: The work conducted in the SMP improves conveyance of storm, flood, and nuisance waters by keeping water in the stream channel and flowing freely rather than being blocked by the invasive species. The SMP protects city

infrastructure by keeping water more in the channel rather than blocked and rerouted by arundo, which reduces the cost of infrastructure repairs to nearby cities.

Project benefits will be measured using the monitoring networks described in Chapter 7. Groundwater levels will be measured with a network of wells that is monitored by MCWRA. Land subsidence will be measured using InSAR data provided by the Department of Water Resources. When data gaps are filled, interconnected surface waters will be measured through shallow groundwater wells and river flow.

The expected benefits to groundwater in the Monterey Subbasin will be defined through further investigation.

9.4.3.3 Circumstances for Implementation

The SMP and invasive species eradication are ongoing projects with MCWRA, the RCDMC, and the Salinas River Management Unit Association. Program administration is provided by the RCDMC and the Salinas River Management Unit Association. Landowners currently pay for all maintenance activities in the maintenance channels and for associated biological monitoring and reporting. SVBGSA could support the program, become an administrative partner in the program with other program partners, or fund maintenance and monitoring activities.

Floodplain enhancement will be implemented if additional water is required to reach sustainability. A number of agreements and rights must be secured before individual projects are implemented. Primarily, a more formal cost/benefit analysis must be completed to determine how many site options are preferable. Water diversion rights may need to be secured to divert stormwater, which may take many years.

9.4.3.4 Permitting and Regulatory Process

For Components 1 and 2, the permitting process has already been initiated by MCWRA and RCDMC and permits are in place until 2025 for the program. Invasive species eradication will be continued under existing permitting. All participants in the SMP must enter into an agreement with MCWRA and comply with all terms, conditions, and requirements of the permits and Program Guidelines.

Component 3 may require a CEQA environmental review process, and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). Additionally, permits from a variety of state and federal agencies may be necessary, and any project that coordinates with federal facilities or agencies may require National Environmental Policy Act (NEPA) documentation.

Permits for all 3 components are detailed below.

Component 1 Permits:

- **U.S. Army Corps of Engineers (USACE) -** The Department of the Army Regional General Permit (RGP) 20 for the Salinas River Stream Maintenance Program, Corps File No. 22309S, was executed on September 28, 2016 by the USACE. The RGP is authorized under Section 404 of the Clean Water Act (33 U.S.C. Section 1344) through November 15, 2021. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) concurred with the USACE determination that the project was not likely to adversely affect the federally endangered San Joaquin kit fox (Vulpes macrotis mutica) and the federally threatened California tiger salamander (Ambystoma californiense), Monterey spineflower (Chorizanthe pungens var. pungens) and its critical habitat, the yellow-billed cuckoo (Coccyzus americanus), and the South-Central Coast (S-CCC) steelhead (Oncorhynchus mykiss). The USFWS issued a Biological Opinion on August 22, 2016 for the federally endangered least Bell's vireo (Vireo bellii pusillus) and tidewater goby (Eucyclogobius newberryi) and its critical habitat and the federally threatened California red-legged frog (Rana draytonii).
- **National Oceanic and Atmospheric Administration (NOAA) –** The RCDMC also has a letter of concurrence in which NOAA supports USACE's decision that the SMP "is not likely to adversely affect species listed as threatened or endangered or critical habitats designated under the Endangered Species Act."
- **State of California Regional Water Quality Control Board -** The Clean Water Act Section 401 Water Quality Certification for Discharge of Dredged and/or Fill Materials, Certification No. 32716WQ02, was approved on August 31, 2016, and is set to expire on November 30, 2025. The Central Coast Water Board staff will assess the implementation and effectiveness of the SMP after five years and consider modifications to this Certification for the second five years of the permit term.
- **California Department of Fish & Wildlife -** The SMP is authorized under a Routine Maintenance Agreement (RMA) 1600-2016-0016-R4, approved October 14, 2016, and held by the RCDMC. The RMA was amended and restated on June 16, 2017 and subsequently amended on April 10, 2018. The RMA covers all impacts under the program from the original date of approval through December 31, 2026.
- **California Natural Resources Agency –** An Environmental Impact Report was completed in compliance with the CEQA.

Component 2 Permits:

- ***California Department of Fish & Wildlife*** – The invasive species eradication is authorized under a Routine Maintenance Agreement (RMA) 1600-2012-0154-R4, approved April 11, 2014 and held by the RCDMC. The RMA was amended on September 30, 2014. It covers all impacts under the program from the original date of approval through April 10, 2026.

- ***Environmental Protection Agency*** – National Pollutant Discharge Elimination System (NPDES) permit CAG990005 allows the Salinas River Arundo Control Program to apply pesticides to waterways.
- In addition, the Salinas River Arundo Control Program filed a CEQA Mitigated Negative Declaration, received a technical assistance letter from NOAA NMFS, completed a U.S. Fish and Wildlife Service No Take Request, and received a technical assistance letter from U.S. Fish and Wildlife Service.

Component 3 Permits that may be required for floodplain enhancement include:

- **United States Army Corps of Engineers (USACE) –** A Regional General Permit may be required if there are impacts to wetlands or connections to waters of the United States.
- **California Department of Fish and Wildlife (CDFW) –** A Standard Agreement is required if the project could impact a species of concern.
- **Environmental Protection Agency (EPA) Region 9 –** National Environmental Policy Act (NEPA) documentation must be submitted for any project that coordinates with federal facilities or agencies. Additional permits may be required if there is an outlet or connection to waters of the United States.
- **National Marine Fisheries Service (NMFS) –** A project may require authorization for incidental take, or another protected resources permit or authorization from NMFS.
- **California Natural Resources Agency –** Projects of a magnitude capable of having a demonstrable impact on the environment will require a CEQA environmental review process. Projects will require either an Environmental Impact Report, Negative Declaration, or a Mitigated Negative Declaration.

9.4.3.5 Implementation Schedule

The components of this program may be implemented on different schedules. The annual implementation schedule for Component 1 is outlined on Figure 9-3. About 40 new acres could be added to the program each year, taking about 10 years to add the remaining acres. Annual maintenance needs to be continued indefinitely. For Component 2, up to 100 of the remaining 900 acres of uncontrolled arundo can begin treatment each year, as shown on Figure 9-4. For Component 3, it is contingent on the first two components, but may be initiated shortly after Component 2. This schedule is shown on Figure 9-5.

Task Description	Dec 1	Mar 31	Sep 1	Nov 30
Phase I – Annual RMU report, Work Plan, and noticing				
Phase II – Pre-maintenance surveys				
Phase III – Maintenance activities				

Figure 9-3. Annual Implementation Schedule for Stream Maintenance

	Year												
Task Description	1	2	3	4	5	6	7	8	9	10	11	12	13
Treat and retreat first 100 acres													
Treat and retreat second 100 acres													
Treat and retreat third 100 acres													
Treat and retreat fourth 100 acres													
Treat and retreat fifth 100 acres													
Treat and retreat sixth 100 acres													
Treat and retreat seventh 100 acres													
Treat and retreat eighth 100 acres													
Treat and retreat ninth 100 acres													

Figure 9-4. Implementation Schedule for Invasive Species Eradication

	Year				
Task Description	1	2	3	4	5
Studies/Preliminary Engineering Analysis					
Agreements/Right of Way (ROW)					
CEQA					
Permitting					
Design					
Bid/Construct					

Figure 9-5. Implementation Schedule for Floodplain Enhancement and Recharge

9.4.3.6 Legal Authority

MCWRA has legal authority over the Component 1 SMP for program administration and permitting. Private landowners and local cities who conduct maintenance in the permitted work areas must agree to permit conditions and execute an agreement annually with each agency. Private landowners and local cities currently pay for all maintenance activities including heavy equipment work and biological monitoring and reporting.

For Component 2 invasive species removal, the RCDMC has legal authority for program administration and permitting. The RCDMC obtains Landowner Access Agreements with property owners or managers (tenants) to allow them to do the work or to allow the RCDMC to oversee landowner-conducted work.

For floodplain restoration activities, the SVBGSA has the right to divert and store water once it has access to the appropriate water rights. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, "Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency" (CWC, 2014).

9.4.3.7 Estimated Cost

Component 1 program permits have been completed and are operational through 2026. Renewal of the 401 Certification with the Central Coast Regional Water Control Board will include a cost of $95,000 in the timeframe of 2024 to 2026. The annual administrative cost of Component 1 of this program is approximately $150,000. This cost does not include stream maintenance activities, required biological monitoring, and reporting, which are currently paid by program participants. These costs vary from year to year based on number of participants and work site conditions. This program could cover the costs of stream maintenance activities, biological monitoring, and/or reporting in order to reach higher participation rates from landowners and therefore increased project benefit. The cost for the vegetation management is approximately $1,200/acre for the first year and $700/acre for annual maintenance thereafter. This does not include the cost of sediment management, which can be costly. The cost estimate for stream maintenance activities, required biological monitoring, and reporting is included in Appendix 9A, which may continue to be paid by participants, be funded by the GSA, or be funded through a different source. The table shows the cost estimates for the primary subbasins where the Salinas River flows. The presence of two reaches of Salinas River in the Monterey Subbasin may adjust this table with further analysis.

Table 9-2. Cost Estimate of Vegetation Management

	Acres	First year of vegetation management ($1,200/acre)	Subsequent years of vegetation management ($700/acre)
Already treated	254	-	$177,800
Upper Valley	250	$300,000	$175,000
Forebay	263	$315,600	$184,100
180/400-Foot Aquifer and Monterey Subbasins	137	$164,400	$95,900
Subtotal		**$780,000**	**$632,800**

For Component 2, the estimated capital cost is estimated at between $14,536,943 and $18,871,239. Annual O&M costs are anticipated to be approximately $165,200. The indirect projected yield for the invasive species eradication project is estimated at between 3.1 AFY and 23.2 AFY per acre of invasive species removed. With the range of costs and range of project benefits, the amortized cost of water for this project is estimated to range between $60/AF and $740/AF. See Appendix 9A for cost estimate.

Component 3 includes the construction of 10 recharge basins near the Salinas River in the greater Salinas Valley Basin, each with an expected benefit of 100 AFY and a capital cost of $1,116,000 each, for a total of $4,464,000. Spread over 25 years and assuming a 6% discount rate, the annualized cost is $83,300 per recharge basin, including annual maintenance. The unit cost is $930/AF. These costs were estimated assuming that only one recharge basin would be built, but there may be economies of scale that lower the cost if more are built. These costs are approximate; exact costs will depend on site specifics.

9.4.3.8 Public Noticing

Component 1 implementation and permitting requires annual notification of potential program participants and this notification is announced via direct mail to program participants as well as announced on MCWRA website. Program related annual reporting as required and is published on the MCWRA website.

Component 2 public noticing practices and requirements of the existing RCDMC invasive species eradication programs will be continued as part of this project. This includes reaching out to specific landowners and tenants in areas of potential work and completing annual permit reports that are posted to the RCDMC website.

Component 3 public noticing will be conducted prior to any project initiates construction to ensure that all groundwater users and other stakeholders have ample opportunity to comment

on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
  - A description of the undesirable result(s) that may occur if action is not taken
  - A description of the proposed project
  - An estimated cost and schedule for the proposed project
  - Any alternatives to the proposed project
- The SVBGSA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project, and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

In addition to the process detailed above, all projects will follow the public noticing requirements per CEQA or NEPA.

Marina-Ord Area Local Projects & Management Actions

9.4.4 Stormwater Recharge Management

The Cities of Marina and Seaside, the two major municipalities within the Marina-Ord Area, have policies that will facilitate additional stormwater catchment and infiltration beyond existing efforts as development and redevelopment occurs.

The City of Marina has historically relied on on-site infiltration as a means of stormwater management and continues to implement policies for on-site infiltration. The City of Marina storm drain design standards specify retention of stormwater runoff from new development or redevelopment sites and require that no runoff from a project site to flow to public streets.

The portion of the City of Seaside within the Monterey Subbasin similarly relies on on-site infiltration of stormwater. Although the City of Seaside historically had not required on-site infiltration of stormwater, the city manages stormwater runoff in accordance with its National Pollutant Discharge Elimination System (NPDES) permit, which is through requirement of Best Management Practices that encourages on-site infiltration or other methods of reducing stormwater runoff. Furthermore, the City of Seaside's recent General Plan update includes policies to promote groundwater recharge by implementing stormwater infiltration.

As discussed in Section 3.5.1.4, redevelopment at the former Fort Ord was governed by the Fort Ord Base Reuse Plan, which was later incorporated into each individual jurisdictional area's land

use plans. The 1997 Fort Ord Base Reuse Plan called for eliminating all ocean stormwater discharges and infiltrating all storm water runoff east of Highway 1. Pursuant to this Plan, in 2002 the storm water outfall pipes that historically extended into Monterey Bay were removed and several percolation basins were constructed west of Highway 1. The percolation basins were considered temporary with the long-term objective to percolate all storm water on the east side of Highway 1 as part of the redevelopment of the former Fort Ord. The Fort Ord Storm Water Master Plan (Creegan + D'Angelo, 2005) was prepared to provide guidelines for meeting the obligation for on-site infiltration. The current and planned urbanized areas within the Marina-Ord Area overlies well-drained, highly permeable dune sands. Infiltration basins or subsurface infiltration systems are effective stormwater disposal methods. It is anticipated that as future development and redevelopment within the Marina-Ord Area occurs, additional stormwater from urbanized areas and construction sites will be captured and infiltrated, providing recharge to the groundwater basin.

9.4.4.1 Relevant Measurable Objectives

The measurable objective benefiting from demand management measures includes:

- **Groundwater elevation measurable objective** – Promoting and requiring stormwater infiltration will percolate more water into the subsurface, which will raise groundwater elevations and add water to the principal aquifer(s).
- **Groundwater storage measurable objective** – Adding water to the groundwater system will ultimately have the effect of increasing groundwater in storage.
- **Seawater intrusion measurable objective** – Increasing groundwater storage and groundwater elevations will support the creation of seaward hydraulic gradients that push back against the intruding seawater.

9.4.4.2 Expected Benefits and Evaluation of Benefits

Managed stormwater recharge is expected to increase sustainable yield and groundwater elevations. Runoff occurs when the rate of rainfall exceeds the soil infiltration rate. This project captures and infiltrates this runoff, which would otherwise flow to the ocean, and facilitates recharge to principal aquifer(s). Based on land use, stormwater catchment area, and precipitation data gathered for the Monterey Subbasin Groundwater Flow Model (MBGWFM), it estimated that approximately 540 AFY of stormwater runoff is generated within the current urbanized areas in the Marina-Ord Area. A significant portion of this volume is infiltrated via existing stormwater catchment facilities. The MBGWFM indicates the amount of runoff capture and re-infiltration will increase to approximately 1100 AFY over time as future development occurs under the existing

guidelines. The MBGWFM indicates that net infiltration rates[3] within the subbasin will increase by approximately 200 AFY to 500 AFY as a result of stormwater catchment and re-infiltration within the subbasin.

Benefits of stormwater recharge on attaining applicable measurable objectives will be measured using the monitoring networks described in Chapter 7.

9.4.4.3 Circumstances for implementation

Stormwater management policies implemented by the Cities of Marina and Seaside are ongoing. No additional circumstances for implementation are necessary.

9.4.4.4 Public Noticing

No additional public noticing is required.

9.4.4.5 Permitting and Regulatory Process

The Cities of Marina and Seaside comply with the Central Coast Regional Water Quality Control Board's Regional Municipal Stormwater Permit (i.e., Phase II NPDES Permit for Small MS4 systems). Both cities are member entities of the Monterey Regional Stormwater Management Program (MRSWMP). The regional program was developed to respond to SWRCB's implementation of the Phase II NPDES Stormwater Program. The purpose of the Phase II NPDES Stormwater Program is to implement and enforce Best Management Practices (BMPs) to reduce the discharge of pollutants from municipal separate storm sewer systems. The municipalities are responsible for conducting their stormwater management program in accordance with the terms of the regional program.

No additional permitting or regulatory process is required of this action.

9.4.4.6 Legal Authority

This action is implemented by local municipalities. Chapter 8.46 of the City of Marina's municipal code and Chapter 8.46 of the City of Seaside's municipal code respectively provides these municipalities the legal authority to manage stormwater discharge within their jurisdictional limits.

[3] Net infiltration is the difference between infiltration that occurs as a result of urban catchment and re-infiltration and naturally occurring infiltration under non-urban conditions

9.4.4.7 Implementation Schedule

Implementation of stormwater recharge management is ongoing and will be carried throughout GSP implementation.

