Salinas Valley Basin GSA

Update on Projects & Management Actions

Presented to Forebay Aquifer Subbasin Committee
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Recharge Projects

Project/ Management Action #	Name	Description	Project Benefits	Quantification of Project Benefits	Cost
A1	Multi-benefit Stream Channel Improvements	Prune native vegetation and remove non-native vegetation, manage sediment, and enhance floodplains for recharge. Includes 3 components: 1. Stream Maintenance Program 2. Invasive Species Eradication 3. Floodplain Enhancement and Recharge	Groundwater recharge, flood risk reduction, returns streams to a natural state of dynamic equilibrium	Component 1: benefits not quantified Component 2: 2,790 to 20,880 AF/yr. of increased recharge Component 3: 400 AF/yr. from 4 recharge basins	<u>Component 1</u> Cost: $150,000 for annual administration and $95,000 for occasional certification <u>Component 2</u> Average Cost: $16,500,000 Unit Cost: $60 to $740/AF <u>Component 3</u> Cost: $4,464,000 Unit Cost: $930/AF
A2	Managed Aquifer Recharge with Overland Flow	Constructs basins for managed aquifer recharge of overland flow before it reaches streams	Groundwater recharge, less stormwater and erosion, more regular surface temperature	400 AF/yr. in increased recharge	Capital Cost: $4,128,000 Unit Cost: $870/AF

Reservoir Reoperation Projects & Management Actions

Project/ Management Action #	Name	Description	Project Benefits	Quantification of Project Benefits	Cost
B1	Winter Releases with Aquifer Storage and Recovery	Shift reservoir releases to winter months and inject winter releases into the 180/400-Foot Aquifer Subbasin for Aquifer Storage and Recovery to provide summer irrigation water to CSIP	More regular winter reservoir releases, greater groundwater recharge in the Forebay Subbasin, and help reducing spread of Arundo; additional benefits for other subbasins	Analysis underway	Valley-wide Capital Cost: $172,141,000 Unit Cost for 12,900 AF/yr. for ASR: $1,450/AF *(distribution of benefits throughout Valley will be determined through a benefits assessment)*
B2	Interlake Tunnel and Spillway Modification	Tunnel to transfer excess water from Nacimiento to San Antonio Reservoir	Greater surface water stored in reservoirs; more groundwater recharge	30,500 AF/yr. of increased groundwater recharge from the Salinas River throughout the Salinas Valley	Valley-wide Capital Cost: $118,503,000 Unit Cost: $393/AF *(distribution of benefits throughout Valley will be determined through a benefits assessment)*
B3	Drought Reoperation	Establishment of the Drought Technical Advisory Committee (D-TAC) to develop a plan for how to manage reservoir releases during drought conditions	More regular winter reservoir releases; drought resilience	Unable to quantify benefits since decisions have yet to be made	Minimal SVBGSA staffing costs for participation; No additional MCWRA costs since already formed

