Santa Clara Valley Water District
Board of Directors Meeting

District Headquarters Board Room
5700 Almaden Expressway
San Jose, CA 95118

1:00 P.M. SPECIAL MEETING AGENDA

Tuesday, January 31, 2017
1:00 PM

District Mission: Provide Silicon Valley safe, clean water for a healthy life, enviornment and economy.

All public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body will be available for public inspection at the Office of the Clerk of the Board at the Santa Clara Valley Water District Headquarters Building, 5700 Almaden Expressway, San Jose, CA 95118, at the same time that the public records are distributed or made available to the legislative body. Santa Clara Valley Water District will make reasonable efforts to accommodate persons with disabilities wishing to attend Board of Directors' meeting. Please advise the Clerk of the Board Office of any special needs by calling (408) 265-2600.

NORMA CAMACHO
Interim Chief Executive Officer

MICHELE L. KING, CMC
Clerk of the Board
(408) 265-2600
Fax (408) 266-0271
www.valleywater.org

Note: The finalized Board Agenda, exception items and supplemental items will be posted prior to the meeting in accordance with the Brown Act.

THIS PAGE INTENTIONALLY LEFT BLANK

Santa Clara Valley Water District
Board of Directors

1:00 P.M. SPECIAL MEETING
AGENDA

Tuesday, January 31, 2017	1:00 PM	District Headquarters Board Room

1. CALL TO ORDER:

1.1. Roll Call.

1.2. Pledge of Allegiance/National Anthem.

1.3. Time Open for Public Comment on any Item not on the Agenda.
Notice to the public: This item is reserved for persons desiring to address the Board on any matter not on this agenda. Members of the public who wish to address the Board on any item not listed on the agenda should complete a Speaker Card and present it to the Clerk of the Board. The Board Chair will call individuals to the podium in turn. Speakers comments should be limited to three minutes or as set by the Chair. The law does not permit Board action on, or extended discussion of, any item not on the agenda except under special circumstances. If Board action is requested, the matter may be placed on a future agenda. All comments that require a response will be referred to staff for a reply in writing. The Board may take action on any item of business appearing on the posted agenda.

2. TIME CERTAIN:

1:00 PM

2.1. Update on the 2017 Water Supply Master Plan and Potential Storage Options. 16-0417

Recommendation:
A. Receive information on the updated long-term water supply outlook;
B. Receive and discuss risk assessment results;
C. Discuss the level of service goal;
D. Receive and discuss information on preliminary project and portfolio analyses; and
E. Receive and discuss information on potential storage options.

Attachments:
Attachment 1: WSMP Strength/Weakness Analysis
Attachment 2: Summary of Projects
Attachment 3: Planning Objectives
Attachment 4: Updated WSMP Schedule
Attachment 5: PowerPoint

Est. Staff Time: 15 Minutes

2.2. Potential Expansion of Pacheco Reservoir and/or Anderson Reservoir, Proposition 1 Funding Opportunity, and Potential Single Source Consultant Agreement. 16-0908

Recommendation:
A. Receive information on and discuss the merits of expanding Pacheco Reservoir and/or Anderson Reservoir;

B. Discuss the merits of preparing a Proposition 1 funding application for one or both of these projects;

C. Provide direction to staff to continue to evaluate Anderson Reservoir expansion as part of the 2017 Water Supply Master Plan update but not to proceed with studies or Proposition 1 application to expand the reservoir at this time; and

D. Authorize the Interim CEO to negotiate and execute a single source agreement with a consultant for up to $900,000 to prepare a Proposition 1 funding application for Pacheco Reservoir.

Attachments:
Attachment 1: Single Source Consultant Justification
Attachment 2: 090908 SCVWD Board Agenda Memo
Attachment 3: PowerPoint

Est. Staff Time: 5 Minutes

2.3. Resolution Calling for a Water Use Reduction Target Equal to 20 Percent of 2013 Water Use. 17-0069

Recommendation: Adopt the Resolution CALLING FOR A 20 PERCENT WATER USE REDUCTION TARGET AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, SUPPORTING LOCAL ENFORCEMENT OF THE WATER WASTE PROHIBITIONS CURRENTLY IN EFFECT BY THE STATE WATER RESOURCES CONTROL BOARD, OR AS MAY BE AMENDED.

Attachments: Attachment 1: SCVWD Resolution 16-55
Attachment 2: Proposed Resolution, with Redlines
Attachment 3: Resolution

Est. Staff Time: 10 Minutes

3. ADJOURN:

3.1. Clerk Review and Clarification of Board Requests.

3.2. Adjourn to 5:00 p.m. Closed Session and 6:00 p.m. Regular Meeting, on February 14, 2017, in the Santa Clara Valley Water District Headquarters Building Boardroom, 5700 Almaden Expressway, San Jose, California.

File No.: 16-0417

Agenda Date: 1/31/2017
Item No.: 2.1.

BOARD AGENDA MEMORANDUM

SUBJECT:
Update on the 2017 Water Supply Master Plan and Potential Storage Options.

RECOMMENDATION:
A. Receive information on the updated long-term water supply outlook;
B. Receive and discuss risk assessment results;
C. Discuss the level of service goal;
D. Receive and discuss information on preliminary project and portfolio analyses; and
E. Receive and discuss information on potential storage options.

SUMMARY:

The Board received information on and discussed staff's approach to preparing the 2017 Water Supply Master Plan (WSMP) on September 27, 2016. At the time, staff presented the scope and schedule for preparing the WSMP, draft planning objectives/assessment criteria, and a list of projects that would be considered during the planning process. Since that time, staff has updated the long-term water supply outlook, conducted a risk assessment, developed an alternative scenario against which to evaluate projects and portfolios, defined costs and yields for various projects, began evaluating different portfolios of projects, and convened three expert panel meetings. This memorandum summarizes staff's work since the last Board update on the WSMP, requests Board input on staff work to date, and provides an update on next steps.

Long-Term Water Supply Outlook

One of the first steps in planning is to identify and assess what gaps need to be filled. For long-term water supply planning, this equates to assessing water supply reliability under future demand and supply scenarios and comparing it to a level of service goal. The baseline long-term water supply outlook assumes that retailer demands increase according to the projections in the retailers' 2015 Urban Water Management Plans, the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) flow and release requirements are implemented according to the FAHCE Settlement Agreement, future imported water deliveries are subject to the same operating requirements/regulations that are in place today, and that the District's 2012 Water Supply and Infrastructure Master Plan is fully implemented. The 2012 Water Supply and Infrastructure Master Plan includes completion of dam seismic retrofit projects before 2025, construction of 24,000 acre-feet per year (AFY) of potable reuse

capacity by 2025, and 99,000 AFY of water conservation savings by 2030.

Staff used the District's water supply system model, Water Evaluation and Planning (WEAP), to assess water supply reliability at five-year increments through 2040. The model incorporates the District's Water Shortage Contingency Plan (WSCP). The WSCP identifies when the District should call on the community to reduce water use in response to drought or other water shortages. The WSCP is based on end of year groundwater storage since this reflects the general health of the District's water supply system. The plan has five levels of shortage ranging from Stage 1 (Normal) when short-term water use reductions are not required, up to Stage 5 (Emergency), which can be triggered by an immediate crisis. One of the methods the District uses to assess long-term reliability is to consider the number of years (over the 94-year simulation in the WEAP model) with shortages, as well as the severity of those shortages. Table 1 shows modeled reliability for this baseline scenario at five-year intervals through 2040.

Table 1. Modeled Reliability in the Baseline Scenario

Parameter	2020	2025	2030	2035	2040
Average Annual Supply (Acre-Feet, AF)	374,800	414,700	423,900	431,300	440,000
Normal Year Demand (AF)	361,400	383,400	401,500	418,500	435,000
Maximum Level of Shortage (% of Normal Year Demand)	Stage 3 (15%)	Stage 2 (10%)	Stage 3 (15%)	Stage 3 (15%)	Stage 3 (15%)
Number of Years with Shortage (over 94 years)	11	5	6	8	13
Number of Years with Stage 2 (10%) Shortages	6	5	4	4	7
Number of Years with Stage 3 (15%) Shortages	5	0	2	4	6

Shortages of up to 15 percent are modeled, even though average annual supplies exceed demands in each of the modeled scenarios. The District stores excess supplies in times of plenty for use in times of need. Supplies are stored in the local groundwater subbasins, reservoirs, and Semitropic Groundwater Bank. While those stored supplies are generally sufficient for a single dry year, they are depleted during extended droughts. As they are depleted, the District calls for short-term water use reductions to preserve groundwater storage and avoid adverse impacts such as land subsidence.

The District's current reliability level of service goal is to develop supplies to meet 100 percent of demands in normal years and at least 90 percent of demands in drought years. This equates to having the maximum level of shortage be Stage 2 or 10 percent. Except in the 2025 scenario, the maximum level of shortage in the water supply outlook is Stage 3 or 15%. In other words, in year 2040, the District would not achieve the current reliability level of service goal in up to six of 94 modeled years.

Risk Analysis

Understanding risks associated with the water supply outlook is another important step in water supply planning. Staff conducted a Strengths, Weakness, Opportunities, and Threats (SWOT) exercise in August 2016. A copy of the SWOT exercise results are in Attachment 1. The information was used to evaluate different risks to water supply reliability. Some of the key risks that were identified include changes in demands due to multiple factors; changes in supplies because of climate change; regulatory uncertainty related to the Delta, instream recharge operations, and potable reuse; development and land use (impacts can be both positive and negative); and funding. Overinvesting and investing too early were identified as risks to making effective and efficient investments in supply reliability. The two greatest vulnerabilities, or risks with the highest likelihood and consequence, are reductions in Delta-conveyed imported water supplies and uncertain demand projections.

Staff identified an imported water vulnerability that involves the current trend of additional regulations resulting in reduced imported water deliveries, as a trending scenario. This scenario includes additional requirements for outflows through the Delta to San Francisco Bay. As a result, average annual imported water deliveries are approximately 129,000 AFY, which is about 47,000 AFY less than the Baseline Scenario average annual deliveries of approximately 176,000 AFY.

Staff also analyzed a demand vulnerability based on retailers' projected 2020 demands after implementation of the "20x2020" requirements in SBx7-7 of 2009 and updated regional growth projections through 2040. This demand scenario reflects the current trend of low growth rates in demands. The 2040 demand in this scenario is approximately 402,000 AF, which is about 33,000 AF less than the Baseline Scenario's 2040 demand of approximately 435,000 AF.

Staff combined the trending imported water and demands scenarios into a "Trending" Scenario that was compared to the Baseline Scenario described on Page 1. Table 2 compares reliability in 2040 under the Baseline Scenario and the Trending Scenario. In the Trending Scenario, average annual supplies do not meet demands. As a result, the District would need call for short-term water use reductions more often, and shortages of up to Stage 4 (30%) are projected to occur. It is important to note that the analysis in Table 2 reflects potential 2040 conditions. While imported water deliveries may decrease over time, the timing of reductions is uncertain and would likely occur over an extended period of time.