9.4.4.8 Estimated Cost

There are no additional costs to implement this project.

9.4.5 MCWD Demand Management Measures

In the past two decades, MCWD has made significant strides in reducing its per capita potable water demand above and beyond targets delineated by the Water Conservation Act. Conservation reductions have come primarily from water conservation retrofits as well as from behavioral changes driven by increasing water rates, drought awareness, and public education programs. During the twenty-year period of 1999 through 2020, per capita water demand within the MCWD service area decreased from 144 gallons per capita per day (GPCD) to 80 GPCD, a decrease of approximately 44% (Schaaf & Wheeler, 2021). At the current population of 30,480 served by MCWD, this decrease in per capita water use provides an approximately 2,500 AFY of in-lieu recharge benefits[4].

Following the 2014-2016 drought, the State of California developed the "Making Water Conservation a California Way of Life" framework to address the long-term water use efficiency requirements called for in executive orders issued by Governor Brown. In May of 2018, Assembly Bill (AB) 1668 and Senate Bill (SB) 606 went into effect, which built upon the executive orders implementing new urban water use objectives for urban retail water suppliers.

SB 606 and AB 1668 establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards, which must be in place by 2022. The bills call for creation of new urban efficiency standards for indoor use, outdoor use, and water loss, as well as any appropriate variances for unique local conditions. These water use standards will be adopted by the State Water Resources Control Board (SWRCB) by regulation no later than June 30, 2022. Using the adopted standards, each urban retail water agency will annually, beginning January 1, 2024, calculate its own objective.

MCWD plans to continue to implement conservation efforts within its service area to meet and exceed new legislative requirements as part of the "Making Water Conservation a California Way of Life" framework. Potable water demand reductions will be achieved through the following strategies.

[4] Without these decreases in per capita water use, water demand for MCWD's current population at 30,480 would be approximately 2,500 AFY higher than it's current water demand. This reduced demand on groundwater extraction by MCWD creates an in-lieu recharge benefit to the Monterey Subbasin.

- MCWD has adopted design standards and guidelines for new construction that exceed the State's plumbing code requirements for water conserving features, codified in Section 3.36 of the District Ordinances.
- MCWD will implement of demand management measures discussed in Section 7 of its 2020 UWMP.
- Phased redevelopment of the Ord Community will include the replacement of a significant amount of water distribution system that is over 50-years old. These replacements should reduce system water losses.

In addition, MCWD plans on using recycled water to offset non-potable uses or augment groundwater production (see Project M3: Recycled Water Reuse Through Landscape Irrigation and Indirect Potable Reuse in Section 9.4.6).

9.4.5.1 Relevant Measurable Objectives

The measurable objective benefiting from demand management measures includes:

- **Groundwater elevation measurable objective –** demand management measures will result in less demand on groundwater pumping and higher groundwater levels, particularly near the location of production wells.
- **Groundwater storage measurable objective –** Reducing pumping from the principal aquifers will ultimately have the effect of increasing groundwater in storage.
- **Seawater intrusion measurable objective –** Seawater intrusion has advanced a few miles inland in Monterey Subbasin. Increasing groundwater storage and groundwater elevation will support the natural hydraulic gradient that pushes back against the intruding seawater.

9.4.5.2 Expected Benefits and Evaluation of Benefits

Continued implementation and expansion of demand management efforts will reduce demand on groundwater resources from the Monterey Subbasin and provide in-lieu recharge to the Subbasin. As described above, the decrease in per capita water use historically provided up to 2,500 AFY of in-lieu recharge benefits. As the population expands, these in-lieu recharge benefits will increase.

Pursuant to Section 7.3 of MCWD's 2020 UWMP:

> *The District will continue to track per capita demand rates to assess overall savings, in addition to comparing water consumption of new residential development against older households and households which have been retrofitted with conservation devices. The District will continually reassess rebate programs to address saturation rates and emerging technologies.*

9.4.5.3 Circumstances for implementation

Implementation of demand management measures is ongoing. No additional circumstances for implementation are necessary.

9.4.5.4 Public Noticing

MCWD's UWMP is updated every five years and documents historical and planned implementation of demand management measures. The plan is adopted by MCWD following a public hearing and is publicly available.

Beginning January 1, 2024, MCWD is anticipated to calculate its urban water use objectives pursuant to SB 606 and AB 1668 and report its water use according to the water use objectives.

9.4.5.5 Permitting and Regulatory Process

As detailed above, MCWD is implementing demand management measures to meet and/or exceed the following legislative requirements:

- **Water Conservation Act -** With the adoption of the Water Conservation Act of 2009, also known as SB x7-7, the state is required to reduce urban water use by 20% by the year 2020. Each urban retail water supplier was required to develop a baseline daily per capita water use ("baseline water use") in their 2010 Urban Water Management Plan (UWMP) and establish per capita water use targets for 2015 and 2020 to help the state achieve the 20% reduction. Per the 2020 UWMP, MCWD's 2020 per capital water demand (or 80 GPCD) was approximately 32% lower than its per capita water use target for 2020 (117 GPCD).
- **SB 606 and AB 1668 water use objectives -** Following the 2014-2016 drought, the State of California developed the "Making Water Conservation a California Way of Life" framework to address the long-term water use efficiency requirements called for in executive orders issued by Governor Brown. In May of 2018, AB 1668 and SB 606 went into effect, which built upon the executive orders implementing new urban water use objectives for urban retail water suppliers.

  SB 606 and AB 1668 establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards, which must be in place by 2022. The bills call for creation of new urban efficiency standards for indoor use, outdoor use, and water loss, as well as any appropriate variances for unique local conditions. These water use standards will be adopted by the State Water Resources Control Board (SWRCB) by regulation no later than June 30, 2022. Using the adopted standards, each urban retail water agency will annually, beginning January 1, 2024, calculate its own objective.

- **California plumbing code and design standards -** As discussed above, MCWD has adopted design standards and guidelines for new construction that exceed the State's requirements, including the California Green (CALGreen) Building Code Standards and Model Water Efficient Landscape Ordinance (MWELO).

  CALGreen requires installation of water-efficient fixtures and equipment in new buildings and retrofits. CalGreen includes prescriptive indoor provisions for maximum water consumption of plumbing fixtures and fittings in new and renovated properties. It also allows for an optional performance path to compliance, which requires an overall aggregate 20% reduction in indoor water use from a calculated baseline using a set of worksheets provided with the CalGreen guidelines.

  The MWELO establishes a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects. It promotes low-water use landscaping through more efficient irrigation systems, greywater usage, onsite storm water capture, and limiting the portion of landscapes that can be covered in turf.

9.4.5.6 Legal Authority

This action is implemented pursuant to MCWD's authority as a public water system. Plumbing standards are adopted in Section 7 of the Marina Coast Water District Code.

9.4.5.7 Implementation Schedule

Implementation of demand management measures is ongoing and will be carried throughout GSP implementation.

9.4.5.8 Estimated Cost

MCWD has increased its conservation program budget in recent years, from a total expense of $336,553 in fiscal year 2018-19 to an estimated budget of $438,000 for fiscal year 2021-22[5]. The major change in conservation program budget over the past five years reflects increases in MCWD's educational outreach efforts and resultant demand for rebates and retrofits. It is anticipated that MCWD will maintain its current level of conservation spending.

9.4.6 Recycled Water Reuse Through Landscape Irrigation and Indirect Potable Reuse

The project consists of recycled water reuse through landscape irrigation and/or indirect potable reuse (IPR) within MCWD's service area. As described below, the source water for both of these

[5] MCWD, 2020. Budget Summary of the FY 2020–2021 Draft Budget Memorandum, dated 15 June 2020.

options is recycled water from the Monterey One Water (M1W) Regional Treatment Plant (RTP), which would undergo advanced treatment to meet criteria under Title 22 of the California Code Regulations (CCR) for subsurface applications of recycled water. Advanced treated recycled water is non-potable. Reuse of this water through IPR involves injection into a groundwater aquifer and recovery through an appropriately permitted Groundwater Replenishment Reuse Project (GRRP), which provides seasonal storage and generates potable water that can meet a larger portion of MCWD's water demand beyond irrigation and non-potable needs.

Recycled Water Generation, Collection and Treatment

MCWD operates two wastewater collection systems serving the City of Marina and the Ord Community (i.e., communities within the former Fort Ord). Wastewater is conveyed to the Monterey One Water (M1W) Regional Treatment Plant (RTP) north of Marina. The RTP treats wastewater collected from multiple communities in Monterey County, from Pacific Grove to Moss Landing along the coast and inland to the City of Salinas. In 2020, municipal wastewater flows to the RTP were 19,000 AF, with MCWD contributing 2,170 AF, or 11%. Wastewater is treated to secondary treatment standards at the RTP facilities. That water not designated for further treatment and recycling is discharged via an ocean outfall. Water designated for further treatment is conveyed to either the Salinas Valley Reclamation Plant (SVRP) or the Advanced Water Purification Facility (AWPF), as discussed below.

The SVRP is capable of producing an average of 33,000 AFY of tertiary-treated recycled water. It currently produces about 14,000 AFY of tertiary-treated recycled water meeting the standards of unrestricted reuse under Title 22 of the California Code of Regulations. The majority of the recycled water is delivered to the Castroville Seawater Intrusion Project (CSIP), irrigating farmland in the greater Castroville area and reducing demands on Salinas Valley groundwater. As agricultural demands are seasonal, this capacity cannot be fully utilized year-round.

In 2020, M1W completed Phase I of the AWPF that has the capacity to produce 4,300 AFY of advanced treated water. Of this water produced, 3,700 AFY is conveyed to Seaside Subbasin for IPR use as part of M1W's Pure Water Monterey project, and 600 AFY is available to MCWD. Based on current plans, the AWPF will be expanded further to produce an additional 2,250 AFY of purified water for M1W and 827 AFY for MCWD[6].

In 1989, MCWD entered into an annexation agreement with Monterey Regional Water Pollution Control Agency (MRWPCA; now M1W) for wastewater treatment. This agreement established MCWD's first right to receive tertiary treated wastewater from the SVRP. MCWD has the right to obtain treated wastewater from M1W's RTP equal in volume to that of the volume of MCWD

[6] MCWD has the right to utilize up to and including a net 1,427 AFY of the AWPF treatment capacity to serve the Ord Community to implement the recycled water portion of the Regional Urban Water Augmentation Program (RUWAP). The wastewater stream for the MCWD portion of the project is MCWD's own municipal wastewater, which was originally slated for tertiary treatment, in addition to a 650 AFY contribution to RUWAP by MCWRA through M1W during May through August.

wastewater treated by M1W and additional quantities not otherwise committed to other uses. MCWD's sewer flows will increase over time as MCWD's water demand increases and could be used as source water for a MCWD expansion of the AWPF. Based on MCWD's projected 2040 water demand of 9,574 AFY, it is anticipated that 6,130 AFY of sewer flows will be generated within MCWD's service area. Such wastewater flows could provide 5,500 AFY of net advanced treated water from MCWD[7].

Landscape Irrigation

On April 8, 2016, MCWD and M1W entered into the Pure Water Delivery and Supply Project Agreement, as amended by the 2017 First Amendment, wherein the Product Water Conveyance Facilities were designed, constructed, owned, and operated by MCWD with a capacity sufficient to convey a minimum of 5,127 AFY of advanced treated water, including the 3,700 AFY capacity for M1W and a total of 1,427 AFY capacity for MCWD. The Product Water Conveyance Facilities include a regional advanced treated water transmission line through Marina, the Ord Community, and into the City of Seaside and allow delivery of advanced treated water from the AWPF for landscape irrigation within these communities and IPR in the Seaside Subbasin.

The regional transmission line was completed in 2019 and placed in operation in 2020 as part of the Pure Water Monterey Project. With completion of the Phase I AWPF and the transmission line, MCWD is currently constructing a recycled water distribution system to allow delivery of its 600 AFY of advanced treated water for landscape irrigation by 2022 (RBF, 2003). This distribution system could increase deliveries for landscape irrigation to as much as 1,427 AFY or more in the future through expansion of the AWPF. MCWD's right to purchase recycled water has a contractual upper limit in the summer months, so providing 1,427 AFY of recycled water supply requires the commitment of summertime flows from M1W and MCWRA. The recycled water distribution system currently under construction and the regional transmission line are shown on Figure 9-7.

Landscape irrigation use of recycled water reduces groundwater demand and thus functions as an in-lieu groundwater recharge project.

IPR in Monterey Subbasin

MCWD conducted a joint, regional three-party study with FORA and M1W for water supply planning for redevelopment of the former Fort Ord (2020 Water Supply Augmentation Study) (EKI, 2020). The 2020 Water Supply Augmentation Study conceptualized various groundwater augmentation and direct supply options for screening and systematic evaluation. The

[7] During 2020, MCWD generated approximately 2,170 AF of wastewater, which represents approximately 64% of MCWD's total water production of 3,367 AF in 2020. Assuming a similar wastewater flow to water production ratio, MCWD's projected water demand of 9,574 AFY by 2040 would generate approximately 6,130 AFY of wastewater. A total of 6,650 gross sewer flow is available from MCWD for treatment at the AWPF with the additional 650 AFY of gross wastewater flow contributed by MCWRA and M1W.

recommended option under the Study was IPR through expansion of the AWPF, injection of advanced treated water into 180/400 Foot Aquifers and/or the Deep Aquifers, and extraction with new and existing MCWD production wells (EKI, 2020).

Advanced treated recycled water is non-potable unless it is injected into a groundwater aquifer and recovered as part of an appropriately permitted Groundwater Replenishment Reuse Project (GRRP). A GRRP provides seasonal storage capacity and generates potable water that can meet a larger portion of MCWD's water demand beyond irrigation and non-potable needs.

As described above, MCWD's sewer flows will increase over time as MCWD's water demand increases and could be used as source water for a MCWD expansion of the AWPF. As described above, based upon projected water demands and sewer flows, approximately 5,500 AFY of net advanced treated water could be generated for IPR by MCWD (minus that used directly for landscape irrigation) by 2040. The majority of this water is more likely to be available during winter months when CSIP is not operational and therefore is more compatible with IPR than landscape irrigation.

The recommended water supply alternative in the 2020 Water Supply Augmentation Study identified three options for IPR injection/extraction of the advanced treated water. These options include:

- Injection into and extraction from the 180/400-Foot Aquifers near existing MCWD 180/400-Foot Aquifer production wells;
- Combined injection/extraction from both 180/400-Foot Aquifer and Deep Aquifer; and
- Injection into and extraction from the Deep Aquifer, near existing MCWD Deep Aquifer wells

The current operation frequency of MCWD's production wells generally ranges from 10% to 40%. These operation frequencies are low and, barring other constraints (e.g., concerns regarding seawater intrusion), could likely be increased to an operational frequency of up to 70% to capture injected water. Additional production wells might need to be constructed to provide additional extraction capacity, depending on the volume and rate of injection. The 2020 Water Supply Augmentation Study evaluated two potential production capacities for the IPR project including 973 AFY and 2,400 AFY. The project could be readily expanded to facilitate injection of additional advanced treated water as it becomes available.

9.4.6.1 Relevant Measurable Objectives

The measurable objective benefiting from recycled water use through landscape irrigation or a IPR project includes:

- **Groundwater elevation measurable objective** – The project provides either in-lieu groundwater recharge by eliminating irrigation demand and direct recharge through IPR. This has the effect of adding water to the principal aquifer(s). Adding water to the

principal aquifer will ultimately increase groundwater elevations or decrease their decline.

- **Groundwater storage measurable objective** – Adding water to the groundwater system will ultimately have the effect of increasing groundwater in storage.
- **Seawater intrusion measurable objective** – Increasing groundwater storage and groundwater elevations will support the natural hydraulic gradient that pushes back against the intruding seawater. The option of injection/extraction into the 180/400-Foot Aquifer may provide additional benefits of creating a barrier near MCWD's existing production wells against seawater intrusion.

9.4.6.2 Expected benefits and evaluation of benefits

The primary benefit from recycled water use is to provide an alternative water supply to address the current overdraft in the Subbasin and supply future redevelopment of the former Fort Ord. Using recycled water for landscape irrigation reduces groundwater demand, which provides an in-lieu recharge benefit and is expected to increase groundwater elevations near groundwater productions. IPR application directly recharges the groundwater aquifers, thereby increasing the basin's sustainable yield and groundwater elevations. Based on current and projected wastewater flows, approximately 2,200 AFY to 5,500 AFY advanced treated water may be available to MCWD for landscape irrigation and/or IPR.

