

Projects with Preliminary Cost and Yield Estimates					
Project	District Lifecycle Cost (Present Value, 2017) <sup>1</sup>	Average Annual Yield (AFY) <sup>2</sup>	Cost/AF	Relative Risk <sup>3</sup>	
<b>Anderson Reservoir Expansion:</b> Increases reservoir storage by 100,000 AF to about 190,000 AF, increasing the District's ability to capture and store local runoff. Planning for reconstruction of Anderson Reservoir to meet seismic standards is currently underway. Consideration of also expanding the reservoir would likely delay the required work.	\$1.2 billion	10,000	\$5,000	---	
<b>Bay Area Brackish Water Treatment:</b> Secures a partnership with other Bay Area agencies to build a brackish water treatment plant in Contra Costa County. District would receive up to 5 MGD of water in critical dry years. There are concerns about the complexity of permitting a desalination plant and the availability of water rights during dry periods when such a facility would be most needed. This project will require collaboration among multiple agencies and requires partners for moving forward. The District is a member of Bay Area Regional Reliability and will continue to work on regional solutions to water reliability.	\$80 million	1,000	\$2,900	---	
<b>Calero Reservoir Expansion:</b> Expands Calero Reservoir storage by about 14,000 AF to 24,000 AF. Planning and design for Calero Reservoir Seismic Retrofit project is currently underway. Consideration of also expanding the reservoir would likely delay the required work.	\$180 million	3,000	\$2,200	---	

<sup>1</sup> The District Lifecycle Cost (Present Value, 2017\$) includes capital, operations, maintenance, rehabilitation, and replacement costs, as applicable, for a 100-year period, discounted back to 2017 dollars. All costs are subject to change pending additional planning and analysis.

<sup>2</sup> The average annual yield of many projects depends on which projects they are combined with and the scenario being analyzed. For example, groundwater banking yields are higher in portfolios that include wet year supplies. Similarly, they would be lower in scenarios where demands exceed supplies and excess water is unavailable for banking.

<sup>3</sup> District staff complete risk ranking analyses in September 2017 and December 2018. Not all the potential projects were included in the analysis. "---" indicates the project was not included in either of the risk ranking analysis.

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<b>California WaterFix:</b> Constructs alternative conveyance (one or two tunnels) capable of diverting up to 9,000 cubic feet-per-second from the Sacramento River and delivering it to the federal and state pumps. This would result in less impactful diversions, help maintain existing deliveries, improve the ability to do transfers, and protect water quality from sea level rise. The project has implementation complexity, uncertainty, and stakeholder opposition.	\$620 million	41,000	\$600	High - Extreme
<b>Church Avenue Pipeline:</b> Diverts water from the Santa Clara Conduit to the Church Avenue Ponds. The Morgan Hill recharge projects provide the same or better yields at a lower cost.	\$30 million	1,000	\$900	---
<b>Dry Year Options / Transfers:</b> Provides 12,000 AF of State Water Project transfer water during critical dry years. Amount can be increased or decreased. Can also include long-term option agreements. There are uncertainties with long-term costs and ability to make transfers in critical dry years.	\$100 million	2,000	\$1,400	Low
<b>Groundwater Banking:</b> Provides 120,000 AF of banking capacity for Central Valley Project and State Water Project contract water. Sends excess water to a groundwater bank south of the Delta during wet years and times of surplus for use during dry years and times of need. Amount could be increased or decreased. There are uncertainties with the ability to make transfers in critical dry years and Sustainable Groundwater Management Act implementation.	\$60 million	2,000	\$1,300	Low