Table 2. Baseline and Trending Scenario Reliability Comparison

Parameter	2040 Baseline	2040 Trending
Average Annual Supply (Acre-Feet, AF)	440,000	391,000
Normal Year Demand (AF)	435,000	402,000
Maximum Level of Shortage (% of Normal Year Demand)	Stage 3 (15%)	Stage 4 (30%)
Number of Years with Shortage (over 94 years)	13	22
Number of Years with Stage 2 (10%) Shortages	7	16
Number of Years with Stage 3 (15%) Shortages	6	4
Number of Years with Stage 4 (30%) Shortages	0	2

Staff will evaluate how different water supply portfolios, or combinations of projects, perform in meeting the reliability level of service goal under the Baseline Scenario as well as different risk scenarios such as the Trending Scenario.

It is likely that there will be a set of “no regrets” projects, such as cost-effective water conservation and demand management activities, that are appropriate regardless of the scenario. However, other projects may only be appropriate under certain scenarios or when combined with other projects. For instance, dry year transfers or options may make sense in the Baseline Scenario because Delta exports are subject to the same regulations as are currently in place and the District is currently able to obtain such transfers. However, in the Trending Scenario, where Delta exports are constrained, transfers would be less effective unless they were combined with another project..

Level of Service Goal

The level of service goal is a key driver for the level of additional investment the District will need to make in reliability. Higher levels of service require more investments in reliability. Lower levels of service require fewer investments in reliability. The Board acknowledged this and requested additional discussion on the level of service goal at its September 27, 2016 meeting.

Staff has not yet completed its analysis of portfolios and how those portfolios perform under different scenarios. However, based on the analysis completed to date, staff has begun to bracket the costs to the District associated with providing different levels of reliability in the Baseline and Trending scenarios. Table 3 shows the upper range of future investments, beyond those already included in the Capital Improvement Plan and water rate forecast, that would be needed to achieve different levels of service. These costs range from none up to about $3,000 million. If these investments were made now, North County water rates in Fiscal Year 2033 could increase by $972/AF over the current projection of $2,859/AF and South County water rates in Fiscal Year 2033 could increase by $737/AF over the current projection of $806/AF.

Table 3. Range of Future Water Supply Reliability Investments

Scenario	**Range of District Costs** (2016$)	
	Baseline Scenario	Trending Scenario
Current Level of Service (Stage 2 or 10% Shortage)	Up to $700 million	Up to $3,000 million
Stage 3 or 15% Shortage	None	Up to $1,200 million

The economic loss to the community associated with a 10 percent shortage is about $40 million, while the cost for a 15 percent shortage is about $400 million[1] based on analysis performed for the 2012 Water Supply and Infrastructure Master Plan. However, the District’s cost for improving water supply reliability from a 15 percent maximum shortage to 10 percent maximum shortage increases District costs between $700 million and $3,000 million. Therefore, to avoid a community cost of $360 million associated with a 15 percent shortage instead of a 10 percent shortage, the District would incur a cost of up to $1,800 million (i.e. the difference in cost to increase water supply reliability from

15 percent shortage to 10 percent shortage in the Trending Scenario). The shortage costs have not been updated since 2012, so they may be somewhat low. However, the District is in the process of updating this analysis as part of the Expedited Purified Water Program. In addition, the District will be conducting a survey over the next few weeks to better understand the community's willingness to pay for various levels of reliability.

The timing and magnitude of additional investments will depend on the level of service, as well has how demands and supplies change over time. While the District will likely need to make some investment decisions over the next year, such as whether to invest in California WaterFix, many other decisions can be deferred. In other words, even if the Board decides to invest in a portfolio that achieves the current level of service and avoids shortages/calls for water use reductions of greater than 10 percent in the Trending Scenario, those investments can be phased in over time as they are needed.

Water Supply Alternatives

The next step in the planning process involves the identification of projects and portfolios for filling the gap between the water supply outlook and the level of service goal. Staff evaluated over 20 projects for their ability to meet the level of service goal and other objectives in the Baseline Scenario. The projects, which are summarized in Attachment 2, include:

- Water Conservation and Demand Management - Advanced metering infrastructure, gray water rebate program expansion, local land fallowing, model new development ordinance, rain barrel rebate program, and rain garden rebate program
- New or Expanded Storage - Sites Reservoir, Los Vaqueros Reservoir Expansion, groundwater banking, Anderson Reservoir Expansion, Pacheco Reservoir Expansion, Calero Reservoir Expansion, and Uvas Reservoir Expansion
- Additional Recharge Capacity in South County
- California WaterFix
- Raw Water Pipelines to Increase Operational Flexibility
- Morgan Hill Recycled Water
- Additional North County Potable Reuse
- Regional Desalination
- Stormwater Capture and Reuse - Centralized and Decentralized
- Transfers
- Imported Water Contract Purchase

Specific sites for agricultural land flooding for recharge were not identified, but would have similar benefits and costs as stormwater capture and reuse. Options for increasing San Francisco Public Utilities Commission (SFPUC) water deliveries to Santa Clara County is an on-going topic that is currently being evaluated through SFPUC's planning processes, the Bay Area Regional Reliability project, and potable reuse feasibilities studies. These processes have not yet identified specific options, but options will be evaluated as they are developed. Shallow groundwater reuse was re-evaluated, but was not carried forward due to concerns related to water quality, impacts on the

environment, and infrastructure requirements. Del Valle Reservoir re-operations are being evaluated through a collaborative process with Alameda County Water District and Zone 7, but the benefits of such re-operations currently focus on short-term yields and water quality improvements. If a project is identified that would increase long-term water supply yields, staff will evaluate the project.

Baseline Scenario Analysis

None of the individual projects analyzed could achieve the current level of service goal in the Baseline Scenario analysis. Staff are currently in the process of developing portfolios of projects to achieve the current level of service goal, meet the planning objectives (see Attachment 3 for the Planning Objectives), and/or address risks. The portfolios that have been evaluated to date in the Baseline Scenario are summarized in Table 4 and discussed below.

Table 4. Baseline Scenario Analyses Summary

Portfolio	Description	Maximum Level of Shortage	Number of Years with Shortages	Number of Years with Stage 3 (15%) Shortages	Lifecycle Cost (2016 $)
n/a	Baseline Scenario	Stage 3 (15%)	13	7	n/a
B1	All Water Use Efficiency	Stage 3 (15%)	8	5	$500 million
B2	All Water Use Efficiency and Groundwater Banking	Stage 3 (15%)	7	2	$600 million
B3	Los Vaqueros Reservoir Expansion and 15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	2	$1,500 million
B4	All Water Use Efficiency and 15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	1	$1,700 million
B5	All Water Use Efficiency and Sites Reservoir	Stage 2 (10%)	6	0	$700 million
B6	Pacheco Reservoir and 15,000 AFY of Additional Potable Reuse Capacity	Stage 2 (10%)	4	0	$2,700 million

- Portfolio B1 - All Water Use Efficiency. This portfolio includes all water conservation and

demand management programs, recycled water, and stormwater capture. This project reduces the number of years when the level of service goal is missed from six to five over the 94 years of modeled hydrology. Most of the projects and programs in this portfolio are relatively cost-effective, reduce reliance on the Delta, maximize water use efficiency, allow for phased implementation, adapt to climate change, and protect the natural environment. Staff plans to carry the most cost-effective options forward in future portfolios.

- Portfolio B2 - All Water Use Efficiency and Groundwater Banking. Groundwater banking does not provide a lot of average yield, but, in the Baseline Scenario, it helps manage existing supplies for dry year yield. This portfolio maximizes water use efficiency, has a relatively low life-cycle cost, allows for phased implementation, and adapts to climate change. This portfolio would reduce the number of years when the current level of service goal is not achieved from seven to two years over the 94 years of modeled hydrology. Banking is less effective in scenarios where there is little excess wetter year supply and/or transfer capacity is limited due to Delta pumping constraints.
- Portfolio B3 - Los Vaqueros Reservoir Expansion and 15,000 AFY of Additional Potable Reuse Capacity. The Los Vaqueros Reservoir Expansion project includes expanding Los Vaqueros Reservoir from 160,000 AF to up to 275,000 AF and constructing a pipeline that connects Contra Costa Water District (CCWD) facilities to the South Bay Aqueduct. The project would enable the District to bank water in Los Vaqueros for drought yield and, potentially, capture additional Delta surplus supplies. This would be a regional project. The 15,000 AFY of potable reuse capacity would be in addition to the 24,000 AFY that was included in the 2012 Water Supply and Infrastructure Master Plan and is currently being planned as Phase 1 of the Expedited Purified Water Program. Both the projects could provide drought year supply, though modeling indicates there would still be two years over the 94 years of modeled hydrology when the current level of service goal is not achieved. This project allows for phased implementation and adapts to climate change.
- Portfolio B4 - All Water Use Efficiency and 15,000 AFY of Additional Potable Reuse Capacity. In this portfolio, the current level of service goal is missed in one of 94 years of modeled hydrology. This project reduces reliance on the Delta, maximizes water use efficiency, maximizes District influence of supplies and operations, allows for phased implementation, and adapts to climate change.
- Portfolio B5 - All Water Use Efficiency and Sites Reservoir. Sites Reservoir is a proposed 1,810,000 AF north-of-Delta off-stream reservoir in the Sacramento Valley. The reservoir would collect winter flood flows (surplus flows) from the Sacramento River and release them later in the year for water supply and environmental benefits. The project would deliver additional Delta-conveyed supplies to the District in all year types. The combination of additional supplies from Sites Reservoir and reduced demands from the water use efficiency projects would enable the District to meet the current level of service goal. This portfolio maximizes water use efficiency, has a relatively low life-cycle cost, and provides environmental benefits to the Delta and Sacramento River. Staff is still evaluating how this project would perform in a scenario with more Delta outflow requirements and/or the California WaterFix.
- Portfolio B6 - Pacheco Reservoir and 15,000 AFY of Additional Potable Reuse Capacity. The Pacheco Reservoir project would replace the existing 6,000 AF reservoir owned by Pacheco Pass Water District with a 130,000 AF reservoir. This portfolio achieves the current level of service goal with local projects, improves treated water and groundwater quality, and improves

our ability to adapt to climate change. Some of the concerns with this portfolio are the relatively high life-cycle cost, implementation complexity, potential impacts on aquatic habitat, and increases in greenhouse gas emissions.

Staff will identify additional portfolios that achieve the level of service goal and/or better meet other objectives such as minimizing life-cycle costs and flexibility.

Trending Scenario Analysis

Staff also evaluated some of the reservoir projects, additional potable reuse, and/or California WaterFix in the Trending Scenario, where Delta-conveyed imported water supplies are anticipated to be constrained. The shortages associated with the various options are summarized in Table 5.