The option of injection/extraction into the 180/400-Foot Aquifer may provide additional benefits of protecting MCWD's existing production wells from seawater intrusion and contaminant migration from the former Fort Ord. However, siting of this location is constrained by Fort Ord's Groundwater Protection Zone. Additional modeling and long-term monitoring are required to assess impacts on contaminants migration and seawater intrusion.

Project deliveries will be quantified directly through volumetric measurements of delivered or injected advanced treated water. Benefits towards attaining applicable measurable objectives will be measured using the monitoring networks described in Chapter 7.

9.4.6.3 Circumstances for implementation

As discussed above, MCWD is currently constructing its recycled water distribution system to allow delivery of 600 AFY of recycled water for landscape irrigation by 2023. No additional circumstances for implementation are necessary.

Project planning for AWPF expansion with additional irrigation or IPR use is current ongoing. Permitting, design, and construction efforts will be initiated as soon as funds become available.

9.4.6.4 Public Noticing

Stakeholder engagement is a critical aspect of developing a successful and implementable project. Key stakeholders include the U.S. Army, local governments and adjacent municipalities, as well as the public. MCWD intends to engage stakeholders early in project development.

Before any project initiates construction, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built.

In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA.

9.4.6.5 Permitting and Regulatory Process

Landscape Irrigation

The regulatory requirements for recycled water use for landscape irrigation are defined in California Code of Regulations, Title 22, Article 3. M1W and MCWD have existing permits with the RWQCB to produce, transmit, and distribute advanced treated water for landscape irrigation.

Production of disinfected, advanced treated recycled water at M1W facilities is regulated under Waste Discharge Requirements (WDR) permit Order No. R3-2017-0003. Transmission and distribution of advanced treated water from the M1W AWPF is regulated under Order No. WQ 2016-0068-DDW (General Permit). The General Permit allows MCWD's distribution of advance treated recycled water for non-residential irrigation use in accordance with its Title 22 Engineering Report approved by the SWRCB in April 2020. The report detailed specific uses and the use area requirements for the advanced treated recycled water produced by M1W. The General Permit will need to be modified if significant changes are made to the transmission, distribution, storage, or use, and/or the volume or character of the recycled water applied within MCWD's service area.

IPR in Monterey Subbasin

Major permitting processes required for an Advanced Water Treatment Plant (AWTP) expansion and IPR use includes CEQA, SWRCB permitting, and RWQCB permitting.

- **California Environmental Quality Act (CEQA) Compliance:** The project will be required to comply with CEQA requirements likely by preparing an environmental impact report (EIR). It is assumed that the EIR would build upon the Pure Water Monterey EIR, and thus may take the form of a supplemental EIR, rather than a standalone EIR.
- **State Water Resources Control Board (SWRCB) Permitting:** Regulations for subsurface application of recycled water are included in CCR Title 22, Division 4, Chapter 3, Article 5.2. These regulations include minimum treatment requirements for full advanced treatment at the AWPF, as well as requirements to demonstrate adequate retention time

within the aquifer. The SWRCB Division of Drinking Water (DDW) oversees permitting of such a project.

Detailed descriptions of all regulatory requirements for the advanced treatment of wastewater as well as implementation of a GRRP is included in Section 2 of the Pure Water Monterey Final Engineering Report (Nellor et. Al., 2017).

- **Regional Water Quality Control Board (RWQCB) permitting:** The Regional Water Quality Control Board is responsible for waste discharge requirements and water recycling requirements for wastewater treatment plants and thus oversees the general water quality effects of discharging treated wastewater into groundwater basins.

  M1W has an existing WDR permit for the Pure Water Monterey project, which applies to both the AWPF, as well as injection of the purified recycled water into the Seaside Subbasin. In order for MCWD to inject the purified recycled water into the Monterey Subbasin, the Pure Water Monterey WDR would either need to be modified to explicitly include this use, or a new WDR would need to be issued by the Central Coast RWQCB.

Additional construction permits are required prior to construction, including but not limited to, City of Marina encroachment permit, grading permit, and building permit, and County approval of use permitting, grading permit, and well construction permit.

9.4.6.6 Legal Authority

This project will be implemented pursuant to MCWD's authority as a water district.

9.4.6.7 Implementation Schedule

Landscape Irrigation

MCWD owns and operates the regional transmission line from the AWPF and is currently constructing a recycled water distribution system that will allow distribution of up to 1,427 AFY to customers. MCWD anticipating delivering its current 600 AFY of advanced treated water available to customers by 2022. Landscape irrigation use beyond 600 AFY is possible as soon as additional capacity is available through an AWPF expansion and more developments are connected to the distribution system. If selected and funds are available, an AWPF expansion project is likely to take three years (M1W, 2018). MCWD's 2020 UWMP estimates that 950 AFY of landscape irrigation demand can be met by recycled water by 2030 and 1,270 AFY by 2040.

IPR in Monterey Subbasin

MCWD is currently conducting a Recycled Water Feasibility Study to further assess the possibility of implementing an IPR project. The Recycled Water Feasibility Study includes analysis of IPR alternatives using a groundwater flow model and the development of a conceptual design.

MCWD anticipates conducting preliminary investigations recommended in the Water Supply Augmentation Study during the first or second year of GSP implementation.

If selected, the IPR project is likely to take between 5 and 7 years from the initiation of additional groundwater investigations through completion of tracer study that is required to be performed within the first year of GRRP operations (Figure 9-6).

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Primary investigations						
Permitting						
CEQA						
Design						
Bidding						
Construction						
Tracer study and analysis						

Figure 9-6. Implementation Schedule for MCWD Indirect Potable Reuse

9.4.6.8 Estimated Cost

Landscape Irrigation

Infrastructure required for delivering the initial 600 AFY of recycled water for landscape irrigation within MCWD is already under construction and does not require additional investment. The additional capital costs associated with providing recycled water up to 1,427 AFY (i.e. an additional 827 AFY) is primarily associated with expansion of the AWPF. It is assumed that this expansion will be planned concurrently with the future phases of the Pure Water Monterey project or a MCWD expansion for IPR uses for economies of scale.

Capital plus soft costs (planning environmental, permitting, engineering, legal, mitigation etc.) costs are estimated to be $5,600,000 for an MCWD-contributed AWPF expansion to provide an 827 AFY of recycled water for landscape irrigation. Annual O&M costs are estimated at $810,000 for operation of the AWPF expansion and the recycled water system. Total annualized cost is therefore $1,250,000 and the unit cost of water is $1,600/AFY. Detailed cost estimates and assumptions are included as Appendix 9A.

IPR in Monterey Subbasin

Conceptual costs for the IPR option are evaluated as part of the Water Supply Augmentation Study (EKI, 2020) and adjusted to conform with GSP cost assumptions as described in Section 9.3.4. The project includes a AWPF expansion and a new transmission main from M1W to a small injection wellfield in Marina (Figure 9-7). The water would be injected using new wells and extracted using new and existing MCWD production wells. Property or pipeline easement

acquisition costs were not included in these estimates. It is assumed that the source water and finished water are available and rights to these sources can be obtained.

Capital plus soft costs (planning environmental, permitting, engineering, legal, mitigation etc.) for IPR use at an assumed 2,400 AFY project capacity are estimated to be approximately $65 million. Annual O&M costs are estimated at $3,110,000 for operation of the AWPF, injection wells, and additional production wells. Total annualized cost is $7,820,000. Based on the assumed project capacity of 2,400 AFY, the unit cost of water is $3,300/AF. Project per unit cost may decrease with economies of scale. Detailed cost estimates and assumptions are included as Appendix 9A.

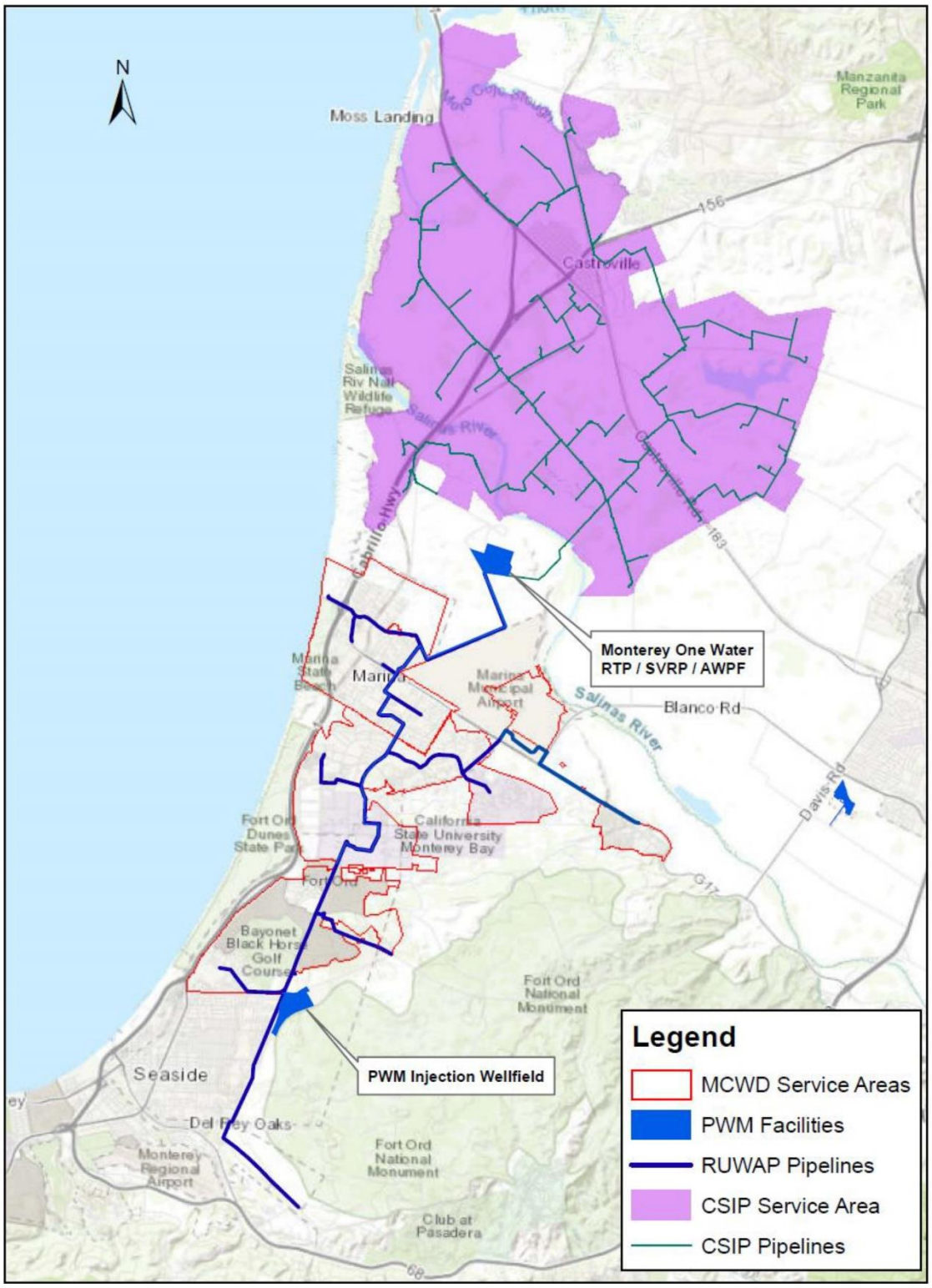

Figure 9-7. MCWD Recycled Water System

9.4.7 Drill and Construct Monitoring Wells

This project includes drilling and construction of monitoring wells screened in the 400-Foot Aquifer and the Deep Aquifers near the southwestern portion of the Subbasin. Additional monitoring wells are needed to fulfill monitoring network data gaps identified in Chapter 7 (Figures 7-7 and 7-8), and investigate several data gaps related to groundwater conditions identified in this area, including

1) Extent of seawater intrusion in the 400-Foot Aquifer and Deep Aquifers,
2) Connectivity between the 400-Foot Aquifer and the Deep Aquifers;
3) The cause of the groundwater depression observed in monitoring wells MPWMD#FO-10S and MPWMD#FO-11S; and
4) The source of elevated chloride detections in monitoring well MPWMD#FO-10S.

The project is assumed to include three monitoring wells in two locations: one cluster of two wells north of monitoring well MPWMD#FO-10, with separate wells in the 400-ft Aquifer and the Deep Aquifers, and one well near the coast screened in the 400-ft Aquifer.

During well drilling and construction, MCWD will collect geological information at the well sites including soil cores and water samples at selected depths, as well as borehole geophysical logs. Collected data will be analyzed to evaluate the quality and movement of groundwater in the 400-Foot and Deep Aquifers in this area. Findings of the hydrogeological analyses will be integrated into future updates of this GSP. Annual induction logging of the Deep Aquifer monitoring well will also provide additional information regarding potential vertical migration of seawater in this area.

In addition, the project may include geochemical analysis and pilot testing of core and groundwater samples to aid in the design of recycled water injection into the southwestern portion of the Subbasin. As discussed in Project M3 Recycled Water Reuse Through Landscape Irrigation and Indirect Potable Reuse (Section 9.4.6), MCWD is planning to expand its recycled water use for injection into the 400 foot Aquifer and/or Deep Aquifers. The monitoring wells proposed herein are located seaward of production wells in Monterey and Seaside Subbasins. Therefore, groundwater injection in this area may have the additional benefit of protecting production wells in both Subbasins from seawater intrusion. The geochemical work will inform future feasibility studies and site selection of the recycled water project.

General steps for the Project would include:

- Preparation of project scope;
- Identification of field locations and (if needed) negotiation for long-term access to the planned well locations;

- Preparation of bid specifications and a request for proposals ("RFP"); a bid walk with potential drilling contractors; and eventually selection of a drilling contractor and negotiation of contracts;
- Preparation and permitting for drilling and well construction with the local agency (Monterey County Health Department); health and safety planning for the project;
- Site walk with the drilling contractor to identify layout, hazards, traffic, and particular constraints such as the need for sound walls or other mitigation measures at each well location; marking and clearing for buried utilities and other hazards;
- Preliminary well and annular materials design;
- Mobilization of the rig and crew to the wellsite, borehole drilling, collection of soil cores and water samples at selected depths, sampling and logging of drilled materials, and downhole geophysical logging (e.g., induction logging, spinner tests);
- Laboratory analysis of soil hydraulic, mineralogical, and potential contaminant leaching properties;
- Laboratory analysis of water quality constituents,;
- Geochemical compatibility modeling/bench scale pilot studies of potential water quality impacts from recycled water injection;
- Final design of each well and filter pack based on encountered conditions, interpreted geology, and geophysical data, including indications of general water quality and saline conditions;
- Well construction, including casing, filter pack, transition seal, grout, and surface completion;
- Surveying to determine coordinates and elevation of the wells and water level measurement reference points; and
- Development of the wells after at least 72 hours for grout curing; and
- Sampling and water-level gauging of the wells.

9.4.7.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from construction of new monitoring wells described herein include:

- **Groundwater elevation measurable objective –** The proposed monitoring wells will be added to the Subbasin's groundwater elevation monitoring network. After a period of initial monitoring, the GSAs will establish groundwater elevation SMCs at these wells that are consistent with the Subbasin's sustainable goal. Data collected from these wells will

inform groundwater elevation measurable objectives in their vicinity and within the Subbasin.

- **Groundwater storage measurable objective –** The proposed monitoring wells will be added to the Subbasin's groundwater storage monitoring network. Groundwater storage SMCs are defined in this Subbasin using groundwater elevation and seawater intrusion measurements as proxies.
- **Seawater intrusion measurable objective –** The proposed monitoring wells will be added to the Subbasin's seawater intrusion monitoring network. Data collected from this project will fill the existing data gap of seawater intrusion extent near the Monterey-Seaside Subbasin boundary. The GSAs will evaluate initial water quality data collected from these wells and establish additional seawater intrusion SMCs. Annual induction logging will also be performed in the Deep Monitoring well to assess potential vertical migration of the seawater intrusion front. Data collected from these wells will provide additional data regarding seawater intrusion in their vicinity and within the Subbasin.

9.4.7.2 Expected Benefits and Evaluation of Benefits

This project would fill critical data gaps regarding hydrostratigraphy, seawater intrusion, and groundwater recharge mechanisms for the 400-Foot Aquifer and Deep Aquifers that would benefit management towards the abovementioned measurable objectives. The hydrogeologic investigations conducted as part of this project will be incorporated into the hydrogeologic conceptual model of future GSP updates. Data from these monitoring wells will help inform the need, placement, and performance of projects to address potential seawater intrusion into the Monterey Subbasin and the northern Seaside Subbasin.

The proposed monitoring wells will be added to the Subbasin's groundwater elevation, groundwater storage, and seawater intrusion monitoring networks. The GSAs intend to establish additional SMCs at these locations after an initial period of monitoring. Progress towards attaining measurable objectives at these locations will be evaluated pursuant to protocols described in Chapter 7.