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<b>Lexington Pipeline:</b> Constructs a pipeline between Lexington Reservoir and the raw water system to provide greater flexibility in using local water supplies. The pipeline would allow surface water from Lexington Reservoir to be put to beneficial use elsewhere in the county and increase utilization of existing water rights, especially in combination with the Los Gatos Ponds Potable Reuse project. In addition, the pipeline will enable the District to capture some wet-weather flows that would otherwise flow to the Bay. Water quality issues would require pre-treatment/management. An institutional alternative could include an agreement to use some of the District's Lexington Reservoir water right at San Jose Water Company's Montevina Water Treatment Plant.	\$90 million	3,000	\$1,000	Low
<b>Local Land Fallowing:</b> Launches program to pay growers not to plant row crops in critical dry years. This would primarily save water in the South County. The South County recharge projects have similar or greater yields at a lower cost and are more consistent with County land use policy and grower interests.	\$50 million	1,000	\$2,400	---
<b>Los Vaqueros Reservoir:</b> Secures an agreement with Contra Costa Water District and other partners to expand the off-stream reservoir by 115 TAF (from 160 TAF to 275 TAF) and construct a new pipeline (Transfer-Bethany) connecting the reservoir to the South Bay Aqueduct. Assumes District's share is 30 TAF of storage, which includes an emergency storage pool of 20 TAF for use during droughts. Would require funding and operating agreements with multiple parties, likely including formation of a Joint Powers Authority.	\$90 million	2,000	\$1,200	Medium
<b>Morgan Hill Recycled Water:</b> Constructs a 2.25 MGD scalping plant in Morgan Hill. Would need to replace a lower cost recycled water project in Gilroy due to capacity constraints on the system.	\$80 million	3,000	\$1,100	---

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<b>No Regrets Package</b>	\$100 million	11,000	\$400	Medium
Advanced Metering Infrastructure (AMI): Implements a cost share program with water retailers to install AMI throughout their service area. AMI would alert customers of leaks and provide real-time water use data that allows users to adjust water use.	\$30 million	4,000	\$200	Low
Graywater Rebate Program Expansion: Expand the District's existing rebate program for laundry-to-landscape graywater systems. Potentially could include a direct installation program and/or rebates for graywater systems that reuse shower and sink water.	\$1 million	< 1,000	\$2,200	Low
Leak Repair Incentive: Provides financial incentivizes homeowners to repair leaks.	\$2 million	< 1,000	\$7,800	Low
New Development Model Ordinance: Encourages municipalities to adopt an ordinance for enhancing water efficiency standards in new developments. Components include submetering multi-family residences, onsite water reuse (rainwater, graywater, black water), and point-of use hot water heaters.	\$1 million	5,000	\$100	Medium
Stormwater - Agricultural Land Recharge: Flooding or recharge on South County agricultural parcels during the winter months.	\$10 million	1,000	\$1,000	Low
Stormwater - Rain Barrels: Provides rebates for the purchase of a rain barrels.	\$40 million	< 1,000	\$15,100	Low
Stormwater - Rain Gardens: Initiates a District rebate program to incentivize the construction of rain gardens in residential and commercial landscapes.	\$10 million	< 1,000	\$2,800	Low
Stormwater - San Jose: Constructs a stormwater infiltration system in San Jose. Assumes 5 acres of ponds. Potential partnership with City of San Jose.	\$4 million	1,000	\$100	Low
Stormwater – Saratoga #1: Constructs a stormwater infiltration system in Saratoga. Assumes 5 acres of ponds. Assumes easement rather than land purchase. Close to Stevens Creek Pipeline, so could also potentially be used as a percolation pond.	\$4 million	< 1,000	\$1,100	Low

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<b>Pacheco Reservoir:</b> Enlarges Pacheco Reservoir to about 140,000 AF. Assumes local inflows and ability to store Central Valley Project supplies in the reservoir. Construction would be in collaboration with Pacheco Pass Water District and San Benito County Water District. The project would be operated to provide water for fisheries downstream of the reservoir and increase in-county storage. Other potential benefits could include managing water quality impacts from low-point conditions in San Luis Reservoir and downstream flood protection. Potentially significant environmental and cultural impacts are associated with the project.	\$470 million	6,000	\$2,700	Medium
<b>Potable Reuse – Ford Pond:</b> Constructs potable reuse facilities for 4,000 AFY of groundwater recharge capacity at/near Ford Ponds. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. The project would require agreements with the City of San Jose and may require moving existing water supply wells.	\$290 million	3,000	\$2,800	Medium
<b>Potable Reuse – Injection Wells:</b> Constructs potable reuse facilities for 15,000 AFY of groundwater injection capacity. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. The injection wells could be constructed in phases and be connected to the pipeline carrying purified water to the Los Gatos Ponds. The project would require agreements with the City of San Jose and reverse osmosis concentrate management. Injection well operations are more complex than recharge pond operations.	\$1.2 billion	12,000	\$3,100	High