Table 5. Trending Scenario Analysis Summary

Portfolio	Description	Maximum Level of Shortage	Number of Years with Shortage	Number of Years with Stage 3 (15%) Shortages	Lifecycle Cost (2016$)
n/a	Trending Scenario	Stage 4 (30%)	22	6	n/a
T1	Anderson Reservoir	Stage 4 (30%)	18	3	$1,900 million
T2	Pacheco Reservoir	Stage 4 (30%)	17	5	$1,500 million
T3	15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	5	$1,200 million
T4	California WaterFix	Stage 3 (15%)	4	1	$1,800 million
T5	California WaterFix and Pacheco Reservoir	Stage 2 (10%)	2	0	$3,300 million
T6	California WaterFix and 15,000 AFY of Additional Potable Reuse Capacity	Stage 2 (10%)	2	0	$3,000 million

In this analysis, neither the Anderson nor Pacheco Reservoir projects (T1 and T2, respectively) reduced the maximum level of water shortage of Stage 4 (30 percent) and only modestly reduced the frequency of shortage. These two projects do not yield much, if any, new water. Instead, they help manage excess supplies. Since demands exceed supplies in this scenario, there is not much excess supply. Therefore, the projects provide minimum benefit.

Additional potable reuse capacity (T3) and California WaterFix (T4) both reduced the maximum level of shortage and the frequency of shortage. Both of these projects increase the amount of water supply in the system in normal and wet years, and potable reuse increases the amount of water in dry years. As a result, there is a significant improvement in supply reliability, even though the

District's current level of service is not achieved. California WaterFix also meets the objective of securing existing supplies, because, in the Trending Scenario, it restores Delta-conveyed supplies to about the current levels and helps maintain the District's ability to use Semitropic supplies and transfers.

Combining California WaterFix with either Pacheco Reservoir (T5) or additional potable reuse capacity (T6) in the Trending Scenario achieves the District's current level of service goal of shortages not exceeding 10 percent. California WaterFix provides additional water in most year types, especially in wetter years. Pacheco Reservoir improves the ability to manage those wetter year supplies. California WaterFix combined with additional potable reuse capacity works well because both the projects produce water, with California WaterFix producing more water in the wetter years and potable reuse producing more water in the drier years. In the wettest years, these portfolios may produce more water than the District can use or store.

Staff was unable to analyze Sites Reservoir or Los Vaqueros Reservoir Expansion in the Treading Scenario because the projects have not yet been modeled in an equivalent scenario by those project proponents. We anticipate having additional Los Vaqueros modeling results in the next couple of months and evaluate its performance with other projects and programs.

Storage Projects

Staff is evaluating several storage projects - Sites Reservoir, Los Vaqueros Reservoir expansion, groundwater banking, Anderson Reservoir expansion, Pacheco Reservoir expansion, Calero Reservoir expansion, and Uvas Reservoir expansion. None of these individual projects will achieve the reliability level of service goal by themselves, but they could provide valuable benefits when combined with other projects. The projects are summarized in Table 6 and discussed below.

Table 6. Storage Project Summary

	District Lifecycle Cost (2016$)	**Average Annual Yield (AF)**	**Average Annual Drought Yield (AF)**	**Cost/AF**
Anderson Reservoir Expansion	$1,900 million	10,000	20,000	$10,000
Pacheco Reservoir Expansion	$1,500 million	6,000	24,000	$11,000
Calero Reservoir Expansion	$510 million	3,000	5,000	$8,500
Uvas Reservoir Expansion	$450 million	500	1,000	$46,000
Los Vaqueros Reservoir Expansion	$340 million	2,000	7,000	$9,500
Sites Reservoir	$230 million	16,000	40,000	$1,000
Groundwater Banking	$90 million	500	2,000	$5,000

Sites Reservoir -If the District partners in this project, we could typically receive additional Delta-conveyed supplies in the Baseline Scenario in all year types. The additional dry year supplies would be valuable in addressing our greatest challenge, which is droughts, but the additional wet year supplies would need to be carefully managed to avoid potential losses. Since Site Reservoir performs similar to a new all year water source in our analysisit could be effective when combined with additional storage that would help manage the wet year supplies.

Los Vaqueros Reservoir Expansion - If the District partners in this project, we could bank up to 35,000 AF of water in the reservoir for emergency and drought supply. In addition, the District would be able to utilize Contra Costa Water District's ability to capture surplus flows of up to 95,000 AFY. In the Baseline Scenario, this project is valuable because it provides additional conjunctive use capacity to manage wet year supplies, including those generated by other projects such as potable reuse or recycling, and delivers additional dry year supplies. The District is working with Contra Costa Water District to analyze how this project would perform in the Trending Scenario.

Groundwater Banking - Staff is exploring different groundwater banking options. In this scenario, the District would purchase 50,000 AF of additional south-of-Delta groundwater banking capacity. Additional capacity could be purchased. In the Baseline Scenario, groundwater banking helps manage existing supplies for more drought year yield. In the Trending Scenario, it is valuable when combined with projects that generate wetter year supplies that can be banked for use in droughts. California WaterFix would improve the ability to move water to South-of-Delta pumps and exchange water, which supports groundwater banking.

Anderson Reservoir Expansion - This project would expand Anderson Reservoir from 100,000 AF to about 190,000 AF, allowing for some additional capture of local runoff and improved management of existing supplies. Anderson Reservoir is already connected to the Central Valley Project at Coyote Pumping Plant. In the Baseline Scenario, the project helps manage existing supplies for more drought year yield and water quality benefits. In the Trending Scenario, it is valuable when it is combined with projects that generate wetter year supplies that can be banked for use in droughts.

Pacheco Reservoir Expansion - This project would replace Pacheco Pass Water District's existing 6,000 AF reservoir with a 130,000 AF reservoir. After accounting for Pacheco Pass Water District's water rights, instream flow requirements, and other reservations, the District would have 100,000 AF of storage in the reservoir. The project would also include additional pipelines and pump stations to connect the reservoir to the Pacheco Conduit. The District would transfer water from San Luis Reservoir into the new Pacheco Reservoir when in-county demands are otherwise met and take water from Pacheco Reservoir when there are unmet in-county demands. The benefits of this reservoir are associated with better ability to manage existing supplies and improved water quality from being able to manage around low-point conditions in San Luis Reservoir. In the Trending Scenario, this project is valuable when it is combined with projects that general wetter year supplies that can be banked for use in droughts.

Calero Reservoir - This project would expand Calero Reservoir from about 10,000 AF to 24,000 AF. This project would have similar benefits as Anderson Reservoir, but on a smaller scale.

Uvas Reservoir - This project would expand Uvas Reservoir from about 10,000 AF to 15,000 AF. The Uvas watershed is a very productive watershed and the reservoir often spills. This project would enable the District to capture additional wet weather flows. However, given that the District's greatest challenge is droughts and the increase in storage is relatively small, the benefits of this project are relatively small in the Baseline Scenario. In the Trending Scenario, where there is less imported water delivered to the county, the value of the wet weather yield of this project may be higher.

In summary, none of the individual storage projects can meet the reliability level of service goal without being combined with other projects. Some of the storage projects improve the District's ability to conjunctively manage its supplies, some provide additional water supply, and some do both. The value of the individual projects depends on the projects they are partnered with and the scenario in which they are considered. Other considerations for storage projects include costs and potential environmental impacts and permitting issues for in-stream reservoirs. Staff plans to proceed with evaluating additional portfolios that include minimizing costs while providing similar levels of reliability and other benefits.

Water Supply Alternatives Summary

As previously described, staff have analyzed both projects and portfolios (collection of projects) to meet the District's level of service goal. No individual project is sufficient to meet the Board's current level of service goal of having supplies meet 90 percent of demands in drought years. Staff anticipates that cost-effective water conservation and demand management programs should be included as "no regrets" options. Additional potable reuse capacity works well in portfolios in both the Baseline and Trending Scenarios. Anderson and Pacheco Reservoir expansion projects need to be combined with other projects that deliver additional supply to be effective in the Trending Scenario. California WaterFix works well in the Trending Scenario, because it improves Delta-conveyed imported water deliveries to almost the amounts in the Baseline Scenario and maintains the District's ability to use Semitropic supplies and transfers. Projects that rely on Delta-conveyed imported water, such as additional recharge capacity in the Upper Llagas System and Pacheco Reservoir, will do better in the Trending Scenario when they are combined with California WaterFix.

All the Portfolios include maintaining existing supplies and infrastructure, expanding water conservation savings to 99,000 AFY by 2030, and implementing 24,000 AFY of potable reuse capacity. The District should be able to meet its current level of service goal with these planned investments and 2025 demand levels.

Some projects may necessitate early decision-making. The most notable of these is California WaterFix. The District will likely be asked to make a decision regarding this project within the next six months. The District will also likely need to make decisions about any storage projects that receive Prop 1 Water Storage Investment Program funding within a year to 18 months. These projects may include Sites Reservoir, Los Vaqueros Reservoir Expansion, Del Valle Reservoir, and/or any local reservoir project the District includes in a grant application. Staff will continue to evaluate portfolios that include these and other projects to identify portfolios that perform well under a variety of scenarios, minimize costs, and maximize other benefits.

Expert Panel Input

The Board approved single-source agreements for the Expert Panel members at its November 8, 2016 Board meeting. The Expert Panel consists of Ms. Paula Landis (retired Executive Director of the California Water Commission), Mr. David Mitchell (principal at M. Cubed), and Dr. Ed Maurer (water resources engineering professor at Santa Clara University). Staff has met with the Expert Panel three times. For the WSMP update, the panel has provided input to staff on the project scope and approach, cost-effectiveness calculations, evaluating variability and risk, risk assessment, portfolio development, and portfolio comparisons. Some of the input has been very technical, e.g., the merits of different statistical methods for analyzing variability, but other input has been more strategic. Highlights of the input to date include:

- The importance of looking at portfolios of projects rather than individual projects,
- The need to assess the value of the projects and portfolios for their ability to achieve the District's objectives rather than just ranking them by cost per acre-foot,
- There are multiple types of risk - cost risks, implementation risks, yield risks,
- The magnitude of risks and their potential impact on portfolio performance need to be considered, and
- The importance of being consistent with assumptions and methods between analyses - the Water Supply Master Plan, California WaterFix business case, Expedited Purified Water Program, and other planning efforts should use the assumptions and methods to ensure an apples-to-apples comparison.

Staff has been able to incorporate or is in the process of incorporating the Expert Panel's input on the WSMP. The panel has been supportive of staff's work to date and staff looks forward to the Expert Panel's insights as we move forward with water supply portfolio refinement.

Next Steps

The next steps in the WSMP process are to continue to develop and refine portfolios based on the Board's input and then bring preferred portfolios to the Board for consideration. Staff anticipates returning to the Board in April 2017 to get additional input on portfolios and then in June 2017 with preferred portfolios (see the updated schedule in Attachment 4). Then, staff will develop a recommended implementation program and compile the WSMP for Board consideration.

FINANCIAL IMPACT:

There is no financial impact associated with this item.