9.4.7.3 Circumstances for Implementation

This project will be implemented immediately upon GSP adoption and as soon as easements or right-of-way for access are secured.

9.4.7.4 Permitting and Regulatory Process

Drilling permits from Monterey County Health Department (MCHD) will be required for the project. Final Well Construction Reports after completion of the well must be submitted to the California Department of Water Resources (DWR).

9.4.7.5 Implementation Schedule

After approval and access to the well sites are obtained, project implementation may require 6 - 12 months to complete.

9.4.7.6 Legal Authority

Legal access to the well sites may require negotiation if the sites are on private land. An easement or right-of-way may be required to ensure access to the wells over the timeframe required by SGMA of at least 20 years.

9.4.7.7 Estimated Cost

Based on monitoring well construction and geological analysis conducted for the Pure Water Monterey project the Seaside Subbasin, estimated capital costs of this project is approximately $1,100,000. This cost includes constructing three monitoring wells at two locations as well as geochemical analysis and modeling to evaluate groundwater impacts from injecting AWPF treated water into areas near the monitoring wells.

9.4.7.8 Public Noticing

As with all SGMA projects and management actions, stakeholder input and involvement are crucial for long-term success in sustainable management of groundwater. Normal notification and updates to the project schedule will be implemented as part of regular public meetings and publications.

Corral de Tierra Area Local Projects & Management Actions

9.4.8 Pumping Allocations and Controls

Pumping allocations are one demand-side approach to managing and controlling pumping. Given limited supply-side options in the Monterey Subbasin, pumping allocations provide a management action to proactively determine how extraction should be fairly divided and controlled if needed.

Pumping allocations divide up the sustainable yield among beneficial users. Pumping allocations are not water rights and cannot determine water rights. Instead, they are a way to determine each extractor's pro-rata share of groundwater extraction and regulate groundwater extraction. They can be used to:

- Underpin management actions that manage pumping
- Generate funding for projects and management actions

- Incentivize water conservation and/or recharge projects

Pumping allocations can take many forms if it is needed now or in the future. Allocations can be developed based on various criteria. After a Valley-wide workshop on pumping allocations, Subbasin committee members and other stakeholders completed a survey on their preferences for a pumping allocation structure. At the January and both March 2021 Monterey Subbasin Planning Committee meetings, members discussed whether and what type of pumping allocation structure would be appropriate in the Corral de Tierra management area portion of the Monterey Subbasin. Subbasin committee members passed a motion for an allocations-based demand management, and the criteria that form the basis for the Subbasin's allocations structure would be based on a per connection allocation for small parcels and a per acreage for large parcels. This provides a starting point for the development of an allocation structure within GSP implementation; however, a different allocation structure could be selected at that point.

The hybrid per connection/per acreage allocation structure estimates *de minimis* extraction and subtracts it from the overall sustainable yield. Under this allocation structure, extractors with parcels larger than 5 acres receive an allocation based on acreage, and extractors with parcels smaller than 5 acres receive an allocation on a per connection basis, assuming one connection per parcel. Allocations for municipal water systems would be on a per connection basis. If pumping needs to be reduced to meet the sustainable yield, all users would reduce water usage by the same percentage, except for *de minimis* users. Unless *de minimis* users are incorporated into the allocation structure, the total amount estimated for *de minimis* use would be preset and remain the same, thus increasing the portion of the sustainable yield used by *de minimis* users.

Including pumping allocations in the GSP shows that allocations are a management tool that can be further developed during implementation, but it will not establish pumping allocations nor pumping controls. During the GSP implementation period, a full stakeholder engagement process and in-depth analysis needs to be undertaken into potential impacts and additional data that needs to be collected. Stakeholder engagement will include outreach to water systems, homeowners, and landowners so that those interested can participate in the establishment of the selected allocation structure.

Developing the selected allocations structure in order to be feasible and effective requires good groundwater extraction data. Two implementation actions that can help are GEMS Expansion and Well Registration.

Pumping allocations could also be used as the basis for pumping fees, which could raise funds for projects and management actions. For example, a fee structure could be defined such that each extractor has a pumping allowance that is based on their allocation, and a penalty or disincentive fee is charged for extraction over that amount. If the sustainable yield is lower than current extraction, a transitional pumping allowance could be developed to transition from a groundwater user's actual historical pumping amounts (estimated or measured) to their allowance based on the sustainable yield. The purpose of this transitional allowance is to ensure that no pumper is required to immediately reduce their pumping, but rather pumpers have an

opportunity to reduce their pumping over a set period. Transitional pumping allowances could then be phased out until total pumping allowances in each subbasin are less than or equal to the calculated sustainable yield.

9.4.8.1 Relevant Measurable Objectives

The measurable objectives benefiting from pumping allowance and controls include:

- **Groundwater elevation measurable objective -** Pumping allocations and controls that promote less pumping that will result in higher groundwater levels.
- **Groundwater storage measurable objective -** Reducing pumping from the principal aquifers will ultimately have the effect of increasing groundwater in storage.
- **Land subsidence measurable objective -** Pumping allocations and controls that reduce the pumping stress on the principal aquifers and thereby reduce any potential for groundwater reduction-induced subsidence.
- **Seawater intrusion measurable objective -** Seawater intrusion has advanced a few miles inland in Monterey Subbasin. Conserving groundwater through an allocations structure will support the natural hydraulic gradient that pushes back against the intruding seawater.

9.4.8.2 Expected Benefits and Evaluation of Benefits

The primary benefits expected for this project is that it is another demand-side management tool that would help manage to the sustainable yield and help reduce further decline of groundwater elevations. Working within a groundwater budget allows the subbasin to bring extraction in line with the sustainable yield and mitigate overdraft.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Groundwater storage will be monitored using groundwater extraction measurements. Land subsidence will be measured using InSAR data provided by the Department of Water Resources. Seawater intrusion will be measured using selected Representative Monitoring Sites wells.

9.4.8.3 Circumstances for implementation

SVBGSA will work with the Subbasin stakeholders to collect data needed to establish pumping allocations and undertake additional stakeholder outreach prior to establishing pumping allocations. As part of establishing pumping allocations, SVBGSA will determine whether to implement pumping controls immediately or to establish a trigger based on groundwater conditions, after which controls are implemented.

9.4.8.4 Permitting and Regulatory Process

The GSA Board of Directors will need to authorize the establishment of pumping allocations and controls. The development and implementation of pumping controls is a regulatory activity and would be embodied in a GSA regulation. The regulation could be established to provide for automatic implementation upon existence of specific criteria or to require the vote of the Board to implement.

9.4.8.5 Legal Authority

California Water Code §10726.4(a)(2) provides GSAs the authorities to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate (CWC, 2014). Imposition of pumping allocations and controls will require a supermajority plus vote of the SVBGSA Board of Directors.

9.4.8.6 Implementation Schedule

If selected, the proposed implementation schedule is shown on Figure 9-8. After the establishment of pumping allocations is initiated for the Monterey Subbasin, pumping controls will be implemented only when needed.

Task Description	Year 1	Year 2	Year 3	Year 4	Years 5+
Phase I – Data collection and stakeholder outreach					
Phase II – Establishment of allocation structure					
Phase III – Pumping controls, when needed					

Figure 9-8. Implementation Schedule for Pumping Management

9.4.8.7 Estimated Cost

Development of a pumping allocation structure and pumping controls is approximately $400,000. This includes outreach meetings to engage stakeholders, analysis of potential allocation structures, facilitation of stakeholder dialogues, refinement according to specific situations, and legal analysis. When pumping controls are enacted, there will be additional administrative costs associated with implementation.

9.4.8.8 Public Noticing

As part of the approval of the establishment of pumping allocations in the Monterey, it will go through a public notice process to ensure that all groundwater users and other stakeholders have

ample opportunity to comment on it. The general steps in the public notice process will include the following:

- GSA staff will bring an assessment of the need for allocations to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
  - A description of the undesirable result(s) that may occur if action is not taken
  - A description of the proposed management action
  - An estimated cost and schedule for the proposed management action
  - Any alternatives to the proposed management action
- The SVBGSA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project, and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

Imposition of pumping allocations and controls may also require a CEQA review process and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). All projects will follow the public noticing requirements per CEQA or NEPA.

9.4.9 Check Dams

Check dams are small, sometimes temporary dams constructed across streams or rivers to reduce or slow flow. Especially when streambeds have high recharge potential, check dams can increase recharge by holding back water while infiltration occurs, rather than running off in the stream. Most streams in the Corral de Tierra area are intermittent, flowing less than 25% of the year as a result of generally high infiltration rates and low precipitation rates. A check dam will slow this flow down in order to facilitate the additional infiltration of water and increase recharge to the principal aquifer. Two potential sites for this project have been identified downstream of the confluence of Watson Creek and Calera Canyon. The headwaters of Watson Creek at this location are part of a subwatershed that is approximately 20.5 square miles; this subwatershed is part of the larger El Toro Creek Subwatershed, which drains north to the Salinas River. Alternative sites could be identified during GSP implementation.

At the assumed location along Watson Creek, the creek bed is relatively wide (approximately 50-60 feet) and has significant bank erosion. For the purposes of the cost estimate, an inflatable rubber dam is assumed to serve as a check dam. An inflatable rubber dam has the advantage of remote, automatic control of the dam height promoting operational safety and passage of higher stream flows. A similar, but larger, inflatable dam system is installed along the Salinas River as part of the Salinas River Diversion Facility. Alternative types of check dams, such as more

permanent structures built of rock or other materials, may be possible and will be analyzed as part of project design if this project is selected for implementation.

The scoped check dam will be approximately 70 feet in length and approximately 7.5 feet at maximum height. The rubber dam will require a concrete structure that includes both a foundation and transition walls. Housing a compressed air system, power supply and controls will require a control building nearby. Rock slope protection will be installed both upstream and downstream of the facility to address existing areas of eroded streambank and ensure long-term stability. This project also includes a stilling basin and fish passage for the rubber dam for preliminary consideration. This project assumes acquiring ten acres of land for construction of the check dam structure and associated control facilities.

The check dam will detain low stream flows and create a detention volume of approximately 3 AF when runoff is present. The 2-year return interval flow rate for this point of the creek is approximately 218 cfs based on the flow gage measurements from the (United States Geological Survey) USGS gauge that collected data through 2006 (USGS, 2012). The runoff volume for a 2-year, 24-hour rainfall event is estimated to be approximately 250 AF.

The benefit of this project is dependent on the recharge rate from the creek bed into the underlying aquifers. There is hydraulic connectivity between the alluvial sediments in the stream beds and the underlying El Toro Primary Aquifer System. However, the extent of this connectivity is currently unquantified and may be inconsistent with the presence of clay deposits in the subsurface.

9.4.9.1 Relevant Measurable Objectives

The measurable objectives benefiting from outreach and education include:

- **Groundwater elevation measurable objective** - By slowing stormwater and runoff in designated areas along the streambed, there will be more water added to the principal aquifer. This water will be slowed down and allowed to infiltrate, which has the effect of addition water to the aquifer. Adding water into the principal aquifer will raise groundwater elevations over time.
- **Groundwater storage measurable objective** - Furthermore, adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage. Groundwater storage is also calculated from measured groundwater elevations. By raising groundwater elevations, the calculation of change in storage will be less negative, or even positive over time.
- **Land subsidence measurable objective** - Increasing both groundwater elevations and groundwater storage will have the added benefit of preventing any potential land subsidence. Maintaining and adding water in the subsurface will keep pore spaces saturated with positive pressure and inhibit land surface collapse associated with groundwater depletion.

9.4.9.2 Expected Benefits and Evaluation of Benefits

This project will increase sustainable yield and groundwater elevations through enhanced recharge of stormwater and runoff. Runoff occurs when the rate of rainfall exceeds the soil infiltration rate. This runoff then flows over the land surface before accumulating into washes and streams as measurable stream flow. In the initial phases of overland flow, this water often infiltrates into the soils, which enhances soil moisture and can recharge the aquifer. The benefits to increased soil moisture go beyond increased opportunity for recharge. The primary benefit from this project is increased groundwater elevations and storage that results from increased infiltration of stormwater and runoff. The project benefit is anticipated to be 150 AFY

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Various volumetric measurement methods may be installed with this facility to assist in calculating increases to groundwater storage. Land subsidence will be measured using InSAR data provided by the Department of Water Resources.

9.4.9.3 Circumstances for Implementation

The check dam project will be implemented if stakeholders determine it is necessary to reach or maintain sustainability. A number of agreements and rights must be secured before the project is implemented. In particular, access agreements and surface water rights will be pivotal to the project implementation, as detailed below. A more formal cost/benefit analysis must be completed to determine if the check dam will provide quantifiable benefits to the principal aquifer. Site specific analyses will help determine the potential recharge benefit.

9.4.9.4 Permitting and Regulatory Process

Projects described in this section may require a CEQA review process and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). Additionally, permits from a variety of state and federal agencies may be necessary, and any project that coordinates with federal facilities or agencies may require National Environmental Policy Act (NEPA) documentation.

In addition, permits from the following government organizations that may be required for the check dam project include:

- ***Monterey Bay National Marine Sanctuary (MBNMS)*** – All Regional Water Quality Control Board (RWQCB) 404 permits, Section 10 permits, and National Pollutant Discharge Elimination System (NPDES) permits must be reviewed by MBNMS.
- ***United States Fish and Wildlife Service (USFWS)*** – Federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with

Section 7 of the Endangered Species Act. Interagency coordination is also required by the Fish and Wildlife Coordination Act (16 U.S. Code § 661-667e; the Act of March 10, 1934; ch. 55; 48 stat. 401).

- ***National Oceanic & Atmospheric Administration, Fisheries (NOAA)*** – Federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with Section 7 of the Endangered Species Act.
- ***United States Army Corps of Engineers (USACE) –*** Under the Rivers and Harbor Act, a Section 10 permit (33 U.S. Code § 403) is required for the construction of any structure in or over any navigable water of the United States. Under the Clean Water Act, a Section 404 permit (33 U.S. Code § 1341) is required to discharge dredge or fill materials into waters of the United States.
- ***State Water Resources Control Board (SWRCB)*** – Construction that disturbs one acre or more of land and that discharges stormwater requires a General Construction Stormwater Permit (Water Quality Order No. 2009-0009-DWQ). Water quality certification may be required by Section 401 of the Clean Water Act and by the Porter-Cologne Water Quality Control Act (California Water Code §13000 *et seq.*). Diversion and use require an appropriative water right permit per Water Code § 1200 *et seq*.
- ***California Department of Fish and Wildlife (CDFW)*** – Projects that may result in the taking of a threatened or endangered species require an Incidental Take Permit (California Endangered Species Act Title 14, § 783.2). A Streambed Alteration Agreement (California Fish and Game Code Section 1602) is required if the project may substantially adversely affect fish and wildlife resources.
- ***Monterey County*** – If the project encroaches onto any county-maintained road, an Encroachment Permit (Monterey County Code Chapter 14.04) is required from the County. Removal of 3 or fewer trees can be handled by a standalone Tree Removal Permit (Monterey County Code Chapter 16.60). Removal of more than 3 trees should be included in a County Use Permit and/or Coastal Development Permit.
- ***Monterey County Health Department*** – Other required permits include a Well Construction Permit (Monterey County Code Chapter 15.08), permits to construct and operate a desalination treatment facility (Monterey County Code Chapter 10.72), and a variation on Monterey County Noise Ordinance (MCC 10.60.030).
- ***Monterey County Department of Planning and Building Services*** – This project will require a Use Permit (MCC Chapter 21.72 Title 21). A Grading Permit (Monterey County Code Chapter 16.08) is required if total disturbance on site equals or exceeds 100 cubic yards. An erosion control plan (Monterey County Code Chapter 16.12) is required if there is risk of accelerated (human-induced) erosion that could lead to degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, or increased danger from flooding.

- ***Local jurisdictions*** – Permits may also be required by a local jurisdiction depending on location, including but not limited to: land use permits, building permits, public health permits, public works permits, tree removal permits, and encroachment permits
- ***Landowners*** –Land lease/sale, easements, and/or encroachment agreements may be required.

9.4.9.5 Implementation Schedule

If selected, it will follow the implementation schedule presented on Figure 9-9. The schedule begins after any SWRCB permits are secured. The schedule may vary if a different type of check dam is implemented.