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<b>Potable Reuse - Los Gatos Ponds:</b> Constructs a facility to purify water treated at wastewater treatment plants for groundwater recharge. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. Assumes up to 24,000 AFY of advanced treated recycled water would be available for groundwater recharge at existing recharge ponds in the Los Gatos Recharge System. Some of the outstanding issues with the project are reverse osmosis concentrate management and agreements with the City of San Jose.	\$1.2 billion	19,000	\$2,000	Medium
<b>Saratoga Recharge:</b> Constructs a new groundwater recharge facility in the West Valley, near the Stevens Creek pipeline. Would help optimize the use of existing supplies. Land availability and existing land uses limit potential project locations.	\$50 million	1,000	\$1,300	Low
<b>Sites Reservoir:</b> Establishes an agreement with the Sites JPA to build an off-stream reservoir (up to 1,800 TAF) north of the Delta that would collect flood flows from the Sacramento River and release them to meet water supply and environmental objectives. Assumes District's share is 24 TAF of storage, which is used to prorate yields from the project. The project would be operated in conjunction with the SWP and CVP, which improves flexibility of the statewide water system but would be subject to operational complexity. The project would increase reliance on the Delta.	\$250 million	8,000	\$1,200	High
<b>South County Recharge – Butterfield Channel:</b> Extends the Madrone Pipeline from Madrone Channel to Morgan Hill's Butterfield Channel and Pond near Main Street. Would help optimize the use of existing supplies. Would need to be operated in conjunction with the City's stormwater operations.	\$20 million	2,000	\$400	Low

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<b>South County Recharge - San Pedro Ponds:</b> Implements a physical or institutional alternative to enable the ponds to be operated at full capacity without interfering with existing septic systems in the vicinity.	\$10 million	1,000	\$400	---
<b>South County Water Treatment Plant:</b> Provides in-lieu groundwater recharge by delivering treated surface water to the Cities of Morgan Hill and Gilroy. Would require a connection to the Santa Clara Conduit or other raw water pipeline and pipelines from the plant to the cities' distribution systems. The District owns two properties that could potentially be used for this project. The South County recharge projects provide similar benefits at significantly lower cost.	\$110 million	2,000	\$2,300	---
<b>Stormwater – Saratoga #2:</b> Constructs a stormwater infiltration system on a parcel in Saratoga. Assumes 5 acres of ponds. Currently zoned as ag land; assumes land purchase. About 0.6 miles from the Stevens Creek Pipeline. The cost-effectiveness is low due to the land purchase requirement. Other stormwater projects are included in the “No Regrets” package.	\$50 million	<1,000	\$10,700	---
<b>Transfer-Bethany Pipeline:</b> Constructs a pipeline between CCWD’s Transfer Facility to Bethany Reservoir that serves the South Bay Aqueduct and the California Aqueduct. Would provide an alternative to through-Delta conveyance of supplies from projects such as the Bay Area Brackish Water Treatment and Refinery Recycled Water Exchange projects. Also, it would facilitate conveyance of Delta surplus supplies or transfers from CCWD and East Bay Municipal Utility District. The pipeline is one element of the larger Los Vaqueros Reservoir Expansion Project. Would require funding and operating agreements with multiple parties, likely including formation of a Joint Powers Authority.	\$50 million	1,000	\$1,200	Medium