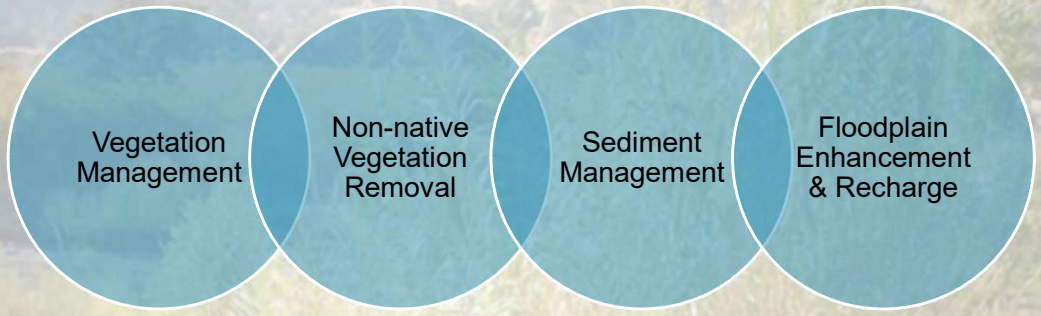
Demand Management Projects

Project/ Management Action #	Name	Description	Project Benefits	Quantification of Project Benefits	Cost
C1	Conservation and Agricultural BMPs	Promote agricultural best management practices and support use of evapotranspiration data as an irrigation management tool for growers	Better tools assist growers to use water more efficiently; decreased groundwater extraction	Unable to quantify benefits until specific BMPs are identified and promoted	Approximately $100,000 for four workshops, grant writing, and demonstration trials. Cost could be reduced if shared between subbasins.
C2	Fallowing, Fallow Bank, and Agricultural Land Retirement	Includes voluntary fallowing, a fallow bank whereby anybody fallowing land could draw against the bank to offset lost profit from fallowing, and retirement of agricultural land	Decreased groundwater extraction for irrigated agriculture	Analysis underway	Analysis underway
C3	Forebay Pumping Technical Advisory Committee (TAC)	Establish TAC to convene if triggered by groundwater levels declines, groundwater storage loss, or low Arroyo Seco flows to determine potential pumping restrictions	Decreased groundwater extraction when pumping restrictions enacted	Dependent on specific pumping restrictions implemented	Staffing costs plus $10,000 per year (if TAC is triggered)

Implementation Actions

Project/ Management Action #	Name	Description	Project Benefits	Quantification of Project Benefits	Cost
D1	Groundwater Elevation Management System (GEMS) Expansion	Update current GEMS program, by collecting groundwater elevation data from wells in areas not currently covered by GEMS and enhance data collection	Better informed decisions	N/A – Implementation Action	Not estimated at this time
D2	Domestic water partnership	Form a working group for different agencies to coordinate on domestic water issues	Better access to quality drinking water	N/A – Implementation Action	Not estimated at this time
D3	Localized Groundwater Elevation Triggers	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	N/A – Implementation Action	Not estimated at this time
D4	Well Registration	Register all production wells. Monitor flowmeters on all non-*de minimis* wells.	Better informed decisions, more management options	N/A – Implementation Action	Not estimated at this time

Multi-benefit Stream Channel Improvements



Component 1: Stream Maintenance Program

- An ongoing collaboration between several partner agencies to reduce flood risk, minimize erosion, and improve ecological conditions
- Groundwater benefits difficult to quantify
- Cost: $95,000 for certification and $150,000 for annual administration; could increase participation through funding stream maintenance activities

Component 2: Invasive Species Eradication

- Will increase groundwater recharge by 2,790 to 20,880 AF/yr. once work is complete
- Capital cost for remaining work: $14.5 to $19 million
- Unit cost for remaining work: $60 to $740/AF

Component 3: Floodplain Enhancement and Recharge

- Build four recharge basins to increase storage by 400 AF/yr. at a capital cost of $4,464,000 and unit cost of $930/AF

Managed Aquifer Recharge (MAR) of Overland Flow

- Benefits:
  - Approximately 400 AF/yr. (4 x 100 AF/yr. recharge basins)
  - Highly dependent on site and precipitation
  - Enhance sustainable yield and groundwater elevations
  - Enhance soil moisture, which also helps erosion protection and near-surface temperature regulation
- Approximate Costs:
  - $4.2 million for 4 recharge basins, each of which recharges 100 AF/yr.
  - $870/AF

Photo source: Driscoll's, Inc.

Winter Releases with Aquifer Storage and Recovery

Overview:
Build an injection well field near the Salinas River Diversion Facility and inject water released from the reservoirs

Benefits:

- Benefit to Forebay Subbasin underway
- Additional 12,900 AF/yr. injected into the 180- and 400-Foot Aquifers
- Distribution of benefits throughout Valley will be determined through a benefits assessment.

Photo source: San Luis Obispo County

Costs:

- Valley-wide Capital Cost: $172 million
- Unit Cost for 12,900 AF/yr. ASR: $1,450/AF

Fallowing, Fallow Bank, and Agricultural Land Retirement

- Includes voluntary fallowing, a fallow bank whereby anybody fallowing land could draw against the bank to offset lost profit from fallowing, and retirement of agricultural land
- Analysis underway
- Estimated benefit:
  - # acres x (crop groundwater use – cover crop groundwater use)
  - 3.3 AF/yr. for vegetables in the Forebay? (2018 MCWRA Groundwater Extraction Summary Report)
- Estimated cost – rotational fallowing, only applicable if fallowed in dry months
  - Time fallowed x (cost of cover crops + average lost income)
  - Or, time fallowed x (cost of cover crops + rent)

***We recognize there are broader economic consequences resulting from taking farmland out of production*

***Payment may be a portion of these*

***Need to think about management of fallowed/retired land and associated costs*

Questions