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Phase I – Location and agreements secured						
Phase II – CEQA						
Phase III – Permitting						
Phase IV – Design						
Phase V – Bid/Construct						
Phase VI – Start Up						

Figure 9-9. Implementation Schedule for Check Dams

9.4.9.6 Legal Authority

The SVBGSA will use the legal authority and partnerships for this modified project contained in existing distribution, irrigation, and partnership programs. California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges. This project would be developed in accordance with all applicable groundwater laws and respect all groundwater rights. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, “Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency” (CWC, 2014).

The County also has the power to impose charges on a parcel or acreage basis under the County Service Area provisions of the Government Code (beginning with Section 25210). These provisions give the County the authority to provide extended services within a specified area, which may be countywide, and to fix and collect charges for such extended services. Miscellaneous extended service for which county service areas can be established include "water service, including the acquisition, construction, operation, replacement, maintenance, and repair of water supply and distribution systems, including land, easements, rights-of-way, and water rights."

9.4.9.7 Estimated Cost

Capital costs were estimated at $5,143,000. On an annualized basis, assuming a 6% discount rate, and 25-year term, this amounts to $402,300. Including an annual operations and maintenance cost of $22,000 generates a total annualized cost of $424,300. Assuming a yield of 150 AFY, the unit cost for water stored is estimated at $2,830/AFY

9.4.9.8 Public Noticing

Before SVBGSA initiates construction on this project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board and the MCWRA Board in publicly noticed meetings. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board and the MCWRA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

The permitting and implementation of the check dam will require notification of stakeholders, beneficiaries, water providers, member lands adjacent to the river, and subbasin committee members as well as all permit and regulatory holding agencies such as DWR, NOAA, USACE, and others. In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA or NEPA.

9.4.10 Recharge Basins from Surface Water Diversions

Surface water in the El Toro Creek watershed can be diverted from the small tributaries, and rerouted to recharge basins to enhance storage, infiltration, and recharge opportunities in this management area. While many of the streambeds have high recharge potential, the topographic relief of the many canyons is too steep and flow in these smaller streams is too intermitted to allow for more storage or recharge. Diverting runoff from these smaller tributaries to recharge

basins may allow for increased recharge of the principal aquifer system by increasing the time the water is in contact with permeable sediments in a more stable location.

Four potential locations for recharge basins were identified. El Toro Lake was selected for the development of the cost analysis; however, the other locations, as well as additional locations not yet identified, remain viable options for this project. This project diverts water from Watson Creek downstream of its confluence with Calera Canyon and conveys it to a recharge basin located at El Toro Lake.

El Toro Lake is located in a 0.6 square mile watershed, separate from the watershed for Watson Creek, which drains 20.5 square miles and contributes to El Toro Creek. In this watershed, the two-year, 24-hour storm event with a rainfall depth of 2.31 inches yields a runoff volume of 7.4 AF. However, El Toro Lake has reportedly not filled to its capacity during recent wet weather seasons. Therefore, the watershed contribution is neglected for the initial cost estimate, and it is assumed that diversion and associated pipeline infrastructure from Watson Creek will be required to deliver water to the recharge basin for it to reach storage capacity.

Based on LIDAR topographical data, the storage capacity of El Toro Lake is approximately 32 AF assuming a maximum depth of 4.5 feet and allowing a minimum of 2 feet of freeboard around the perimeter of the lake (NOAA, 2010). Additional surface runoff captured from the Toro Lake subwatershed, or other subwatersheds nearby and retained in the Toro Lake recharge basin may lessen the quantity of water required to be diverted from Watson Creek to maintain a fuller capacity.

The project will require construction of a diversion structure and pump station located downstream of the confluence of Calera Canyon and Watson Creeks, and accessible from Corral de Tierra Road via a new access drive. The diversion structure will include a concrete weir structure set at an elevation to divert flows above a designated flow rate. This structure will include a debris screen, concrete weir, sluice gate, and a gravity pipeline for conveying water to a pump station that will be sized for pumping at a rate of 1,500 gpm (approximately 3.5 cfs). The two-year return interval flow rate for this point of the creek is approximately 218 cfs. The pump station will include a control building for power supply and controls. Water will be conveyed 3,200 linear feet from the diversion pump station to the El Toro Lake recharge basin. The cost estimate also includes a new inlet structure at El Toro Lake for water discharged from the conveyance pipeline.

This project will also acquire 15.7 acres of land that includes El Toro Lake. Easements will be established to allow installation of the new diversion structure and construction of the conveyance pipeline.

9.4.10.1 Relevant Measurable Objectives

The measurable objectives benefiting from outreach and education include:

- **Groundwater elevation measurable objective** - By routing stormwater and runoff into El Toro Lake, there will be more water added to the principal aquifer. This water will be stored in the recharge basin and allowed to infiltrate, which has the effect of addition water to the aquifer. Adding water into the principal aquifer will raise groundwater elevations over time.
- **Groundwater storage measurable objective** - Furthermore, adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage. Groundwater storage is also calculated from measured groundwater elevations. By raising groundwater elevations, the calculation of change in storage will be positive.
- **Land subsidence measurable objective** - Increasing both groundwater elevations and groundwater storage will have the added benefit of preventing any potential land subsidence. Maintaining and adding water in the subsurface will keep pore spaces saturated with positive pressure and inhibit land surface collapse associated with groundwater depletion.

9.4.10.2 Expected Benefits and Evaluation of Benefits

This project will increase sustainable yield and groundwater elevations through enhanced infiltration of diverted stormwater and runoff. Runoff occurs when the rate of rainfall exceeds the soil infiltration rate. This runoff then flows over the land surface before accumulating into washes and streams as measurable stream flow. The benefits to increased soil moisture go beyond increased opportunity for recharge. The primary benefit from this project is increased groundwater elevations and storage that results from increased infiltration of stormwater and runoff. The project benefit is anticipated to be 250 AFY.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Various volumetric measurement methods may be installed with this facility to assist in calculating increases to groundwater storage. Land subsidence will be measured using InSAR data provided by the Department of Water Resources.

9.4.10.3 Circumstances for Implementation

If selected, the creek diversion project will be implemented if stakeholders determine it is necessary to reach or maintain sustainability. A number of agreements and rights must be secured before the project is implemented. Primarily, a more formal cost/benefit analysis must be completed to determine if the creek diversion will provide quantifiable benefits to the principal aquifer. Site specific analyses will help determine the potential recharge benefit.

9.4.10.4 Permitting and Regulatory Process

Projects described in this section may require a CEQA review process and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). Additionally, permits from a variety of state and federal agencies may be necessary, and any project that coordinates with federal facilities or agencies may require National Environmental Policy Act (NEPA) documentation.

In addition, permits from the following government organizations that may be required for the recharge from surface water diversion project include:

- ***United States Army Corps of Engineers (USACE)*** – A Regional General Permit may be required if there are impacts to wetlands or connections to waters of the United States.
- ***California Department of Fish and Wildlife (CDFW)*** – A Standard Agreement is required if the project could impact a species of concern.
- ***Environmental Protection Agency (EPA) Region 9*** – National Environmental Policy Act (NEPA) documentation must be submitted for any project that coordinates with federal facilities or agencies. Additional permits may be required if there is an outlet or connection to waters of the United States.
- ***National Marine Fisheries Service (NMFS)*** – A project may require authorization for incidental take, or another protected resources permit or authorization from NMFS.
- ***State Water Board Stormwater Pollution Prevention Plan (SWPPP)*** – A General Permit to Discharge Stormwater may be required depending on how stormwater is rerouted.
- ***California Department of Transportation (Caltrans)*** – An Encroachment Permit is required if any state highway will be obstructed.
- ***Monterey County*** – A Use Permit may be required. A Grading Permit is required if 100 cubic yards or more of soil materials are imported, moved, or exported. An Encroachment Permit is required if objects will be placed in, on, under, or over any County highway.
- ***Landowners*** –Land lease/sale, easements, and/or encroachment agreements may be required.

9.4.10.5 Implementation Schedule

If selected, this project will follow the implementation schedule that is presented on Figure 9-10. Implementation Schedule for Surface Water Diversions, after any SWRCB permits are secured.

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5
Studies/Preliminary Engineering Analysis					
Agreements/ROW					
CEQA					
Permitting					
Design					
Bid/Construct					

Figure 9-10. Implementation Schedule for Surface Water Diversions

9.4.10.6 Legal Authority

Pursuant to California Water Code sections 10726.2 (a) and (b), the SVBGSA has the right to acquire and hold real property, and to divert and store water once it has acquired any necessary real property or appropriative water rights. Some right in real property (whether fee title, easement, license, leasehold or other) may be required to implement a recharge project. A diversion permit or a SWRCB 5-year temporary permit is required for the authority to divert water.

9.4.10.7 Estimated Cost

Capital costs were estimated at $5,477,000. On an annualized basis, assuming a 6% discount rate, and 25-year term, this amounts to $428,500. Including an annual operations and maintenance cost of $21,000 generates a total annualized cost of $449,500. Assuming a yield of 250 AFY, based on operation 40 days of the year the unit cost for water stored is estimated at $1,800/AFY.

9.4.10.8 Public Noticing

Before SVBGSA initiates construction on this project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board and the MCWRA Board in publicly noticed meetings. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project

- The SVBGSA Board and the MCWRA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

The permitting and implementation of the diversion will require notification of stakeholders, beneficiaries, water providers, member lands adjacent to the river, and subbasin committee members as well as all permit and regulatory holding agencies such as DWR, NOAA, USACE, and others. In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA or NEPA.

9.4.11 Wastewater Recycling for Indirect Potable Use

This project will reclaim up to 232 AFY of treated wastewater. This water will be disinfected tertiary levels for beneficial reuse within the Corral de Tierra Planning Area. Wastewater flow volumes totaling 232 AFY from the California Utility Service (CUS) wastewater treatment plant are available to serve the Toro Park Subdivision and parts of Corral de Tierra management area, as well as potential non-irrigation water uses not served by public water purveyors.

An estimated annual demand of 168.5 AFY from the local golf course and 23.3 AFY from area parks, amount to an approximate total demand of 192 AFY This assumes the golf course's full demand would be utilized by recycled water, which may be an over assumption as golf courses may not utilize recycled water to irrigate their greens. An additional 40 AFY to 80 AFY of demand will need to be identified to completely allocate the treated wastewater for beneficial reuse; there may be additional demand within the community's landscaped open spaces found in the public right of way, private developments, or schools not considered at this time. However, this project assumes the project benefit is equivalent to the entire 232 AFY.

The project assumes construction of a tertiary filtration and disinfection system at the CUS-owned wastewater treatment plant (WWTP). The plant is rated for a design flow of 0.30 MGD and sends its secondary-treated effluent to approximately 112 acres for disposal.

This project will retrofit the existing treatment plant to produce tertiary-disinfected recycled water. A new membrane bioreactor system and ultraviolet (UV) disinfection system is needed, and treatment costs may be lessened depending on the degree to which the existing unit processes may be retained and/or retrofitted. Treated water will be stored within a 300,000-gallon treated water storage tank and ultimately conveyed to the southwest toward open space parks and the golf course located in Corral de Tierra management area. A recycled water pump station rated for a peak flow of 1 MGD will be installed at the plant and 30,900 linear feet (LF) of 10" pipe will deliver the water to the reuse sites. No changes to the plant headworks or equalization storage were assumed for the retrofit.

Project costs associated with onsite storage could be reduced if alternative storage is identified offsite at reuse sites, such as at golf course ponds or recharge basins, which allows the plant to pump recycled water as it is produced to those sites. There may also be an opportunity to re-purpose one of the wet-weather storage ponds at the WWTP as a treated effluent storage pond. The feasibility of each of the different treated water storage alternatives would have to be refined in subsequent planning and design phases.

The pipelines will be installed in the public right-of-way where feasible. Otherwise, temporary construction and permanent access easements will be recorded where the pipelines cross private lands. This project will require easements on 3.25 acres of land. Costs to retrofit the irrigation piping at the parks and golf course to accommodate the recycled water and a small equalization tank and pump station at the golf course are not included at this time. At this conceptual planning stage, the costs for pipeline installation are generic, and do not delineate varying costs for paved and unpaved areas or areas inside or outside the public right of way. In the next phase of planning, pipeline costs can be further reduced by analyzing alignment routes in unpaved and undeveloped areas where costs associated with traffic control, utility crossings, pavement demolition and restoration, and other installation considerations would be reduced. Because the project retrofits existing facilities for treatment and reuse, and proposed pipelines will largely remain in the public right of way, the associated environmental permitting costs for this project may be lower than those for other green field projects. An adjustment to reflect these lower environmental permitting costs may be warranted in future cost estimates for this project.

9.4.11.1 Relevant Measurable Objectives

The measurable objectives benefiting from outreach and education include:

- **Groundwater elevation measurable objective -** By using recycled water instead of pumping groundwater, there will be more water maintained in the principal aquifer. This has an effect of adding water to the principal aquifer. Adding water into the principal aquifer will either raise groundwater elevations or reduce the rate of groundwater elevation decline. Furthermore, using recycled water instead of pumped groundwater passively increases the groundwater elevations by not diminishing them.
- **Groundwater storage measurable objective -** Furthermore, adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage. Groundwater storage is also calculated from measured groundwater elevations. By raising groundwater elevations, the calculation of change in storage will be positive.
- **Land subsidence measurable objective -** Increasing both groundwater elevations and groundwater storage will have the added benefit of preventing any potential land subsidence. Maintaining and adding water in the subsurface will keep pore spaces

saturated with positive pressure and inhibit land surface collapse associated with groundwater depletion.

9.4.11.2 Expected Benefits and Evaluation of Benefits

The primary benefit from this project is increased groundwater elevations and storage that results from reduced groundwater extraction. The existing treatment plant will produce approximately 232 AF/yr. of tertiary recycled water for distribution, and therefore, up to that amount of reduced groundwater extraction will be reduced assuming the timing of water delivery aligned with irrigation needs. The exact location of groundwater elevation impacts would depend on where current extraction is reduced, which would need to be determined during the project design phase.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Land subsidence will be measured using InSAR data provided by the Department of Water Resources. Seawater intrusion will be measured using select Representative Monitoring Sites wells.

9.4.11.3 Circumstances for Implementation

If selected, the Toro WWTP project will be implemented if stakeholders determine it is necessary to reach or maintain sustainability. This project retrofits existing facilities for treatment and reuse, and proposed pipelines will largely remain in the public right of way, the associated environmental permitting costs for this project may be lower than those for other green field projects. The upgrades need to be designed, permits and CEQA completed, and recycled water recipients identified before this project can be funded and implemented.

9.4.11.4 Permitting and Regulatory Process

Projects described in this section may require a CEQA review process and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). Additionally, permits from a variety of state and federal agencies may be necessary, and any project that coordinates with federal facilities or agencies may require National Environmental Policy Act (NEPA) documentation.

In addition, permits from the following government organizations that may be required for the check dam project include:

- ***United States Fish and Wildlife Service (USFWS)*** – A Migratory Bird Treaty Act Permit (16 U.S. Code § 703-711) may be required from the USFWS. Other federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with Section 7 of the Endangered Species Act. Interagency coordination is also required by the Fish and Wildlife Coordination Act (16 U.S. Code § 661-667e).

- ***State Water Resources Control Board (SWRCB)*** – A permit to operate a public water system is required from SWRCB's Division of Drinking Water. Construction that disturbs one acre or more of land and that discharges stormwater requires a General Construction Stormwater Permit (Water Quality Order No. 2009-0009-DWQ).
- ***California Department of Fish and Wildlife (CDFW)*** – Projects that may result in the taking of a threatened or endangered species require an Incidental Take Permit (California Endangered Species Act Title 14, § 783.2).
- ***California Department of Transportation (Caltrans)*** – Work that may obstruct a State highway requires an Encroachment Permit.
- ***California Public Utilities Commission (CPUC)*** – A Certificate of Public Convenience and Necessity (California Public Utilities Code § 1001 *et seq.*) is required to show that the project will benefit society.
- ***Monterey County*** – If the project encroaches onto any county-maintained road, an Encroachment Permit (Monterey County Code Chapter 14.04) is required from the County. Removal of 3 or fewer trees can be handled by a standalone Tree Removal Permit (Monterey County Code Chapter 16.60). Removal of more than 3 trees should be included in a Use Permit (see Monterey County Department of Planning and Building Services).
- ***Monterey County Health Department*** – If there will be 55 gallons (liquid), 500 pounds (solid), or 200 cubic feet (compressed gas) of hazardous materials on site at any one time, a Hazardous Materials Business Plan and a Hazardous Materials Inventory Statement (California Health and Safety Code Chapter 6.95) must be submitted to the Monterey County Health Department's Environmental Health Bureau.
- ***Monterey County Department of Planning and Building Services*** – This project will require a Use Permit (MCC Chapter 21.72 Title 21). A Grading Permit (Monterey County Code Chapter 16.08) is required if total disturbance on site equals or exceeds 100 cubic yards. An erosion control plan (Monterey County Code Chapter 16.12) is required if there is risk of accelerated (human-induced) erosion that could lead to degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, or increased danger from flooding.
- ***Monterey One Water*** – A Sewer Connection Permit is required to connect to the regional sewer system.
- ***Monterey Bay Air Resources District (MBARD)*** – If the project may release or control air pollutants, an Authority to Construct and Permit to Operate is required (MBARD Rule 200).
- ***Monterey Peninsula Water Management District (MPWMD)*** – An expansion/extension permit is required to expand the current water system (MPWMD Ordinance 96).