CEQA:
The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

ATTACHMENTS:
Attachment 1: WSMP Strength/Weakness Analysis
Attachment 2: Summary of Projects
Attachment 3: Planning Objectives
Attachment 4: Updated WSMP Schedule
Attachment 5: PowerPoint

UNCLASSIFIED MANAGER:
Garth Hall. 408-630-2750

THIS PAGE INTENTIONALLY LEFT BLANK

Santa Clara Valley Water District
Water Supply Master Plan
Strengths, Weakness, Opportunities, and Threats Analysis

	Strengths (Internal District)	Weaknesses (Internal District)	Opportunities (External)	Threats (External)
Groundwater	• Retailer systems/countywide pumping capacity is sufficient to meet minimum and average demands (infrastructure is available) • Several natural channels used for recharge are undergoing flood protection or erosion improvement projects • Size of the groundwater basin provides opportunity for soil aquifer treatment	• Potential for subsidence • Limited ability to manage groundwater pumping • Limited recharge capacity • Nitrate in Llagas/ South County • South county supplies less diverse than north county supplies • Need to better inform policy makers and leaders about the relationship between groundwater management and local/surface water supply and facilities	• Expand recharge • Add imported water pipeline to Church Ave ponds • Sustainable Groundwater Management Act • Sewer around San Pedro Ponds • Land use changes and policies that increase natural recharge • High quality stormwater infiltration	• Groundwater basin contamination (existing and potential) • Environmental flow regulations in natural channels may limit water supply/recharge operations • Land use changes that reduce natural recharge • Reduced natural recharge as a result of climate change • Major demand increase in groundwater dependent areas
Local Surface Water	• District's complex system and multiple sources allow for great operational flexibility in most areas • Multiple raw water sources are available to supply the water treatment plants (WTPs) and groundwater recharge operations	• Agreements with USACE for Downtown Guadalupe flood protection project requires District to maintain operations on Guadalupe, Almaden, and Calero • DSOD operating restrictions on several reservoirs • Several irrigators on raw water pipelines are not well documented or monitored, which leads to inefficient system operations • Several dam outlet structures may need rehab • Several dam hydraulic operating systems are in poor condition and at risk of failure • Specific facilities in notably poor condition include Vasona and Almaden-Calero Canals, Vasona Pumps, Church Diversion Dam • Special water quality related raw water blends to the treatment plants reduce amount of water that can go to recharge • Flood and erosion control projects could result in loss of recharge or include environmental requirements that limit the ability to manage the flows for water supply benefits.	• Expand existing in-county reservoirs • Connect local storage reservoirs to the raw water pipelines or improve operations to increase beneficial use of water (Uvas, Lexington) • Maximize use of Calero reservoir, as it can receive water from five sources • Implement new technologies to make system more efficient (automated valves, electronic data transfer, visual monitoring, etc.) • More off-stream recharge ponds and conveyance	• Reliability and cost of power or Federal regulations on GHG emissions could limit District operations • Additional regulatory constraints on using creeks for conveyance and recharge • Potential seismic and spillway and freeboard upgrades at several dams due to DSOD • Invasive species could degrade infrastructure • Reduced runoff from climate change • Increased evaporation of surface water and reservoirs from increased temp
Recycled and Purified Water	• Recycled water use at 5% • Silicon Valley Advanced Water Purification Center • Outreach efforts on recycled water • Long term agreements with San Jose	• Gilroy reclamation pipeline has had many leaks and needs replacement in 2038 or earlier • Need to define internal policies about District's role as sole wholesaler of purified water • Need to establish MOU's with partner agencies defining roles and responsibilities re: ownership and O&M of recycled water systems • Possible unknown water quality issues could affect ability to use • Required changes to current operations may have significant impacts	• Expansion of SCRWA system based on South County Recycled Water Master Plan • Potable reuse through integration of fully advanced treated water into District's water supply system • Partnerships on potable reuse • Partnerships on non-potable reuse	• Public perception about potable reuse, especially direct potable reuse • Ability to secure water for purification • Balancing non-potable and potable reuse • Energy requirements for purification • Availability of land for AWPF expansion Projects • Conflict/competition for recycled /purified water with other agencies/organizations • Direct potable reuse regulations still unavailable • Partnerships w/local wastewater treatment agencies that have inadequate Master Plans and investment analysis • Concentrate management for fully advanced treatment • Uncertainties and potential high cost
San Francisco Public Utilities Commission (SFPUC)	• SFPUC Intertie is available for system outages • SFPUC system is resilient to earthquake as a result of the Water System Improvement project and 1 day outage level of service goal. Some retailers can rely on SFPUC as a backup to District TW outage		• West Pipeline extension or west side SFPUC connection • Individual supply guarantees • Water management agreement, exchange agreement, and/or incentives • Regional desal or other Bay Area Regional Reliability projects	• Climate change effects on supply and reduced deliveries • High cost of SFPUC water to retailers • High quality water is hard to replace with other supplies • Interruptible SFPUC contracts

	Strengths (Internal District)	Weaknesses (Internal District)	Opportunities (External)	Threats (External)
Delta-Conveyed Imported Water	• Relationships with current partners • Diversity of sources (transfer partners, contracts, etc) • Good quality in most years and main supply to drinking WTPs • Relationships with current partners	• Pacheco pump efficiency and San Felipe system capacity constraints can limit District capabilities to take max CVP contract allotment • Pacheco, Santa Clara and Santa Teresa Tunnels have leakage that may require repair • Semitropic accessibility is limited • Internal operational limitations/inefficiencies	• California WaterFix • Additional and improved groundwater banking opportunities, e.g., review Semitropic banking agreement and determine if it can be better used • Los Vaqueros expansion including Transfer-Bethany Pipeline • Sites Reservoir • Del Valle Reservoir • San Luis Reservoir LPIP, including reservoir expansion • Long-term transfer/option agreements • Purchase of permanent water rights • CPOU/Contract Amendment • Develop relationships with new partners • Improved agreements w/USBR for replacing failing infrastructure (PCCP) • Ensure Shasta and North of District water supply in San Luis Reservoir low point years	• Decreased availability of CVP and SWP sources due to environmental restrictions, drought, pumping constraints or infrastructure failure (seismic or age) • San Luis low point problem can limit District abilities to take CVP water • Uncertainty of water market (volatile costs) • Decreased availability of CVP and SWP supplies due to climate change • Reduced water quality due to climate change • SBA in requires substantial maintenance and PCCP pipe may be reaching end of life (Pacheco and SCC) • Cost overruns on Capital Projects and uncertainty and potential high cost of Delta improvements • Delta levee failure and natural disaster (including earthquakes)
Water Conservation	• District has successful water conservation programs	• Unpredictability of funding • Unpredictability/limited control (many users/people's efforts)	• Potential to decrease demands though land use policies that limit impervious surfaces, require recycled water use, increase on-site retention, and require demand management measures beyond code • Increase agricultural water conservation programs	• Increases in demands from climate change, population growth/housing development • Potential impact on meeting short term demand reduction needs
Treated Drinking Water	• East treated water system has redundant sources and a redundant delivery pipeline • Multiple raw water sources are available to supply the WTPs and groundwater recharge operations • Pipelines that have been inspected are in acceptable condition for their ages • Control systems reliability is being improved with completion of master plan and radio and microwave communications upgrades • Currently working on upgrading infrastructure and adding required service factor capacity at RWTP • Advanced treatment processes (Ozone) were added at STWTP and PWTP	• No redundancy in some parts of system, especially on the west side treated system • Most pipelines do not have cathodic protection. Also, the Pipeline Maintenance Plan is underfunded, and permit constraints for pipeline work is an issue • Need pre-stressed concrete cylinder pipe (PCCP) management program for all raw water • Line valves needed for isolation • Pipelines are vulnerable at creek crossings and road under crossings • Inherent seismic risk to PTWP • Water treatment complexities in severe shortages and drought	• Partnerships with SJWC on recycled water or Montevina WTP	• New potable water treatment regulations could impose new plant improvements including fluoridation and emerging contaminants • Deteriorating relationships with retailers and cities • Reduced source water quality due to contamination
Other Issues and Institutional	• Stockpile of pipeline repair materials available for emergency repairs • Most retailers have sufficient back up supplies for District treated water for short duration outages ~30 days • Asset Management Program • District is monitoring GHG reduction and energy efficiency strategies • The electrical system master plan is underway to streamline electrical improvements and improve energy efficiency throughout the District	• The Infrastructure Reliability Plan has not been fully implemented. • Pipeline stockpile security (threat of vandalism) • District customer service for well owners is not strong • Lack of resources • Overinvesting in costly new infrastructure, combined with lack of master planning and under-investing in existing assets	• Retailer exchanges or use of retailer systems to transfer water • Implement newly recommended IRP projects (SCVWD & retailer projects) • Continue to improve the asset management program that replaces and rehabs infrastructure at appropriate times	• Conflict or competition with other agencies • Funding risk & uncertainties and potential for overinvestment • Politics • Conflicts between recreation interests and District operations • Regulatory/environmental requirements; need to speak with one District voice • San Benito financial constraints may limit ability to cost share • SWRCB restricts or changes water rights (through FAHCE or other processes) to require more environmental water (affects local, but also imported) • Infrastructure failure taking 5-10 years to repair

Preliminary Project Analysis Results[1]

Project	Lifecycle Cost (2016$)	Average Annual Yield	Average Annual Drought Yield[2]	Cost/AF[3, 4]	Comments
Agricultural Land Flooding	TBD	TBD	TBD	TBD	Similar water supply benefits as Stormwater – Regional Basins.
Advanced Metering Infrastructure	$30 million	4,000	4,000	$500	
Anderson	$1,900 million	10,000	20,000	$10,000	
Butterfield Recharge	$30 million	TBD	TBD	TBD	
Calero Expansion	$510 million	3,000	5,000	$8,500	
Church Avenue Pipeline	$40 million	TBD	TBD	TBD	Similar water supply benefits as Butterfield Recharge.
Graywater Rebate Program Expansion	$1.5 million	100	100	$1,500	
Groundwater Banking	$90 million	500	2,000	$5,000	
Local Land Fallowing	$90 million	1,000	5,000	$2,500	7,400 AF savings in critical dry years
Los Vaqueros	$340 million	2,000	7,000	$9,500	
Model Ordinance	$1.4 million	5,000	5,000	$500	
Morgan Hill Recycled Water	$220 million	3,000	3,000	$1,500	
Pacheco Reservoir	$1,500 million	6,000	24,000	$11,000	
Potable Reuse – 6,000 AFY	$500 million	4,000	6,000	$3,500	
Potable Reuse – 11,000 AFY	$1,000 million	7,000	11,000	$3,500	
Potable Reuse – 15,000 AFY	$1,200 million	10,000	15,000	$3,500	
Regional Desal	$90 million	1,000	4,000	$4,000	5,600 AF in critical dry year yield

[1] All projects except the California WaterFix were analyzed against the Baseline Scenario.
[2] None of the individual projects reduced the maximum level of shortage (15 percent) compared to the Baseline Scenario. Staff are in the process of developing and evaluating portfolios that reduce the frequency and/or magnitude of shortages.
[3] The methodology for calculating cost per acre-foot has been updated from prior analyses, including the California WaterFix business case analyses presented in July 2016, based on input from the Expert Panel. Specifically, repair and replacement costs are included and the yield is discounted along with the costs.
[4] The cost per AF estimates are being provided at the Board's request. Staff and the Expert Panel recommend evaluating projects and portfolios based on their full range of benefits and avoid ranking projects based on cost per AF estimates.