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<b>Uvas Pipeline:</b> Captures excess water (e.g., water that would spill) from Uvas Reservoir and diverts the water to Church Ponds and a 25 acre-foot pond near Highland Avenue. The new pond would be adjacent to and connected by a pipe to West Branch Llagas Creek. The South County recharge projects provide similar or better yields at a lower cost.	\$80 million	1,000	\$2,500	---
<b>Uvas Reservoir Expansion:</b> Would expand Uvas Reservoir by about 5,100 AF to 15,000 AF, reducing reservoir spills. Project would be located on Uvas Creek, which currently provides good steelhead habitat. Other water storage options under consideration provide better yield for the cost.	\$330 million	1,000	\$21,200	---
<b>Water Contract Purchase:</b> Purchase 20,000 AF of SWP Table A contract supply from other SWP agencies. Would increase reliance on the Delta and be subject to willing sellers' availability. Could also include Long-Term Transfers being considered along with California WaterFix.	\$360 million	12,000	\$800	Medium



### Other Potential Projects

**Conservation Rate Structures:** Many retailers implement conservation rate structures. Given recent court rulings on rate structure, retailers are reluctant to add new conservation rate structures at this time.

**Countywide Water Reuse Master Plan:** The District is working with local recycled water producers, retailers, and other stakeholders to develop a Countywide Water Reuse Master Plan (CWRMP) that will address key challenges in potable water reuse, including: (1) identification of how much water will be available for potable reuse and non-potable recycled water expansion, (2) evaluation of system integration options, (3) identification of specific potable reuse and recycled water projects, and (4) development of proposals for governance model alternatives including roles and responsibilities. The CWRMP will also incorporate proposed infrastructure upgrades that would improve capacity; analyze seasonal, daily, and hourly demand trends to determine the opportunities to optimize flows during peak periods; update the existing and projected future demands of users and retailers; identify land requirements; and prioritize actions and improvements needed to meet the projected demands, including cost estimates of recommended improvements.

**Del Valle Reoperations:** This project, as currently envisioned, would allow for more storage in Lake Del Valle, a State Water Project facility in Del Valle Regional Park that is operated by East Bay Regional Park District. The benefits of the additional storage are primarily related to operational flexibility and water quality. The project may not increase long-term water supply yields or drought year yields. Staff is continuing to evaluate Del Valle reoperations in partnership with Alameda County Water District and Zone 7 Water Agency. If long-term water supply benefits are identified, staff will evaluate it as part of the Water Supply Master Plan.

**Refinery Recycled Water Exchange:** Central Contra Costa Sanitary District (Central San) is a wastewater agency in Contra Costa County. It currently produces about 2,000 acre-feet per year (AFY) of recycled water, but has wastewater flows that could support more than 25,000 AFY of recycled water production. The conceptual program would involve delivering recycled water to two nearby refineries that are currently receiving about 22,000 AFY of CCWD Central Valley Project (CVP) water; in exchange the District would receive some of CCWD's CVP water.

**Retailer System Leak Detection/Repair:** Recent legislation requires retailers to complete annual water loss audits, which will then be used by the State to establish water loss standards. Staff will reconsider this alternative after the standards are developed.

**Shallow Groundwater Reuse:** A feasibility study for the recovery and beneficial use of shallow groundwater was completed in 2009. Although potential sites for shallow groundwater reuse were identified, staff has identified several concerns. These concerns include water quality, sustainable yields, and lack of infrastructure for storage and conveyance. In addition, several reuse sites are in areas where recycled water is already delivered for non-potable use. Staff are continuing to look for opportunities to incorporate shallow groundwater reuse into the Water Supply Master Plan.

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**Shasta Reservoir Expansion:** A Feasibility Study and Environmental Impact Statement have been completed for a Shasta Reservoir Expansion. The United States Bureau of Reclamation concluded the project is technically feasible, but that non-federal partners would need to pay for project implementation. State law prohibits Prop 1 storage funding for the project and restricts funding for any studies. Staff will continue to monitor opportunities related to Shasta Reservoir Expansion.

**Temperance Flat Reservoir:** Temperance Flat Reservoir would be located upstream of Friant Dam on the San Joaquin River. Staff's current analysis is that any water supply benefits to the District from the project would be indirect, largely manifested by lowered requirements for Delta pumping for delivery to the San Joaquin Exchange contractors at the Delta-Mendota Pool.