- ***Transportation Agency for Monterey County (TAMC)***– An easement for access to and use of the project site may need to be negotiated with TAMC.
- ***Local jurisdictions*** – Permits may also be required by a local jurisdiction depending on location of scalping plant, including but not limited to: land use permits, building permits, public health permits, public works permits, tree removal permits, and encroachment permits.

9.4.11.5 Implementation Schedule

The annual implementation schedule is presented on Figure 9-11.

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Phase I –Agreements secured, recipients identified									
Phase II – CEQA									
Phase III – Permitting									
Phase IV – Design									
Phase V – Bid/Construct									
Phase VI – Start Up									

Figure 9-11. Implementation Schedule for Toro WWTP

9.4.11.6 Legal Authority

The SVBGSA will use the legal authority and partnerships for this modified project contained in existing distribution, irrigation, and partnership programs. California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges. This project would be developed in accordance with all applicable groundwater laws and respect all groundwater rights. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, “Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency” (CWC, 2014).

The County also has the power to impose charges on a parcel or acreage basis under the County Service Area provisions of the Government Code (beginning with Section 25210). These provisions give the County the authority to provide extended services within a specified area, which may be countywide, and to fix and collect charges for such extended services. Miscellaneous extended service for which county service areas can be established include "water service, including the acquisition, construction, operation, replacement, maintenance, and repair of water supply and distribution systems, including land, easements, rights-of-way, and water rights."

9.4.11.7 Estimated Cost

Capital costs were estimated at $28,635,000. On an annualized basis, assuming a 6% discount rate, and 25-year term, this amounts to $2,240,100. Including an annual operations and maintenance cost of $486,000 generates a total annualized cost of $2,726,100. Assuming a yield of 232 AFY, the unit cost for water delivered is estimated at $11,750/AF.

These costs do not include the wastewater collection system or the distribution system for treated water to be delivered.

9.4.11.8 Public Noticing

Before SVBGSA initiates construction on this project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board and the MCWRA Board in publicly noticed meetings. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board and the MCWRA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

The permitting and implementation of the diversion will require notification of stakeholders, beneficiaries, water providers, member lands adjacent to the river, and subbasin committee members as well as all permit and regulatory holding agencies such as DWR, CEQA, NOAA, USACE, and others. In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA or NEPA.

9.4.12 Decentralized Residential In-Lieu Recharge Projects

This project is a set of initiatives that incentivize homeowners to install decentralized in lieu recharge projects, such as rainwater harvesting, graywater reuse, and recharge features on their properties. Harvested rainwater can be used for residential landscaping and domestic animal water purposes and reduce groundwater pumping, thereby functioning as in-lieu recharge.

The two main types of in-lieu recharge are rooftop rainwater harvesting and graywater reuse. Decentralized rainwater capture at the residential scale, or graywater use from a laundry-to-landscape system, can assist property owners with outdoor landscaping watering needs, which is typically a significant portion of an individual household's water use. By substituting rainwater or graywater for outdoor irrigation, less groundwater will be pumped and the Corral de Tierra management area benefits from in-lieu recharge. Water used for landscaping is mostly lost to evapotranspiration and not available to be returned to the groundwater system. Alternatively, rain gardens can be designed to capture rainwater.

This project will engage property owners through outreach, help identify opportunities for residential-scale rainwater harvesting or graywater reuse systems. This project primarily includes workshops to do outreach and education for homeowners, but could also help install or incentivize installation in the future. For example, it could also include the development of a fund to provide financial incentives to help bring down individual costs associated with rainwater harvesting or graywater systems. This could also be expanded to include other residential-scale conservation efforts, such as xeriscaping or lawn buy-back efforts.

Rain Barrels and Cisterns

Residential rainwater harvesting in rain barrels or cisterns can provide water for outdoor irrigation, and offset the pumping, treatment of, and delivery of groundwater. Appropriately sized cisterns for 2,500 square foot rooftops range from approximately 600 gallons up to 5,000 gallons. Since more of the rain falls in the winter months, having enough storage to last over the summer months is an important factor in sizing cisterns for outdoor irrigation purposes. Use of rainwater for landscaping typically does not require pumping, treatment, or complex delivery systems. Rainwater harvesting at the residential level could be further enhanced with drip-irrigation systems and timers included with the cistern installations.

Rain Gardens

Rainwater could be captured in small, residential rain gardens to enhance use of rainwater to irrigate landscapes rather than groundwater. Rain gardens are vegetated basins installed at residences to capture and detain rainfall runoff while providing an aesthetic landscaping benefit to landowners. The rain garden temporarily holds water, thereby allowing it to infiltrate in the soil and provide moisture for plant roots. Rain gardens include grassed swales, rock lined swales (dry creek beds), and bioswales. Bioswales are typically sized for larger catchments than residential scale. Grassed and rock-lined swales, which are shallow channels designed to convey, filter, and infiltrate runoff, are more often used at the residential scale.

Rain gardens are installed at natural low points on the property and are typically planted with native, water tolerant plants that are able to thrive in saturated soil conditions. They can be installed in a variety of soils, from clays to sands, but are best suited for soils with high infiltration capacities.

Graywater Systems

Graywater reuse systems can provide additional residential in-lieu water use. These systems direct gently used water from showers or laundry onto landscapes to water plants instead of extracted groundwater. For example, Laundry to Landscape systems and are often installed with dual drainage plumbing that enables the water to be directed to either the landscape or wastewater system. Monterey County has developed and approved its own set of graywater guidelines for discharging graywater onto landscapes.

9.4.12.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- **Groundwater elevation measurable objective** – Rainwater harvesting, rain gardens, and graywater reuse will increase rainwater used for irrigation in lieu of pumped groundwater, thereby decreasing groundwater extraction. By pumping less water, it has a similar effect of adding water to the principal aquifer. Adding water into the principal aquifer, it will raise groundwater elevations over time.
- **Groundwater storage measurable objective** – Adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage.

9.4.12.2 Expected Benefits and Evaluation of Benefits

The primary benefit from this project is increased use of rainwater in lieu of groundwater. The Corral de Tierra area of the Monterey Subbasin is generally characterized by low density or rural density development, covering approximately 11,500 acres with around 3,100 dwellings. A very simplified calculation of potential benefits is applied to the number of dwellings based on a satellite imagery and parcel analysis: there are roughly 2,000 square feet per rooftop receiving 19 inches of rain per year yielding approximately 225 AFY of water potentially available for capture and use. If 75 households implemented rooftop rainwater harvesting, this would yield approximately 5.3 AFY of in-lieu recharge. However, this quantity may be less if rain barrels fill up only once per year in the rainy season. Expected benefits resulting from rain garden installations would be in addition to those described above for rooftop rainwater harvesting. More detailed analyses of land cover and runoff generation are required for refining the evaluation of both rooftop rainwater harvesting systems and rain gardens. During the implementation period, these numbers will be refined that will demonstrate the variation between dry, wet, and normal years. Additionally, these numbers will be refined as more residents implement rainwater capture infrastructure over time.

Increased capture of rainwater will potentially increase groundwater elevations by reducing the amount of residential demand for water for outdoor irrigation. This in-lieu use will yield dividends over a longer period as more residents install rainwater harvesting features, and subsequently use less groundwater for landscaping purposes.

Implementing a laundry-to-landscape program has an expected annual benefit of 0.97 AFY if 75 households in the Corral de Tierra management area installed systems. This is based on an expected water availability of approximately 4,100 gallons per household per April through October season. These values come from assuming a 4-person household, a high efficiency washer that uses 15 gallons per load, and that laundry to landscape water replaces all irrigation water used. Since water for outdoor irrigation takes up a large portions of a household's water use, this would present a significant in-lieu water savings during the hottest and driest months. If the laundry to landscape system was used year-round, the benefits would be higher.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater levels will be measured with a network of wells that is monitored by MCWRA. A direct correlation between groundwater recharge and changes in groundwater levels is unlikely to be observed unless many individual projects are implemented in the same area; however, the program will ask workshop participants about the projects they have implemented and will use that information to estimate reduced extraction.

9.4.12.3 Circumstances for Implementation

Decentralized residential recharge projects can be initiated at any time. Agencies and organizations in the region are already engaged in efforts to promote rainwater harvesting, rain gardens, and graywater reuse systems, and their efforts could be leveraged to expand these projects throughout the Subbasin.

9.4.12.4 Permitting and Regulatory Process

Individuals implementing residential recharge projects are responsible for any required permitting. Due to the small-scale and decentralized nature of these projects, it is not anticipated that these projects are of a magnitude capable of having a demonstrable impact on the environment that would require a California Environmental Quality Assurance (CEQA) review process; however, an applicable permit process will make that determination. Any storage tank sized 5,000 gallons or more will require a permit (WAC, 2021).

For the installation of greywater systems, California Code allows for greywater use from showers, bathtubs, and washing machines, but not from kitchen sinks or dishwashers. The California Plumbing Code Chapter 15 facilitates water conservation, relieves stress on private septic systems, makes legal compliance easily achievable, and provides guidelines for avoiding potentially unhealthful conditions. The Code requires a construction permit for greywater systems that make changes to a home's drain/waste plumbing connected to clothes washers, showers, bathtubs, and bathroom sinks. The Code allows residential greywater landscape irrigation from washing machines to be installed without a construction permit if the system meets all performance guidelines in the Code. For such systems in the unincorporated area of Monterey County on properties containing wells and/or septic systems, residents should apply

at the Monterey County Planning Department using the graywater permit template. Applications will be routed to the Monterey County Environmental Health Bureau's Environmental Health Review Services (EHRS) for review to ensure that the graywater system observes required setbacks from onsite wastewater treatment system and wells, if present. City and unincorporated County residents that do not use a well or septic system should contact their Building Department to apply for a graywater permit using the graywater permit template (Central Coast Greywater Alliance, 2020).

9.4.12.5 Implementation Schedule

If this project is selected, the implementation schedule is presented on Figure 9-12. It is anticipated that Phase I will take 2 years. Phase II will overlap with Phase I and take 2 years and be extendable if the project is expanded. Phase III and IV, implementation and ongoing maintenance by residents, will begin in Year 2 and continue into the future.

Task Description	Year 1	Year 2	Year 3	Years 4+
Phase I – Planning and discussions with residents				
Phase II – Education and outreach				
Phase III – Implementation by residents				
Phase IV – Ongoing maintenance by residents				

Figure 9-12. Implementation Schedule for Recharge of Rainwater Initiatives

9.4.12.6 Legal Authority

No legal authority is needed to promote decentralized residential in-lieu recharge projects.

9.4.12.7 Estimated Cost

The success of this project depends on homeowner participation. An important first step is education and outreach. The GSA will host 5 workshops on rainwater harvesting and 5 workshops on graywater reuse for a total cost of $50,000.

Construction costs will be the responsibility of the homeowners with possible incentives from the GSA. A complete rainwater harvesting system for a typical single-family home will generally cost between $4,000 and $10,000, with the largest cost being the storage tank (WAC, 2021). Many of the other costs are the gutters, downspouts, and irrigation distribution systems. At $10,000 for a 5,000- gallon tank and respective system, that equates to an annual cost of $800 and a unit cost of $8,800/AF.

For laundry-to-landscape systems, the costs include dual drainage plumbing, labor, materials, and the irrigation distribution system. These costs are shown in Table 9-3. If each household system costs $2,100 and yields 4,100 gallons from April to October, this equates to an annual cost of $200 and a unit cost of $9,180/AF.

Table 9-3. Costs of a Laundry to Landscape System for one Household

Item	Cost
Dual drainage plumbing	$500
2-3 hours of labor	$400
Materials	$200
Irrigation distribution system	$1,000
Total	**$2,100**

9.4.12.8 Public Noticing

As part of the approval of the program, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on it. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
  - A description of the undesirable result(s) that may occur if action is not taken
  - A description of the proposed project
  - An estimated cost and schedule for the proposed project
  - Any alternatives to the proposed project
- The SVBGSA Board will notice stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether to approve design and construction of the project.

In addition to the public noticing detailed above, if CEQA is applicable, the public noticing requirements will be followed.

9.4.13 Decentralized Stormwater Recharge Projects

This project promotes the installation of stormwater collection features in neighborhood locations downstream of typical flooding spots for the purpose of groundwater recharge. These projects are typically larger than the household-scale projects and have greater potential for the water to reach the local principal aquifers because as more water is captured, larger basins are more able to harness the power of gravity to saturate the subsurface all the way to the aquifer. Secondary benefits are potential improvement to surface water quality and flood hazard mitigation.

Anticipated climate change may bring more frequent and extreme precipitation events to this subbasin. When rainfall is concentrated in a short time period rather than spread out, more stormwater runs off rather than infiltrates, which reduces recharge to the principal aquifers. Runoff flows out of the Subbasin, but recharge features can capture and recharge a portion of the stormwater. By using proactive stormwater diversion, collection, and infiltration management techniques, groundwater conditions can improve in this Subbasin.

For this project, SVBGSA will engage in outreach, identify opportunities for neighborhood-scale stormwater routing and collection features, and potentially establish a fund to provide financial incentives to encourage their installation in residential areas. For new urban developments, Monterey County has adopted Post-Construction Requirements that require projects to implement low impact development techniques to better enable water infiltration before it becomes runoff. SVBGSA's efforts could be done in conjunction with other rainwater and floodwater efforts scaled to and applied at different locations for a variety of benefits and recharge impacts.

These decentralized stormwater recharge projects include a range of features, such as bioswales, small surface recharge basins, drywells, or other specific capture structures for enhanced infiltration and recharge purposes. This water can also be captured and used for irrigation in lieu of groundwater. Projects may require additional infrastructure and/or maintenance costs.

Bioswales

The routed stormwater could be collected in a series of swales, or into a small recharge basin, or a combination of both depending on land availability and permissions from landowners and neighborhood groups. The 3 primary types of swales are grassed swales, rock lined swales (dry creek beds), and bioswales. Vegetation in the swales slows stormwater, allows sediments to filter out, and can help remove nutrients. Bioswales are vegetated swales that use engineered media beneath the swale to reduce runoff volume and peak runoff rates. Bioswales have a greater capacity for water retention, nutrient removal, and pollutant removal.

Small Surface Recharge Basins

Stormwater could be diverted and captured in small, surface retention basins where it can infiltrate and provide decentralized, indirect recharge opportunities. These small basins can help reduce peak flooding on streets and prevent erosion or damage to the roadways from storms.

Soils greatly influence the extent of groundwater recharge and where recharge projects would be most beneficial. Infiltration of precipitation into the subsurface is dependent on a number of factors such as soil texture, soil organic content, slope, root zone depth, and salinity. High slopes through much of the Subbasin increase run-off and decrease infiltration. According to the Soil Survey Geographic Database (SSURGO), the Corral de Tierra Management Area has a roughly even mix of high and low infiltration rate soils. The soils with the highest designated recharge potential are generally located near the center of the Corral de Tierra Management Area, and along canyon bottoms where alluvial sediments have accumulated (Figure 4-7).

Dry Wells

Recharge basins can be coupled with dry wells that direct water into the subsurface, thus helping water infiltrate into the unsaturated region above the water table. Dry wells can also help circumvent locations with a lot of clay near the surface by providing screens in more permeable sediments. Site-specific analyses would be required to properly design and install these features for maximum benefit to the principal aquifer.

In Lieu Reuse

Stormwater can also be routed for retention and reuse to irrigate common areas within residential communities, medians, parks, and large building landscaping. This functions as in-lieu recharge, as it reduces the amount of groundwater needed for irrigation.

9.4.13.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- **Groundwater elevation measurable objective** - Using decentralized stormwater projects will increase water that recharges the principal aquifer, or if used in lieu of pumped groundwater for irrigation will decrease groundwater extraction. By pumping less water, it has a similar effect of adding water to the principal aquifer. Adding water into the principal aquifer through direct recharge or in-lieu use will raise groundwater elevations over time.
- **Groundwater storage measurable objective** - Adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage.