Project	Lifecycle Cost (2016$)	Average Annual Yield	Average Annual Drought Yield[2]	Cost/AF[3],[4]	Comments
San Pedro Ponds	$40 million	1,000	500	$1,000	
Sites Reservoir	$230 million	16,000	40,000	$1,000	Sites Reservoir would provide additional imported water; current assumption is that it would not provide additional storage for District supplies
Stormwater – Regional Basins	$9 million to $60 million	100 to 1,000	100 to 1,000	$500 to $23,000	Range of cost and yield for three stormwater retention basins. Costs depend on whether additional land needs to be purchased. Yield depends on contributing watershed area (size, percent imperviousness, etc).
Stormwater – On-Site Capture	$20 million to $50 million	100 to 300	200 to 500	$3,500 to $20,000	Range of costs for rain gardens, cisterns, and rain barrels. Rain gardens would provide more yield at a lower cost.
Transfers	$250 million	2,000	8,000	$1,500	12,000 AF in critical dry years.
Uvas Pipeline	$80 million	1,000	200	$5,500	
Uvas Reservoir Expansion	$450 million	500	1,000	$46,000	
Water Rights Purchase	$800 million	12,000	5,000	$1,000	
California WaterFix	$1,800 million	30,000	18,000	$1,500	This project was only evaluated in the Trending Scenario, where there are additional regulatory constraints on Delta-conveyed imported water supplies. The yields would be less and the cost/AF would be higher in Baseline Scenario.

Santa Clara Valley Water District
Draft 2017 Water Supply Master Plan
Planning Objectives

The purpose of the Water Supply Master Plan (Water Master Plan) is to present the District's strategy for ensuring a reliable, clean water supply to meet future demands. One of the first tasks for such a planning activity is to establish objectives that the agency hopes to achieve through implementation of the plan. The objectives guide development of alternatives and include criteria to measure how well identified strategies meet the objectives. Ultimately, they help develop a recommended strategy to pursue.

Planning objectives were developed for the 2012 Water Supply and Infrastructure Master Plan by staff, with input from a technical team, Stakeholder Review Committee, management team, and the District Board. These objectives were based on Board policies, and staff worked with stakeholders to rank the objectives. The objectives have been reviewed and updated for proposed use in the 2017 Water Master Plan update.

The proposed planning objectives and sub-objectives for the 2017 Water Master Plan are described below. They are listed in order of priority from the 2012 WSIMP. The objectives are broad ideas that the District may attain with the plan. With each objective are more detailed sub-objectives, which include evaluation criteria designed to be quantitatively or qualitatively measurable, non-redundant, and clear.

Most of the proposed objectives overlap with objectives in the One Water Master Plan and many may be related to stream stewardship objectives and Safe Clean Water objectives and outcome measures. Development of the 2017 Water Master Plan is being coordinated with development of plans addressing other District mission components. Projects that primarily address the District's water supply responsibilities will be included in the 2017 Water Master Plan. Projects that are designed to address other components of the District mission will be address in the One Water Master Plan and/or related watershed plans.

The objectives of the 2017 Water Master Plan are to:

Objective / Sub-objective	**In support of:**
1. Provide a Reliable Water Supply for Municipalities, Industries, Agriculture, and the Environment (by):	Board Ends Policy 2.1
Meeting service area demands	CEO Interpretation S 2.4
Maintaining groundwater storage	State Law and Regulations; Board Ends Policy 2.1.1
Securing existing water supplies	Board Ends Policies 2.1.2, 2.1.3, 2.1.4
Reducing reliance on the Delta	State Law and Regulations
Maximizing water conservation and water use efficiency	Board Ends Policy 2.1.5
2. Ensure Drinking Water Quality (by):	
Protecting groundwater quality	State Law and Policy; Board Ends Policy 2.1.1
Meeting drinking water quality regulations	State and Federal Law and Regulations; Board Ends Policy 2.3
3. Minimize Costs (by):	
Minimizing life-cycle costs	Executive Limitation 4.2
4. Maximize Flexibility in the Water Supply System (by):	
Maximizing District influence over supplies and operations	State Law and Policy
Minimizing implementation complexities and barriers	Board Ends Policy 1.3
Allowing for phased implementation of new projects and programs	Executive Limitation 4.2
Adapting to climate change	CEO Interpretation S.2.7
5. Protect the Natural Environment (by):	
Protecting and restoring creek, bay, and other aquatic ecosystems	State and Federal Law; Ends Policy 4.1; FAHCE Initialed Settlement Agreement
Reducing greenhouse gas emissions	Ends Policy 4.3
6. Ensure Community Benefits (by):	
Fulfilling reasonable customer expectations for good service	Executive Limitation EL-2
Improving quality of life in the county through appropriate public access to trails, open space, and District facilities	Ends Policy 4.2
Providing natural flood protection and/or reduce potential for flood damages	Ends Policies 3.1 and 3.2

Objective 1 – Provide a Reliable Water Supply for the County

This objective relates to Board Ends Policy 2.1 "Current and future water supply for municipalities, industries, agriculture and the environment is reliable." The District strives to meet water demands throughout the county under all water supply conditions by maintaining a diverse mix of water supplies and a reliable infrastructure system. One of strengths of the District's water supply and infrastructure system is the inter-connected nature of the District's infrastructure and the variety of water supply sources. The District is actively engaged in maintaining its existing imported and local water supplies and is looking at regional and local projects for new supplies. Maintaining a diverse water supply and system reliability minimizes the District's risk of being unable to provide a reliable supply if one part of the system is not performing up to expectations.

Meeting Service Area Demands

CEO Interpretation S 2.4 requires the District to "Develop water supplies designed to meet at least 100 percent of average annual water demand identified in the District's Urban Water Management Plan during non-drought years and at least 90 percent of average annual water demand in drought years." The District manages water supplies to maximize storage in wet periods for use during dry periods. Currently, supplies exceed demands in most years. However, during droughts, storage can be depleted and result in shortages between water supplies and water demands. The District's Water Shortage Contingency Plan (WSCP) provides a strategy for detecting and responding to water shortages where calls for short-term reductions in water use begin when the projected end of year groundwater storage falls below 300,000 acre-feet. Shortages are primarily managed by requesting short-term behavioral changes that result in reduced water use/water demands. Projected end-of-year storage is one of the outputs of the District's water supply system model.

Water supply strategies should avoid the need to call for short-term reductions in water use of more than 10 percent. Strategies will be evaluated to determine the modeled level of short-term demand reductions required.

Maintaining Groundwater Storage

Board Ends Policy 2.1.1 calls for the District to "aggressively protect groundwater from the threat of contamination and maintain and develop groundwater to optimize reliability and to minimize land subsidence and salt water intrusion." In years where supplies exceed demand excess water is stored for future years. The largest 'reservoir' available to the District is the groundwater basin. Maintaining groundwater storage provides reserves for use during droughts/emergencies and is also important in avoiding permanent land subsidence.

Water supply strategies ideally maintain groundwater storage above the "severe" stage in the District's water shortage contingency plan in at least 95% of years modeled to avoid the need to call for short-term reductions in water use of more than 10 percent.

Securing Existing Water Supplies

Board Ends Policies 2.1.2, 2.1.3, and 2.1.4 call for the District to "protect, maintain, and develop" local surface water, imported water, and recycled water, respectively. The District's existing water supply system supports most of the county's water needs and will continue to do so into the

future. Optimizing the use of existing supplies and infrastructure leverages the investments the District has already made in water supply reliability and increases the system's flexibility. The existing system includes the use of surface water, groundwater, recycled and purified water, imported water, and a strong commitment to water conservation. Optimizing the use of existing supplies and infrastructure leverages the investments the District has already made in water supply reliability and increases the system's flexibility.

Water supply strategies should maintain existing local and imported water supplies, protect existing water supply infrastructure, and provide redundancy for outages of supplies and/or infrastructure.

Reducing Reliance on the Delta

Section 85021 of the 2009 Delta Reform Act states that "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

This sub-objective will be evaluated based on the degree to which local and regional supplies are maximized as a means of minimizing risks associated with the reliability of imported water supplies. When first developing, Santa Clara County relied on groundwater and local streams for its water supply, but excessive pumping resulted in ground subsidence. Over the last half-century, the District has brought in imported water supplies to meet increasing demands, to the point where over half the water used in the county is imported from outside the county boundaries. Imported water from the Delta is the District's largest source of supply (about 40 percent on average) and a single event, such as a levee failure, could adversely impact these deliveries.

Water supply diversity helps reduce the county's exposure to risk of any one supply investment not performing up to expectations. This sub-objective is an insurance measure that says, in effect, "Don't put all your eggs in one basket." Individual local supplies are a significantly lower percentage of the county's overall supply and less susceptible to widespread outages from single events. Although imported supplies will continue to be an important part of the county's water supply, maintaining existing local water rights and meeting new demands by developing local and regional projects will help maintain water supply diversity.

Water supply strategies should focus of developing local sources and decrease the overall percentage of the District's water supply that is imported.

Maximizing Water Conservation and Water Use Efficiency

Board Ends Policy 2.1.5, is to "Maximize water use efficiency, water conservation and demand management opportunities." The District has a history of promoting water conservation and other water use efficiency efforts. By 2030, the District anticipates that current and planned conservation activities will result in 98,800 acre-feet per year in savings. These conservation savings will offset demands by about 20 percent and reduce the need for new supplies.

Conservation also provides other benefits. These benefits include energy conservation, reduced greenhouse gas emissions, reduced costs, and reduced demand for wastewater treatment. Water conservation benefits may also be attributable to land use practices such low-impact development. In addition to efficient use of existing water resources, the water savings and/or yields associated with water use efficiency are minimally affected by changes in hydrology.

Water supply strategies that can exceed conservation savings of 98,800 acre-feet per year by 2030, as anticipated in the 2012 Water Master Plan, are preferred.

Objective 2 - Ensure Drinking Water Quality

This objective is based on Board Ends Policies 2.1.1 "Aggressively protect groundwater basins from the threat of contamination and maintain and develop groundwater to optimize reliability and to minimize land subsidence and saltwater intrusion" and 2.3 "Reliable high quality drinking water is delivered." The District's water quality efforts focus on protecting groundwater quality and meeting State and Federal drinking water quality regulations. The purpose of these efforts is to protect public health and drinking water supplies for current and future beneficial use.

Protecting Groundwater Quality

The District is concerned with a number of threats to groundwater quality, including nitrate, salts, gasoline, and solvents. Nitrate, primarily from anthropogenic sources, has historically been the contaminant most frequently detected above drinking water standards in groundwater. Residual nitrate from past practices may contribute to nitrate concentrations in groundwater for decades to come, as water slowly infiltrates from the surface. Further, ongoing land use practices including fertilizer and septic system use can contribute to nitrate in groundwater. Salts, primarily sodium and chloride, are also a concern as the use of recycled water continues to increase. Recycled water, without advanced treatment, is relatively high in salts and recycled water use has the potential to increase salt concentrations in groundwater. Both salts and nitrate are conservative constituents in groundwater, meaning their concentrations do not decrease significantly due to natural subsurface processes. Recharge with surface water, which typically has low concentrations of both constituents, can help reduce salt and nitrate concentrations in groundwater. Treatment processes that remove salt and nitrate from groundwater or waters that will infiltrate to groundwater can also positively affect groundwater quality.