9.4.13.2 Expected Benefits and Evaluation of Benefits

The primary benefit from this project is increased groundwater recharge. The Corral de Tierra management area covers an area of approximately 11,500 acres, with multiple small drainages interspersed throughout. The number of small drainages is unknown, however if 1% of the acreage of the management area is utilized for stormwater capture, that would allow for 115 acres receiving roughly 19 inches of precipitation annually to generate 182 AFY of stormwater runoff to be routed and captured, assuming the applications are large enough to capture all stormwater during rain events. This water can be routed and captured in small neighborhood bioswales, basins, drywells, or even sent directly to agricultural lands. During the implementation period, these numbers will be refined with flood studies that are more location specific and accurate; that will demonstrate the variation between dry, wet, and normal years. Additionally, these numbers will be refined as various neighborhoods implement stormwater capture infrastructure over time.

Increased storage of runoff will potentially increase groundwater elevations in the vicinity of the stormwater capture facilities. This typically will be seen as groundwater mounding. However, as

more water is emplaced in the subsurface, more water will flow laterally, thereby expanding the zone of influence from each stormwater capture basin outward and raise groundwater elevations laterally. Additionally, proper maintenance can minimize recharge system losses, and maximize potential infiltration and subsequent storage.

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. A direct correlation between flood water recharge and changes in groundwater elevations may be possible if located close enough to existing monitoring wells. Additionally, various volumetric measurement methods will be installed along with either recharge basins or dry wells to assist in calculating increases to groundwater storage.

9.4.13.3 Circumstances for Implementation

Decentralized stormwater recharge projects can be initiated at any time. Agencies and organizations in the region are already engaged in efforts to promote stormwater recharge, and their efforts could be leveraged. Among other organizations, the Monterey County Public Works Department (MCPWD) are both engaged in efforts to manage runoff and have set the stage for consideration integrated solutions of runoff and infiltration in these watersheds. Site specific analyses are required to determine the potential recharge benefit.

9.4.13.4 Permitting and Regulatory Process

Projects described in this section may require a CEQA review process and may require an Environmental Impact Report or a Mitigated Negative Declaration (the review could also result in a Negative Declaration or Notice of Exemption). Additionally, permits from a variety of state and federal agencies may be necessary, and any project that coordinates with federal facilities or agencies may require National Environmental Policy Act (NEPA) documentation.

There may be a number of local, county, and state permits, rights of way, and easements required depending on bioswale or conveyance alignments and retention basins. Projects with dry wells will require a well construction permit.

9.4.13.5 Implementation Schedule

If this project is selected, it will follow the implementation schedule presented on Figure 9-13. It is anticipated that Phase I will take 2 years. Phase II will overlap with Phase I and take 2 years. Phase III, site selection and construction, will occur in years 3 and 4. Ongoing maintenance will continue in Year 4 and beyond.

Task Description	Year 1	Year 2	Year 3	Year 4	Years 5+
Phase I - Planning and discussions with neighborhoods					
Phase II - Surveying of top selected sites					
Phase III - Site selection and construction					
Phase IV - Ongoing maintenance					

Figure 9-13. Implementation Schedule for Recharge of Stormwater Capture Initiatives

9.4.13.6 Legal Authority

No legal authority is needed to promote decentralized stormwater recharge projects. For the implementation of projects, pursuant to California Water Code sections 10726.2 (a) and (b), the SVBGSA has the right to acquire and hold real property, and to divert and store water once it has acquired any necessary real property or appropriative water rights. Some right in real property (whether fee title, easement, license, leasehold or other) may be required to implement a recharge project. A permit to appropriate water may not needed to infiltrate stormwater if constructed on a parcel without a USGS blue line stream. If a blue line stream crosses the parcel, SVBGSA will evaluate whether a permit is needed. SVBGSA recognizes that this process takes several years to complete. If a permit is needed, SVBGSA will pursue a SWRCB 5-year temporary permit under the Streamlined Permit Process while it applies for the diversion permit.

9.4.13.7 Estimated Cost

The construction cost for the decentralized stormwater recharge projects is unable to be estimated until specific projects are scoped. This project is designed as a program that encourages developers, municipalities, homeowners' associations, and landowners to install stormwater recharge projects and assists with initial planning costs. The program costs approximately $150,000-$200,000 for strategic outreach, assistance with site assessments, assessment of recharge potential, and help securing grant funds. This amount would fund cone penetration tests to assess recharge potential for 4 to 6 sites. If needed to increase implementation of stormwater recharge projects, SVBGSA could provide monetary incentives or fund and implement the projects themselves. Each site-specific project will have its own associated costs based on the level of complexity of the stormwater capture technique. These span from non-vegetated basin to capture and infiltrate stormwater to recharge basins coupled with dry wells. The project-specific construction costs will be estimated based on initial site assessments and feasibility studies.

9.4.13.8 Public Noticing

Before SVBGSA initiates construction on any project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
  - A description of the undesirable result(s) that may occur if action is not taken
  - A description of the proposed project
  - An estimated cost and schedule for the proposed project
  - Any alternatives to the proposed project
- The SVBGSA Board will notice stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether to approve design and construction of the project.

In addition to the public noticing detailed above, all projects will follow any public noticing requirements required by CEQA. If projects are undertaken by other public agencies or private entities or persons, the implementing agency or private entity or person will be responsible for obtaining the appropriate permit (if any) and undertaking required public noticing.

9.4.14 Increase Groundwater Production in the Upper Corral de Tierra Valley for Distribution to Lower Corral de Tierra Valley

This project undertakes additional groundwater production in the Upper Corral de Tierra Valley for distribution in the Lower Corral de Tierra Valley for supplementary water supply. Although additional sites may be identified in the future, this project is scoped for locating the extraction at the artesian well in Watson Creek, with delivery to El Toro Lake, where it can pe picked up by a water system to be used in lieu of groundwater extraction or recharged. The existing artesian well supplies water to local water systems in the near vicinity, and reportedly can supply more than the existing demand. However, well yield data is not available. This project includes the construction of a new extraction well at the artesian well location and a conveyance pipeline to El Toro Lake, approximately 3.4 miles to the northwest of the site. Water systems may connect to the conveyance pipeline at El Toro Lake, or the water could be temporarily stored there and recharged, depending on the recharge potential.

Although further site scoping and project design is needed, this project would likely require a surge tank, conveyance pipeline, and connection to water systems that would treat the water prior to use. Due to artesian well conditions, a pump was excluded from the conceptual estimate. Easements may be needed to allow for the installation of the new well, construction of the conveyance pipeline, and storage or recharge site.

9.4.14.1 Relevant Measurable Objectives

The measurable objectives benefiting from outreach and education include:

- **Groundwater elevation measurable objective** - By routing excess artesian groundwater from one location to a recharge basin, there will be more water added to the El Toro Primary Aquifer System nearby areas of groundwater elevation decline. This water will be used in lieu of pumping or allowed to infiltrate at Toro Lake, both of which have the effect of adding water to the aquifer. Adding water into the principal aquifer will raise groundwater elevations over time.
- **Groundwater storage measurable objective** - Furthermore, adding water to the principal aquifer will ultimately have the effect of increasing groundwater in storage. Groundwater storage is also calculated from measured groundwater elevations. By raising groundwater elevations, the calculation of change in storage will be positive.
- **Land subsidence measurable objective** - Increasing both groundwater elevations and groundwater storage will have the added benefit of preventing any potential land subsidence. Maintaining and adding water in the subsurface will keep pore spaces saturated with positive pressure and inhibit land surface collapse associated with groundwater depletion.

9.4.14.2 Expected Benefits and Evaluation of Benefits

This project will increase sustainable yield and groundwater elevations through capturing and routing excess artesian groundwater to Lower Corral de Tierra Valley. Artesian conditions occur when the pressure of groundwater is greater than the ground surface elevation, and this groundwater is allowed to easily find the surface. Utilizing excess artesian groundwater presents an opportunity to offset groundwater pumping elsewhere without negatively impacting the current demands on the artesian source. The primary benefit from this project is increased groundwater elevations and storage in the Lower Corral de Tierra Valley that results from in lieu use or increased infiltration of this excess artesian groundwater in El Toro Lake. The project benefit is anticipated to be 160 AFY.

Benefits will be measured using the monitoring networks described in Chapter 7. Groundwater elevations will be measured with a network of wells that is monitored by MCWRA. Various volumetric measurement methods may be installed with this facility to assist in calculating increases to groundwater storage. Land subsidence will be measured using InSAR data provided by the Department of Water Resources.

9.4.14.3 Circumstances for Implementation

If selected, the artesian well project will be implemented if stakeholders determine it is necessary to reach or maintain sustainability. A number of agreements and rights must be secured before the project is implemented. Primarily, a more formal cost/benefit analysis must be completed to determine if the artesian well will provide quantifiable benefits to the principal aquifer. Site specific analyses will help determine the potential recharge benefit.

9.4.14.4 Permitting and Regulatory Process

Permits from the following government organizations that may be required for this project include:

- ***United States Fish and Wildlife Service (USFWS)*** – Federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with Section 7 of the Endangered Species Act. Interagency coordination is also required by the Fish and Wildlife Coordination Act (16 U.S. Code § 661-667e).
- ***National Oceanic & Atmospheric Administration, Fisheries (NOAA)*** – Federal agencies involved in the permitting process for this project may need to consult with USFWS in compliance with Section 7 of the Endangered Species Act.
- ***State Water Resources Control Board (SWRCB)*** – A permit to operate a public water system is required from SWRCB's Division of Drinking Water (California Health and Safety Code § 116525). Construction that disturbs one acre or more of land and that discharges stormwater requires a General Construction Stormwater Permit (Water Quality Order No. 2009-0009-DWQ). Diversion and use require an appropriative water right permit per Water Code § 1200 *et seq.*
- ***California Department of Parks and Recreation*** – Federal agencies involved in this project are required to consult with the Department of Parks and Recreation's State Historic Preservation Officer in accordance with Section 106 of the National Historic Preservation Act (16 U.S. Code § 470).
- ***California Public Utilities Commission (CPUC)*** – A Certificate of Public Convenience and Necessity (California Public Utilities Code § 1001 *et seq.*) is required to show that the project will benefit society.
- ***Monterey County Health Department*** – If there will be 55 gallons (liquid), 500 pounds (solid), or 200 cubic feet (compressed gas) of hazardous materials on site at any one time, a Hazardous Materials Business Plan and a Hazardous Materials Inventory Statement (California Health and Safety Code Chapter 6.95) must be submitted to the Monterey County Health Department's Environmental Health Bureau. Other required permits include a Well Construction Permit (Monterey County Code Chapter 15.08) and a variation on Monterey County Noise Ordinance (Monterey County Code 10.60.030).
- ***Monterey County Department of Planning and Building Services*** – This project will require a Use Permit (Monterey County Code Chapter 21.72 Title 21). A Grading Permit (Monterey County Code Chapter 16.08) is required if total disturbance on site equals or exceeds 100 cubic yards. An erosion control plan (Monterey County Code Chapter 16.12) is required if there is risk of accelerated (human-induced) erosion that could lead to degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, or increased danger from flooding.

- ***Monterey County*** – If the project encroaches onto any county-maintained road, an Encroachment Permit (Monterey County Code Chapter 14.04) is required from Monterey County's Public Works & Facilities division. Removal of 3 or fewer trees can be handled by a standalone Tree Removal Permit (Monterey County Code Chapter 16.60). Removal of more than 3 trees should be included in a Use Permit (see Monterey County Department of Planning and Building Services).
- ***Monterey County Water Resource Agency (MCWRA)*** – Participation/ easements/ purchase agreements
- ***Transportation Agency for Monterey County (TAMC)***– An easement for access to and use of the project site may need to be negotiated with TAMC.
- ***Local jurisdictions*** – Permits may also be required by a local jurisdiction depending on location of scalping plant, including but not limited to: land use permits, building permits, public health permits, public works permits, tree removal permits, and encroachment permits
- ***Landowners*** –Land lease/sale, easements, and/or encroachment agreements may be required.

9.4.14.5 Implementation Schedule

The annual implementation schedule is presented on Figure 9-14.

Task Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Phase I – Source water identification and agreements secured									
Phase II – CEQA									
Phase III – Permitting									
Phase IV – Design									
Phase V – Bid/Construct									
Phase VI – Start Up									

Figure 9-14. Implementation Schedule for Artesian Well

9.4.14.6 Legal Authority

The SVBGSA will use the legal authority and partnerships for this modified project contained in existing distribution, irrigation, and partnership programs. California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges. This project would be developed in accordance with all applicable groundwater laws and respect all groundwater rights. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, "Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and

store within or outside the agency" (CWC, 2014). Some right in real property (whether fee title, easement, license, leasehold or other) may be required to implement the project.

The County also has the power to impose charges on a parcel or acreage basis under the County Service Area provisions of the Government Code (beginning with Section 25210). These provisions give the County the authority to provide extended services within a specified area, which may be countywide, and to fix and collect charges for such extended services. Miscellaneous extended service for which county service areas can be established include "water service, including the acquisition, construction, operation, replacement, maintenance, and repair of water supply and distribution systems, including land, easements, rights-of-way, and water rights."

9.4.14.7 Estimated Cost

Capital costs were estimated at $13,275,000. On an annualized basis, assuming a 6% discount rate, and 25-year term, this amounts to $1,038,500. Including an annual operations and maintenance cost of $9,000 generates a total annualized cost of $1,047,500. Assuming a yield of 160 AFY, the unit cost for water stored is estimated at $6,550/AFY.

9.4.14.8 Public Noticing

Before SVBGSA initiates construction on this project, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board and the MCWRA Board in publicly noticed meetings. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board and the MCWRA Board will notify stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project and notify the public if approved via an announcement on the SVBGSA website and mailing lists.

The permitting and implementation of the diversion will require notification of stakeholders, beneficiaries, water providers, member lands adjacent to the river, and subbasin committee

members as well as all permit and regulatory holding agencies such as DWR, NOAA, USACE, and others. In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA or NEPA.

9.5 Implementation Actions

Implementation actions include actions that contribute to groundwater management and GSP implementation but do not directly help the Subbasin reach or maintain sustainability.

9.5.1 180/400-Foot Aquifer Subbasin GSP Implementation and Seaside Watermaster Actions

Due to the interconnectivity between the Monterey Subbasin and the adjacent critically overdrafted 180/400 Foot Aquifer Subbasin, sustainable groundwater management will need to be achieved jointly within these subbasins. The 180/400-Foot Aquifer Subbasin GSP establishes minimum thresholds, measurable objectives, and groundwater sustainability goals for this subbasin. The primary goal of this implementation action is to assist attaining sustainable management of the Monterey Subbasin through support of regional planning and project implementation efforts that have been selected for the 180/400-Foot Aquifer Subbasin.

This action includes MCWD's continued support of projects implemented in the 180/400 Subbasin and in the larger Salinas Valley Basin, particularly those that address regional seawater intrusion, provide recharge or alternative water supplies to coastal areas, and/or improve Deep Aquifer conditions near the Monterey-180/400 Subbasin boundary. Such projects are identified in the 180/400 Subbasin GSP including:

- CSIP Optimization
- M1W Winter Modification
- CSIP Expansion
- Maximum State Disaster Response Fund (SDRF) Diversion

As mentioned in Chapter 8, the subbasin GSAs is working to fill monitoring network data gaps in the Deep Aquifers immediately north of the Marina-Ord Area. As it does so, SMCs for minimum thresholds for additional Deep Aquifer monitoring sites will be established. MCWD will work with SVBGSA to take a coordinated approach to SMCs development and project implementation that considers conditions and management goals in both of these subbasins.

In addition to SGMA implementation efforts, the Subbasin's water users support regional water planning conducted the MCWRA through contribution to zones of benefit. The majority of the Subbasin is included in MCWRA Zones 2C, 2Y, and 2Z as discussed in Section 3.2.2.2.

The Seaside Basin is an adjudicated basin not subject to SGMA, and as such does not follow the same management structure or goals as the Monterey Subbasin. However, the two subbasins are hydrologically connected, and actions to meet adjudication goals in the Seaside Subbasin will have an impact on the Monterey Subbasin. The Seaside Watermaster Board is currently discussing adding protective groundwater elevations to their original pumping reductions goals in an effort to move towards a more sustainable management approach. These conversations are ongoing and will include the active collaboration with the GSAs in order to decide on protective elevations that are analogous to the established groundwater elevation SMCs outlined in Chapter 8 of this GSP.

9.5.2 Deep Aquifers Study

The Deep Aquifers underlying portions of the Salinas Valley Basin are a critical groundwater resource that is highly valued but minimally understood. Over the decades, as seawater intrusion has advanced into the 180-Foot and 400-Foot aquifers of the 180/400-Foot Aquifer Subbasin, agricultural landowners and drinking water providers have drilled wells deeper to access fresh water. The need for additional studies about the Deep Aquifers has been identified in the context of stopping seawater intrusion and effectively managing groundwater sustainability.

The 180/400-Foot Aquifer Subbasin GSP Section 9.3.6 Priority Management Action 5: Support and Strengthen Monterey County Restrictions on Additional Wells in the Deep Aquifers, calls for the SVBGSA to support the County extending ordinance 5303 to prevent any new wells from being drilled into the Deep Aquifers until more information is known about the Deep Aquifers' sustainable yield. The plan was to complete the study of the Deep Aquifers over the subsequent years, when funding became available. While the ordinance has expired, the plan for the study of the Deep Aquifers has developed.

To address seawater intrusion in the 180/400-Foot Aquifer, the SVBGSA created the Seawater Intrusion Working Group (SWIG), as detailed in Section 9.5.5 below. The SWIG membership comprises nine agencies and municipalities and multiple stakeholders to develop consensus on the current understanding of seawater intrusion in the Subbasin and adjacent subbasins subject to seawater intrusion, identify data gaps, and develop a broad-based plan for controlling seawater intrusion. Working together with a Technical Advisory Committee (TAC), the SWIG identified key tasks that could be included in the Deep Aquifers Study. GSA staff began to meet with stakeholders and partner agencies to determine if there was a reasonable and equitable path forward for securing funding to initiate this study.

A Cooperative Funding Proposal has been developed for the Deep Aquifers Study. The Study will focus on describing the geology, hydrogeology, and extents of the Deep Aquifers, the Deep Aquifers water budgets, and addressing the economic and administrative constraints on extracting from the Deep Aquifers. The study will include guidance on management issues and also propose and initiate a Deep Aquifers Monitoring Program. The Study is expected to begin in 2022 and take one to two years to complete. The GSAs will incorporate findings of the Deep

Aquifers Study into future GSP updates to ensure that the study and the development of future regulations will promote groundwater sustainability of the Deep Aquifers as defined in this GSP.

Particularly within the Monterey Subbasin, MCWD GSA and SVBGSA will facilitate data collection and share information during the study process. Such data collection efforts and information will include:

- Deep Aquifer information collected to date within the Monterey Subbasin, such as lithologic, geophysical, groundwater elevation, and water quality data;
- Completion of additional Deep Aquifer groundwater monitoring wells to address data gaps in the southwestern portion of the Monterey Subbasin (see Project M4: Drill and Construct Monitoring Wells in Section 9.4.7);
- Annual induction logging of Deep Aquifer wells in the Monterey Subbasin;
- Participating in the Seawater Intrusion Working Group (see Section 9.5.5),
- Attending coordination meetings stakeholders, providing comments to draft study work products, and incorporating its findings into understanding of basin setting in the Monterey Subbasin.

9.5.3 Support Monterey County's Final Well Construction Ordinance to Protect Deep Aquifers

Due to identified concerns regarding the risk of seawater intrusion into the Deep Aquifers the Monterey County Board of Supervisors adopted Ordinance No. 5302 in May 2018, pursuant to Government Code Section 65858. The ordinance was an Interim Urgency Ordinance, which took effect immediately upon adoption. The ordinance prohibited the acceptance or processing of any applications for new Deep Aquifers Wells beneath areas impacted by seawater intrusion, with stated exceptions including municipal wells and replacement wells. The ordinance was originally only effective for 45 days, but at the June 26, 2018 Monterey County Board of Supervisors meeting, the Board of Supervisors extended the ordinance to May 21, 2020, by adoption of Ordinance No. 5303. The Ordinance also required that all new wells in the Deep Aquifers meter groundwater extractions, monitor groundwater elevations and quality, and submit all data to MCWRA and the Groundwater Sustainability Agency with jurisdiction.

A new County Ordinance that placed a 90-day moratorium on new well construction permit applications was adopted in December 2020. The moratorium was adopted so the County could study the impact of the California Supreme Court's decision on 27 August 2020 in the case Protecting Our Water and Environmental Resources et al., v. County of Stanislaus, et al., (10 Cal.5th 479 (2020); "Protecting Our Water"). The decision may require environmental review, pursuant to CEQA, when the County considers applications to construct, repair, or destroy water wells if the decision to issue the permit involves the exercise of discretion by the decision-making authority. The County has not yet completed proposed modifications to the well construction ordinance and the moratorium on well construction permit applications has expired since March

2021. Well construction applications for the Deep Aquifers are currently being reviewed and permitted on a case-by-case basis.

As shown in Chapter 5, dramatic groundwater elevation declines of over five feet per year have been observed in MCWD's Deep Aquifers wells and in the Cooper & Nashua Road area in the 180/400 Subbasin. These declines are due to increases in production from the Deep Aquifers. Deep Aquifers groundwater elevations in MCWD wells and Cooper & Nashua Road area are 50 to 100 feet below sea level. They are also 50 to 100 feet below groundwater elevations in the 400-Foot Aquifer, leading to a significant risk of vertical migration of seawater intrusion from this aquifer to the Deep Aquifer. This indicates that current levels of pumping in the Deep Aquifers have already created the conditions which result in undesirable groundwater elevations as defined in Chapter 8, and may also result in undesirable seawater intrusion in the future. SVBGSA and MCWD will continue to collaborate and provide input to Monterey County as they finalize the proposed modifications to the well construction ordinance.

9.5.4 Adopt 2022/2023 Priority Actions for Deep Aquifers in Absence of New Well Construction Ordinance if Conditions Threaten Sustainability in Near Term

Priorities will be developed based on findings reported from the Deep Aquifers study. Resulting priority management actions will promote groundwater sustainability as defined in this GSP. [TO BE FURTHER DEVELOPED]

9.5.5 Seawater Intrusion Working Group

SVBGSA established a Seawater Intrusion Working Group (SWIG) as part of GSP implementation in the 180/400-Foot Aquifer Subbasin. The SWIG membership comprises nine agencies and municipalities and multiple stakeholders to develop consensus on the current understanding of seawater intrusion in the Subbasin and adjacent subbasins subject to seawater intrusion, identify data gaps, and develop a broad-based plan for controlling seawater intrusion. Additionally, the SWIG provides a platform for understanding Deep Aquifers issues that accompanies seawater intrusion in the coastal Subbasins. The SWIG advises SVBGSA staff and is not a legislative body subject to the Brown Act open meeting law.

The SWIG and its Technical Advisory Committee (TAC) were established by SVBGSA in August 2020. The purpose of the TAC is to provide technical information in support of the SWIG's policy direction and decision-making. SVBGSA and MCWD has been participating in the SWIG and SWIG TAC, each meeting monthly.

As part of GSP implementation, the Subbasin GSAs will continue convening and participating in the SWIG and SWIG TAC, to work towards the ultimate goal of developing a path to address seawater intrusion. See discussion under Section 9.5.1 above.

9.5.6 Future Modeling of Seawater Intrusion and Projects

Neither the SVIHM nor the Monterey Subbasin Groundwater Flow Model (Monterey Subbasin Model or MBGWFM) are variable density flow models, which is needed to adequately simulate seawater intrusion and model the impacts of proposed projects. Addressing seawater intrusion is a critical piece of sustainable groundwater management in the Monterey Subbasin, and a model that can project how it will change in response to projects and management actions is needed to identify a strategy to reduce seawater intrusion impacts. Upon completion of the Monterey Subbasin model, SVBGSA will develop a variable density flow model for the Monterey Subbasin, working together with MCWD and MCWRA. The model will use three-dimensional variable density modeling code that is compatible with the MODFLOW modeling platform, such as SEAWAT or MODFLOW-USG. Development of this model will include compiling all the concentration data available and mapping it to determine initial conditions and boundary conditions, calibrating to water levels and concentration (i.e., seawater intrusion), and developing predictive scenarios. It is anticipated that this model may be expanded to include the coastal area of the 180/400 Foot Subbasin and will aid in evaluating the potential effects of regional projects on seawater intrusion and groundwater levels in the Monterey Subbasin.

A number of multi-subbasin projects has been proposed as part of integrated management in the Salinas Valley Basin, including those identified in Section 9.4 above as well as projects proposed in the 180/400-Foot Aquifer Subbasin GSP that may affect subbasin boundary conditions. As part of project planning, the anticipated benefits and impacts of these projects will need to be assessed with a numerical model that covers multiple subbasins.

Neither the SVIHM nor the Monterey Subbasin Model is currently capable of simulating conditions across the Monterey and adjacent subbasins. The Monterey Subbasin Model, which was used to develop water budget information in this GSP, has a model area that focuses primarily on the Monterey Subbasin. The SVIHM encompasses the entire Salinas Valley Groundwater Basin. However, the SVIHM does not accurately reflect hydrologic conditions within the Monterey Subbasin or the Seaside Subbasin[9].

The MCWD GSA and SVBGSA will incorporate information from the Monterey Subbasin Model into the SVIHM and/or the seawater intrusion model so that projects can be modeled for the entire Salinas Valley Groundwater Basin, inclusive of the Monterey Subbasin. This action was envisioned during development of the Monterey Subbasin Model, as the model was developed from the MODFLOW family of groundwater model software tools to ensure that it will be compatible with the regional SVIHM.

[9] A detailed discussion of the models' current construction and calibration results can be found in technical memorandum presented to the SVBGSA Advisory Committee on April 2, 2021.

9.5.7 Well Registration

All groundwater production wells, including wells used by *de minimis* pumpers, will be required to be registered with the SVBGSA. Well registration is intended to establish a relatively accurate count of all the active wells in the Subbasin. This implementation action will help gain a better understanding of the wells in active use, verses those that have been decommissioned. Well registration will collect information on active wells, such as type of well meter, depth of well, and screen interval depth. Well metering is intended to improve estimates of the amount of groundwater extracted from the Subbasin. SGMA does not allow metering of *de minimis* well users, and therefore well metering is limited to non-*de minimis* wells. The details of the well registration program, and how it integrates with existing ordinances and requirements, will be developed during the first 2 years of GSP implementation.

9.5.8 GEMS Expansion and Enhancement

SGMA requires Groundwater Sustainability Agencies to manage groundwater extractions within a basin's sustainable yield. Accurate extraction data is fundamental to this management. The MCWRA GEMS collects groundwater extraction data from certain areas in the Salinas Valley. The system was enacted in 1993 under Ordinance 3663 and was later modified by Ordinances 3717 and 3718. The MCWRA provides the SVBGSA annual GEMS data that can be used for groundwater management.

Most of the Monterey Subbasin's estimated groundwater extraction data is derived from MCWRA's GEMS Program, which is only implemented in Zones 2, 2A, and 2B[10]. There are limited data on groundwater extraction within the Corral de Tierra management area outside of MCWRA Zones 2, 2A and 2B.

SVBGSA will work with MCWRA to expand the existing GEMS Program to cover the entire Monterey Subbasin, which would capture all wells that have at least a 3-inch internal diameter discharge pipe. Program revisions will consider and not contradict related state regulations. Alternatively, SVBGSA could implement a new groundwater extraction reporting program that collects data outside of MCWRA Zones 2, 2A, and 2B. The groundwater extraction information will be used to report total annual extractions in the Subbasin and assess progress on the groundwater storage SMCs as described in Chapter 8. Additional improvements to the existing MCWRA groundwater extraction reporting system may include some subset of the following:

- Developing a comprehensive database of extraction wells
- Expanding reporting requirements to all areas of the Salinas Valley Groundwater Basin
- Including all wells with a 2-inch discharge or greater

[10] Zones 2 and 2A were later superseded by Zone 2C, see Chapter 3 Section 3.2.2.2.

- Requiring automatically reporting flow meters
- Comparing flow meter data to remote sensing data to identify potential errors and irrigation inefficiencies.

9.5.9 Dry Well Notification System

The GSAs could develop or support the development of a program to assist well owners (domestic or state small and local small water systems) whose wells go dry due to declining groundwater elevations. The program could include a notification system whereby well owners can notify the GSAs or relevant partner agency if their well goes dry, such as the Household Water Supply Shortage System (DWR, 2021). The information collected through this portal is intended to inform state and local agencies on drought impacts on household water supplies. It could also include referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and/or long-term supply solutions. For example, the GSAs could set up a trigger system whereby it would convene a working group to assess the groundwater situation if the number of wells that go dry in a specific area cross a specified threshold. A smaller area trigger system would initiate action independent of monitoring related to the groundwater level SMCs. The GSAs could also support public outreach and education.

9.5.10 Water Quality Partnership

Drinking water access and quality is a critical issue throughout the Monterey Subbasin. Numerous agencies at the local and State levels are involved in various aspects of water quality. The SWRCB and RWQCBs are the principal state agencies with primary responsibility for the coordination and control of water quality for the health, safety, and welfare of the people of the state pursuant to the Porter-Cologne Water Quality Control Act 1969 (California Water Code Division 7 Section 13001). The locally based Groundwater Sustainability Agencies established by the SGMA are required to develop and implement GSPs to avoid undesirable results (one related to water quality) and mitigate overdraft within 20 years. SVBGSA and MCWD GSA will coordinate with the appropriate water quality regulatory programs and agencies in the Subbasin to understand and develop a process for determining when groundwater management and extraction are resulting in degraded water quality in the Subbasin.

Both the State and the County have committed to a Human Right to Safe Drinking Water. SGMA outlines a specific role for GSAs related to beneficial users of groundwater, including drinking water. This implementation action will help define the unique role for the GSAs, not related to specific sustainability metrics. Under this implementation action, the GSAs will play a convening role by developing and coordinating a water quality partnership (Partnership). There are many efforts to address water quality occurring simultaneously and the GSAs acknowledge this developing set of policy and implementation actions by the SWRCB. For example, at the State level, the DDW's Safe and Affordable Funding for Equity and Resilience (SAFER) program is designed to meet the goal of safe drinking water for all Californians. At the local level, the County

of Monterey Health Department Drinking Water Protection Service is designed to regulate and monitor water systems and tests water quality for new building permits for private wells.

The Partnership will review water quality data, identify data gaps, and coordinate agency communication. The Partnership will include the RWQCB, local agencies and organizations, water providers, domestic well owners, technical experts, and other stakeholders including the U.S. Army, which is responsible for implementing remedial efforts to address legacy groundwater contamination at Fort Ord. The Partnership will convene at least annually. The goal of the Partnership will include documenting agency actions to address water quality concerns. An annual update to the GSAs' board of directors will be provided regarding Partnership efforts and convenings.

9.6 Addressing Overdraft Conditions

As discussed in Chapter 6, projected water budget results indicate that if adjacent subbasins are managed sustainably and the 180/400 Foot Aquifer Subbasin reaches SMCs:

- The Marina-Ord Area WBZ will not be in overdraft during the 30-year post-GSP implementation period, and
- The Corral de Tierra Area WBZ will be in minor overdraft (i.e., 89 AFY) during the 30-year post-GSP implementation period.

However, projected water level results indicate that further analysis and implementation of projects and/or management actions may be required to reach SMCs in the Marina-Ord Area WBZ and/or the Corral de Tierra WBZ, depending upon boundary conditions achieved in adjacent subbasins.

The projects presented herein, if fully implemented, are adequate to comprise the entirety of the Marina-Ord Management Area's projected groundwater demand, and significantly impact the projected demand in the Corral de Tierra area.

The MCWD GSA and SVBGSA are the same GSAs covering the adjacent 180/400-Foot Aquifer Subbasin and will be directly leading joint efforts to achieve sustainability and mitigate any residual overdraft. As described herein, regional, or multi-subbasin projects and management actions will need to be coordinated. For example, in the event that a seawater intrusion extraction barrier is constructed in the 180/400 Foot Aquifer Subbasin, impacts to groundwater levels, seawater intrusion, and cross-boundary flows will need to be assessed.

To demonstrate this future coordination, Implementation Action 1 (180/400-Foot Aquifer Subbasin GSP Implementation and Seaside Watermaster Actions) describes the GSAs' plan to support projects and actions in adjacent subbasins, particularly those that will improve groundwater conditions near Monterey Subbasin boundaries and reduce the potential for seawater intrusion and decrease cross-boundary outflows from the Monterey Subbasin. During the first five years of GSP implementation, the GSAs will perform various studies and analyses to

refine project concepts into actionable projects. As part of this process, the GSAs will implement Implementation Action 6 (SVIHM Calibration and Refinement) to develop a numerical tool capable of quantifying the benefits and impacts of these projects on the Monterey Subbasin.