Water supply strategies should help improve groundwater quality by reducing the concentrations of salt, nitrates, and other contaminants.

Meeting Drinking Water Quality Regulations

The District's treatment plants must comply with a long list of state and federal water quality regulations related to chemical, biological, radiological, and physical parameters prior to treatment, during treatment, and within the treated water distribution system. A key treatment challenge is to maximize the disinfection of biological contaminants such as bacteria, viruses, and protozoa, while minimizing the formation of harmful disinfection by-products such as bromate, trihalomethanes, and n-nitrosodimethylamine. The District is also concerned with a number of potential threats to surface water quality, such as protozoan pathogens, perchlorate, endocrine disruptors, pharmaceuticals, and personal care products, each of which could require the addition of new treatment processes. Research level efforts to determine which emerging contaminants

are most important to test for are on-going. However, many of the contaminants have no concrete guidelines monitoring or testing as of yet.

Source water quality can impact the effectiveness of the water treatment processes at the District's water treatment plants. Large or sudden fluctuations in source water quality constituents of algae, turbidity, salinity, organic carbon, pH and temperature can create operational problems that can potentially result in plant shutdowns, with algae being of greatest concern. The District collaborates and cooperates with other agencies to protect and monitor surface water sources but needs to have a variety of water sources to draw from should an individual source have water quality issues.

Water supply strategies need to meet current and anticipated treated water quality standards with existing or currently planned treatment facilities and should provide various options of supply water to the treatment plants that can be selected if other sources are impacted by adverse water quality constituents.

Objective 3 - Minimize Cost

This objective relates to Executive Limitation 4.2 that the Board Appointed Officers shall "Spend in ways that are cost-efficient." Costs include capital and operations costs associated with a project or program, including maintenance and mitigation. The District looks at total cost to the county's residents and businesses, not just District costs.

Water supply strategies will be measured by total present value cost.

Objective 4 - Maximize Flexibility in the Water Supply System

In addition to its variety of water supply sources, one of the District's strengths is the inter-connectedness and reliability of its water supply infrastructure. The Water Master Plan will lay out the District's long-term water supply strategy and identify the associated new infrastructure and infrastructure upgrade needs. Infrastructure reliability and asset management are addressed through separate programs. However, system reliability is an important consideration in long-term planning, as water supply reliability can only be assured if the system that provides the supplies is flexible to address various conditions. Multiple water supply sources, multiple storage and recharge facilities, and a well-maintained and connected infrastructure system all provide the District with a flexible system that can respond to change. Some expected changes are short-term, such as switching sources due to water quality issues, calling on reserves in dry years, or asking retailers to use more groundwater during treated water pipeline shutdowns. Other changes are long-term, such as reservoir and recharge re-operations to meet aquatic habitat needs and climate change. So far, the District's system has proven capable of responding to change. However, some parts of the infrastructure system may not be prepared for future changes. Some new supplies or projects may provide more flexibility for responding to future changes than others.

Maximizing District Influence over Supplies and Operations

The District's influence over a source of water or water supply operation affects the District's ability to manage that supply's performance. For example, the District has greater ability to affect deliveries from its own reservoirs than deliveries from the State and Federal water projects.

Likewise, the District has greater ability to affect expansion of the recycled water and purified system in the South Bay Water Recycling and South County Regional Wastewater Authority service areas than other areas since it is a partner in those two recycled water programs. Local and regional partnerships are another means to increase the District's ability to secure supplies and influence operations, and are consistent with State policy direction to implement integrated regional water management.

Water supply strategies should allow the District to adapt to changes in water supplies by providing a high degree of District control including District-controlled supplies and supplies developed in partnership with other local and regional agencies.

Minimizing Implementation Complexities and Barriers

Different types of projects and programs have different levels of implementation complexity and barriers. Very complex projects and projects with significant barriers are more difficult to implement. The types of complexities and barriers that may affect the District's ability to implement a project or program include legal and regulatory requirements, conflicts with existing policy, public perception, institutional and contractual relationships, and technical complexity. For instance, a local water exchange (i.e., an exchange with San Jose Water Company or the San Francisco Public Utilities Commission) might be easier to implement than an exchange that involves moving water through the Delta. Ends Policy E-1.3 states that "collaboration with government, academic, private, non-governmental, and non-profit organizations is integral to accomplishing the District mission."

Water supply strategies should be supported by the public and minimize legal, regulatory, and technical complexity.

Allowing for Phased Implementation of New Projects and Programs

This Water Master Plan is based on assumptions about future conditions, including assumptions regarding future water demands, precipitation patterns, availability of new technologies, and imposition of future regulations. Depending of the accuracy of these assumptions new supplies may be needed sooner or later or at a different scale. Alternatives that can be implemented in phases, as needed, are more desirable.

Water supply strategies that can be phased over time and allow the District to adjust to changes in water demands from those forecasted are preferred to those that must occur at once.

Adapting to Climate Change

CEO Interpretation S.2.7 of Ends Policy E-2 "there is a reliable, clean water supply for current and future generations" calls for the District to "incorporate climate change mitigation and adaptation into District planning efforts." Climate change is expected to increase sea level and change precipitation patterns, both of which can impact the District's water supplies. Sea level is projected to increase by 55 inches by 2100, resulting in increased salinity in the Delta and reduced exports if no action is taken to offset impacts. Modeling results indicate that changing weather patterns may also result in more intense storms over a shorter period of time which could impact both local

surface supplies and imported water. In addition, the frequency and severity of droughts may increase.

Water supply strategies that are not affected by changing weather patterns, or are adaptable to these changes are preferable to those that are not.

Objective 5 - Protect the Natural Environment

This objective relates to Board Ends Policies 4.1 "Protect and restore creek, bay, and other aquatic ecosystems" and 4.3 "Strive for zero net greenhouse gas emission or carbon neutrality." The District and its customers value the natural environment. While the purpose of the Water Master Plan is to provide for water supply reliability, it is important that the projects and programs be considered in the context of their impacts on the environment. This includes avoiding impacts to watersheds, streams, and natural resources such as water quality and habitat degradation. It also includes maximizing energy efficiency as a means to reduce greenhouse gas emissions.

Protecting and Restoring Creek, Bay, and Other Aquatic Ecosystems

Santa Clara County is rich in natural resources and the District participates in and supports watershed stewardship to protect and enhance resources and ensure consistency with State and Federal laws and regulations. These activities include protecting and restoring fisheries and aquatic species, preserving and restoring natural stream functions and processes, protecting and restoring riparian and in-stream habitat conditions, and protecting and improving water quality in streams, the Bay, and the Delta. District programs such as the Fisheries and Aquatic Habitat Collaborate Effort are expected to restore and maintain fisheries, wildlife, water quality, and other beneficial uses of creeks in good condition.

Water supply strategies should provide benefits to environmental resources and in-stream and reservoir water quality, or at a minimum avoid impacts to these resources.

Reducing Greenhouse Gas Emissions

Board Ends Policy 4.3 calls for the District to "strive for zero net greenhouse gas emissions or carbon neutrality." Planning for future water supplies and infrastructure should consider both total emissions generated or sequestered and adaptation to climate change (which is addressed under the Maximize Flexibility criterion). The California Water Plan 2009 suggests that local agencies should implement cost effective, energy efficiency measures in their water projects as a means of reducing GHG emissions.

Water supply strategies should reduce greenhouse gas emissions.

Objective 6 - Ensure Community Benefits

This objective relates to Board Executive Limitation EL-2 "The BAOs shall promote conditions, procedures, and decisions that fulfill reasonable customer expectations for good service, are safe, dignified, and nonintrusive." This objective also relates to Board Ends Policies 3.2 "Reduced potential for flood damages," and 4.2.1 "Support healthy communities by providing additional trails, parks, and open space along creeks and in the watersheds." The District provides multiple services to the

community. In addition to environmental stewardship and water supply, the District provides flood protection services and supports recreational opportunities when possible. In developing its water supply strategy, the District will consider these benefits for the community and work to ensure benefits are distributed equitably.

Fulfilling Reasonable Customer Expectations for Good Service

It is important for the District to provide even levels of service within zones of benefit and minimizing adverse socio-cultural impacts. Minimizing socio-cultural impacts includes minimizing disproportionate impacts to minority and low-income populations (environmental justice), minimizing adverse impacts to cultural resources, and minimizing adverse social effects such as impacts to community character.

Water supply strategies will be evaluated by the degree to which water supply benefits are provided throughout the District's service area and the likelihood of disruption is the same throughout the service area.

Improving Quality of Life in the County through Appropriate Public Access to Trails, Open Space, and District Facilities

The District supports recreational opportunities on and around its reservoirs, along creeks, and in the watersheds by providing access to District facilities and, in some cases, providing funding for recreation projects. The recreation programs are maintained and operated by other entities.

Water supply strategies should provide additional water-based recreational opportunities benefits.

Providing Natural Flood Protection and/or Reducing Potential for Flood Damages

One of the primary missions of the District is to minimize flooding impacts to residents and property in Santa Clara County. Flood protection benefits could be associated with water supply projects that increase reservoir storage or reduce stormwater runoff to creeks.

Water supply strategies should provide additional flood protection benefits.

THIS PAGE INTENTIONALLY LEFT BLANK

Santa Clara Valley Water District
2017 Water Supply Master Plan
Scope of Work

This summarizes the planned scope of work for the 2017 Water Supply Master Plan (Water Master Plan). The purpose of the Water Master Plan is to guide water supply investments to provide for reliability and ensure investments are effective and efficient. The Water Master Plan is scheduled to be completed in 2017 and needs to support other Board investment decisions such as potable reuse program components and timing and California WaterFix participation. The following schedule is designed to support Board decisions on the potable reuse program components and California WaterFix participation, which are currently anticipated for the first half of 2017.

Activity	Timeframe	Notes
Conduct Stakeholder Engagement	Ongoing	
Establish Expert Panel	Completed	The Expert Panel has met three times to date.
Develop Planning Objectives (aka Assessment Criteria)	Completed	
Evaluate Risk Scenarios	July 2016 – January 2017	
Update Water Supply System Model	July 2016 – January 2017	
Prepare Baseline System Outlook	August 2016 – January 2017	
Identify and Define Projects and Programs to Address Shortages and Risks	July 2016 – January 2017	Board workshop planned for January 31, 2017 on initial analysis results, including storage options
Assemble and Evaluate Portfolios	December 2016 – May 2017	Continue analysis of project and projects and incorporate Board input from the planned January workshop
Identify Recommended Water Supply Strategy	March 2017 – June 2017	Board workshops to be scheduled for April 2017 and June 2017 to get Board input on preferred portfolios and Level of Service Goal
Develop Implementation Program for Water Supply Strategy	July 2017 – October 2017	Board workshop to be scheduled for October 2017 to get Board input on implementation program
Compile Water Supply Master Plan	September 2017 – December 2017	Board workshop to be scheduled for December 2017 to adopt Water Master Plan

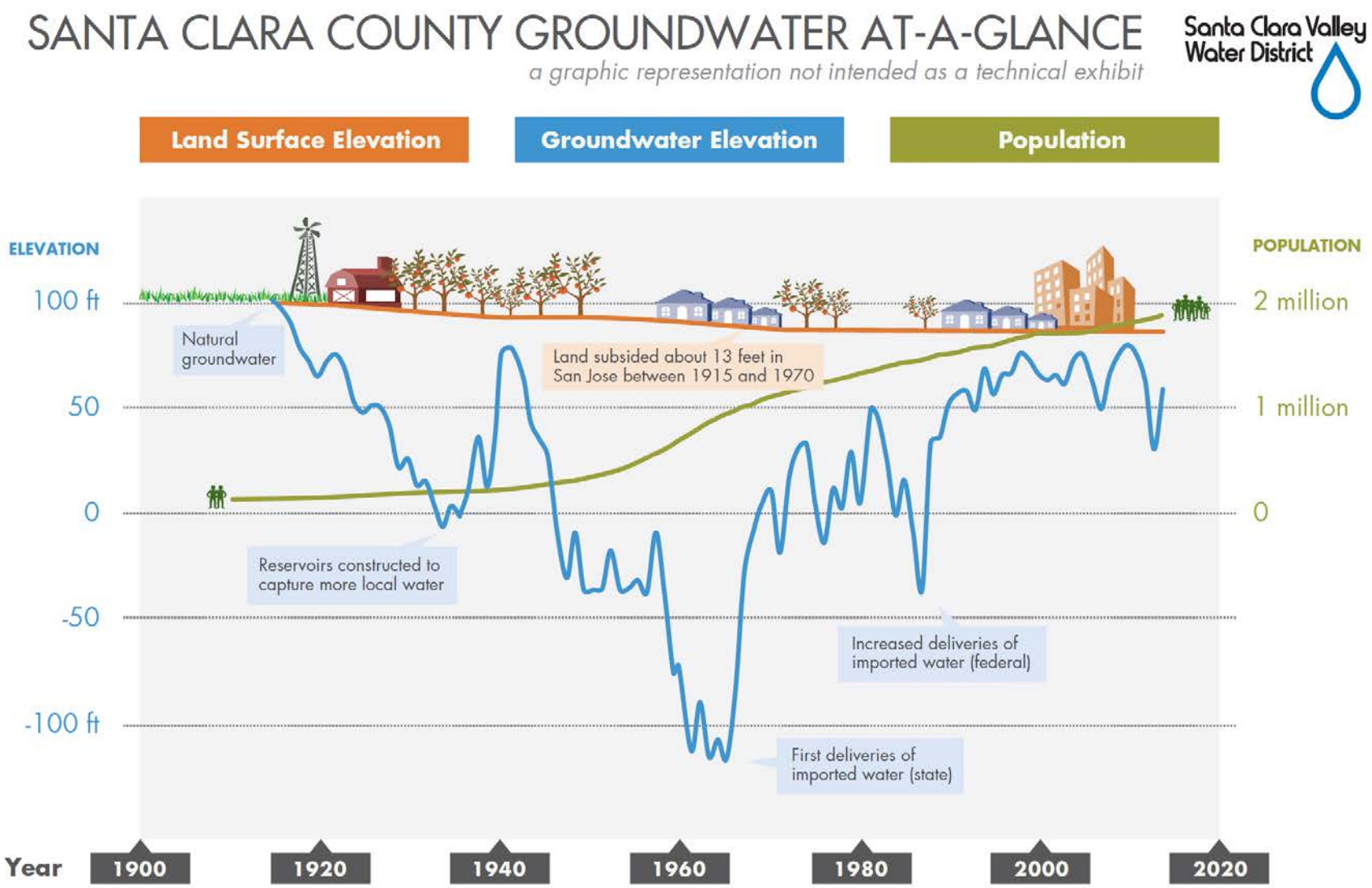
THIS PAGE INTENTIONALLY LEFT BLANK

Water Supply Master Plan Update

January 31, 2017

Santa Clara Valley Water District

Long history of investments in reliability



Water supply planning driven by Board policy

E-2.1 – "Current and future water supply for municipalities, industries, agriculture, and the environment is reliable"

EL-4.2 – "[A BAO shall] spend in ways that are cost-efficient"

S-2.1- "Develop supplies to meet at least 100 percent of demands in the Urban Water Management Plan in non-drought years and 90 percent of demands in drought years"

Recommendations

- Receive information on the updated long-term water supply outlook
- Receive and discuss risk assessment results
- Discuss level of service goal
- Receive and discuss information on preliminary project and portfolio analyses
- Receive and discuss information on potential storage options

Summary of Findings to Date

- Investments above currently planned investments are needed to meet current level of service goal
- Level of service goal determines the level of investment needed
- No individual project meets the current level of service goal – need to consider portfolios and full range of benefits
- Some additional investment decisions will be required in the next 6-18 months

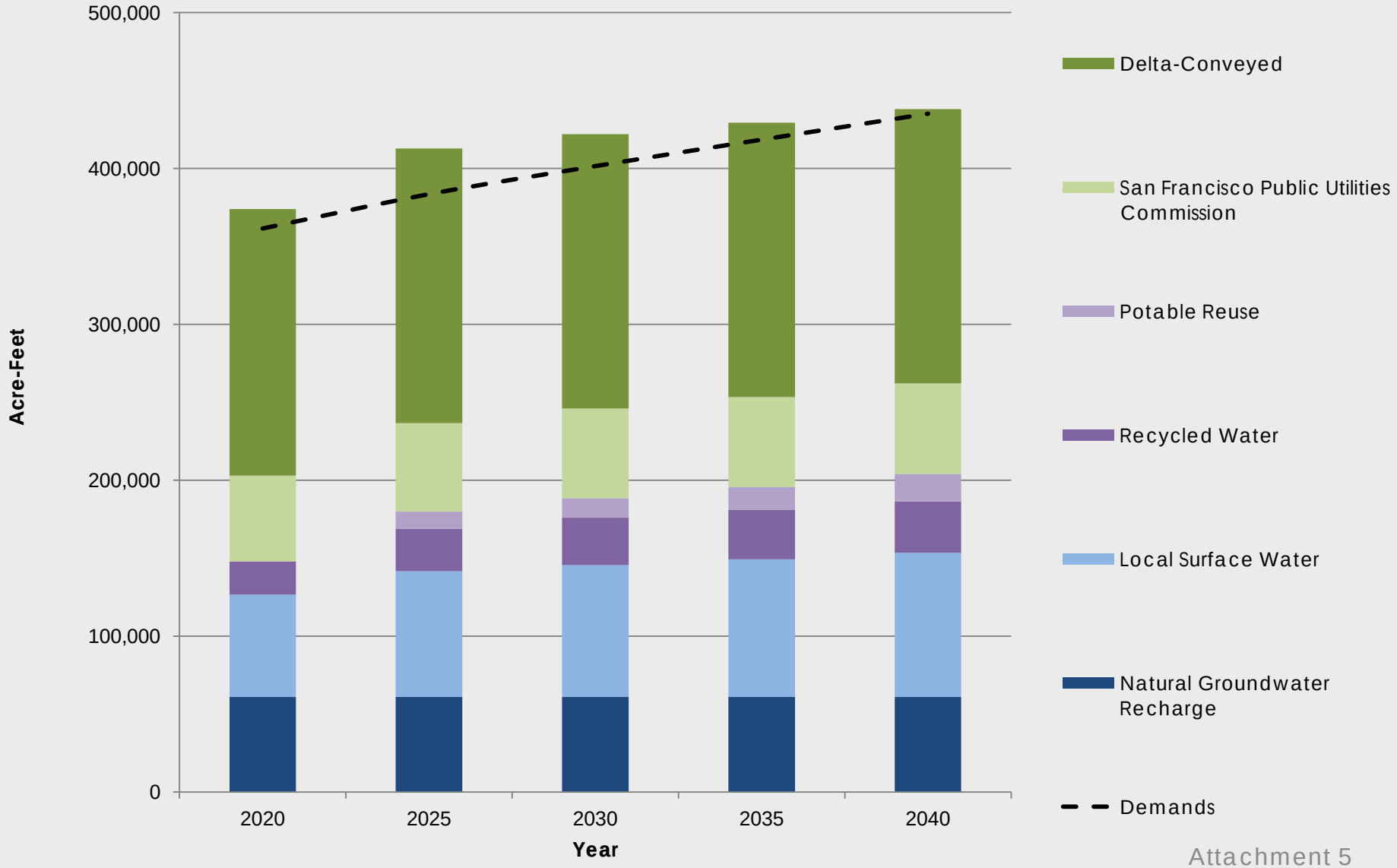
A. Long-Term Water Supply Outlook

Key Baseline Scenario Assumptions

- Dam seismic retrofits complete by 2025
- 24,000 AFY of potable reuse capacity by 2025
- 99,000 AFY of long-term water conservation savings by 2030
- Retailer projections from final 2015 UWMPs
- FAHCE flow and release requirements
- No decrease in imported water supply reliability

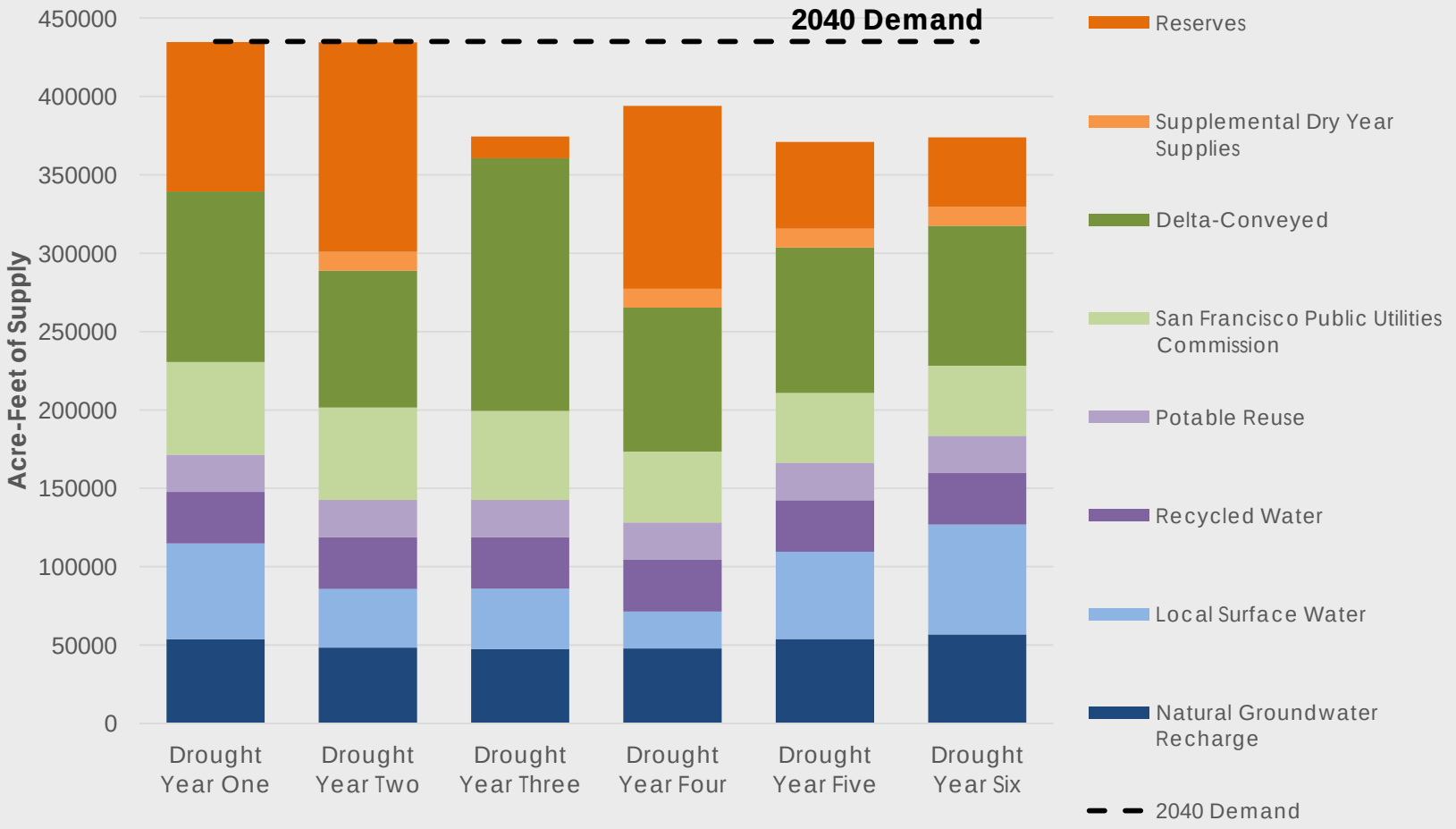
Baseline supplies sufficient for average annual demands

Note: Baseline includes 24,000 AFY of purified water capacity by 2025



Droughts continue to be the greatest challenge

Note: Baseline includes 24,000 AFY of potable reuse capacity by 2025



Baseline Water Supply Outlook

Assumes 24,000 AFY of potable reuse capacity by 2025 and other baseline investments

Parameter	2020	2025	2030	2035	2040
Average Annual Supply (AF)	374,800	414,700	423,900	431,300	440,000
Normal Year Demand (AF)	361,400	383,400	401,500	418,500	435,000
Maximum Level of Shortage Incurred (% of Normal Year Demand)	Stage 3 (15%)	Stage 2 (10%)	Stage 3 (15%)	Stage 3 (15%)	Stage 3 (15%)
Number of Years with Shortage (Over 94 Years)	11	5	6	8	13
Number of Years with Stage 2 (10%) Shortages	6	5	4	4	7
Number of Years with Stage 3 (15%) Shortages	5	0	2	4	6

B. Risk Analysis

Risks are important to consider

Climate Change
- Supplies
- Demands

Regulatory Uncertainty
- Delta
- Instream recharge operations
- Potable reuse

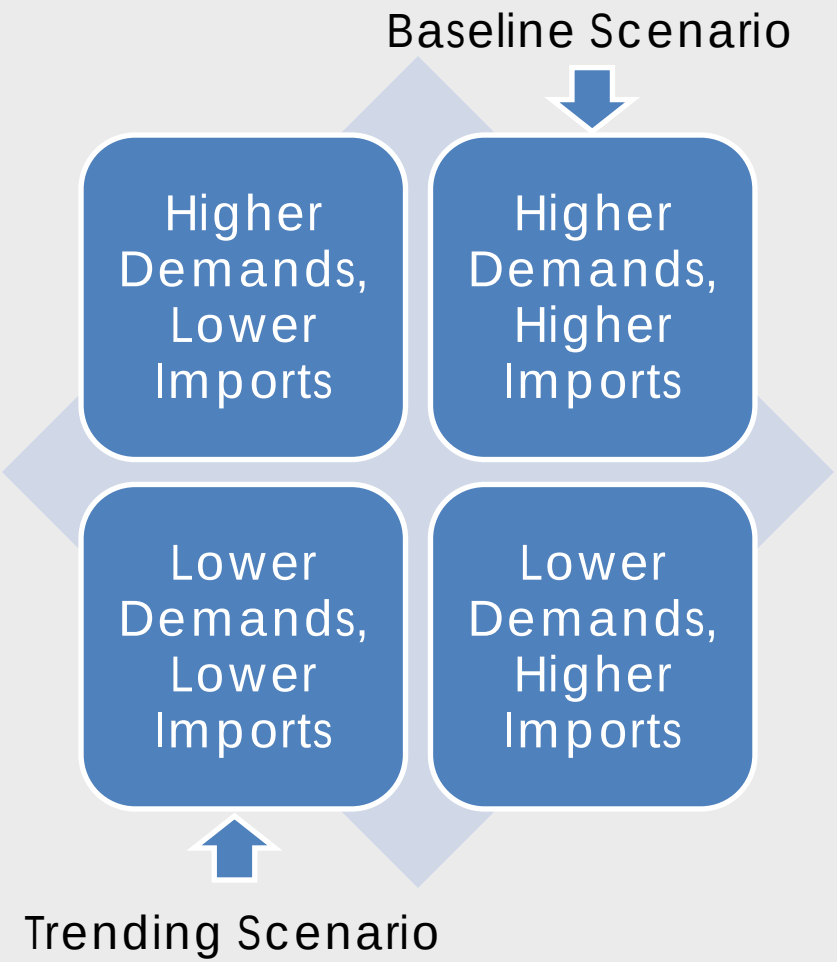
Development/Land Use
- Demands
- Reuse
- Infiltration

Funding

Planning Outside of WSMP Context

Demand Growth Uncertainty

Risk analysis includes "Trending" Scenario



- Demand growth lower than Baseline
- Imported water deliveries lower than Baseline

Trending Scenario shows more shortages

Assumes 24,000 AFY of potable reuse capacity and other baseline investments

Parameter	2040 Baseline	2040 Trending
Average Annual Supply (Acre-Feet, AF)	440,000	391,000
Normal Year Demand (AF)	435,000	402,000
Maximum Level of Shortage (% of Normal Year Demands)	Stage 3 (15%)	Stage 4 (30%)
Number of Years with Shortage (Over 94 Years)	13	22
Number of Years with Stage 2 (10%) Shortages	7	16
Number of Years with Stage 3 (15%) Shortages	6	4
Number of Years with Stage 4 (30%) Shortages	0	2

C. Level of Service Goal

Current Level of Service Goal

E-2 – "There is reliable, clean water supply for current and future generations"

S-2.1- "Develop supplies to meet at least 100 percent of demands in the Urban Water Management Plan in non-drought years and 90 percent of demands in drought years"

Level of service goal determines costs

Level of Service Goal	Range of District Costs (2016$)*	
	Baseline Scenario	Trending Scenario
Current Level of Service (Stage 2 or 10% Shortage)	Up to $700 million	Up to $3,000 million
Stage 3 or 15% Shortage	None	Up to $1,200 million

Costs to the community for shortages increase as the District's costs and level of service decrease. Going from a 15 percent level of shortage to a 10 percent level of shortage increases District costs from up to $700 million to up to $3,000 million. The commensurate increase in costs to the community for shortage is on the order of about $360 million.

*Non-District costs include costs such as recycled water and some water conservation investments

D. Water Supply Alternatives

Water Supply Project Alternatives

- Storage, inside and outside county, surface and groundwater
- Groundwater recharge ponds
- Additional potable reuse
- Recycled water
- Conservation and demand management
- Graywater reuse
- Raw Water Pipelines
- Ag land fallowing
- Stormwater reuse
- Desalination
- Transfers/dry year options
- Additional water rights
- SFPUC deliveries
- Shallow groundwater reuse
- Ag land flooding
- California WaterFix

Initial Baseline Portfolio Analysis

Preliminary estimates

Portfolio	Description	Number of Years with Shortages (15%, 10%)	Lifecycle Cost (2016$)
n/a	Baseline Scenario	13 (7, 6)	n/a
B1	All Water Use Efficiency (WUE)	8 (5, 3)	$500 million
B2	All WUE and Groundwater Banking	7 (2, 5)	$600 million
B3	Los Vaqueros and 15,000 AFY of Additional Potable Reuse	6 (2, 4)	$1,500 Million
B4	All WUE and 15,000 AFY of Additional Potable Reuse	6 (1, 5)	$1,700 million
B5	All WUE and Sites Reservoir	6 (0, 6)	$700 million
B6	Pacheco Reservoir and 15,000 AFY of Additional Potable Reuse	4 (0, 4)	$2,700 million

All projects and portfolios analyses assume the baseline projects/planned investments are implemented, such as maintaining and restoring existing assets, seismic retrofits, and 24,000 AFY of potable reuse capacity.

Initial Trending Project and Portfolio Analysis

Preliminary estimates

Portfolio	Description	Number of Years with Shortages (30%, 15%, 10%)	Lifecycle Cost (2016$)
n/a	Trending Scenario	22 (2, 4, 16)	n/a
T1	Anderson Reservoir	18 (1, 2, 15)	$1,900 million
T2	Pacheco Reservoir	17 (1, 4, 12)	$1,500 million
T3	15,000 AFY of Additional Potable Reuse Capacity	6 (0, 5, 1)	$1,200 million
T4	California WaterFix	4 (0, 1, 3)	$1,800 million
T5	California WaterFix and Pacheco Reservoir	2 (0, 0, 2)	$3,300 million
T6	California WaterFix and 15,000 AFY of Additional Potable Reuse Capacity	2 (0, 0, 2)	$3,000 million

All projects and portfolios analyses assume the baseline projects/planned investments are implemented, such as maintaining and restoring existing assets, seismic retrofits, and 24,000 AFY of potable reuse capacity.

Wide range of yields and costs

Preliminary estimates based on Baseline Scenario analysis

Water Conservation and Demand Management

Project	Lifecycle Cost (2016$)	Average Annual Yield (AF)	Average Annual Drought Yield (AF)	Cost/AF
Advanced Metering Infrastructure	$30 million	4,000	4,000	$500
Graywater	$1.5 million	100	100	$1,500
Local Land Fallowing	$90 million	1,000	5,000	$2,500
Model Ordinance	$1.4 million	5,000	5,000	<$100
On-Site Stormwater Capture	$20 million to $50 million	100 to 300	200 to 500	$3,500 to $20,000
Regional Stormwater Capture	$9 million to $60 million	100 to 1,000	100 to 1,000	$500 to $23,000

Note: Cost/AF estimates focus on average annual yield. Portfolio analysis is best for decision making regarding drought supply.

Wide range of yields and costs

Preliminary estimates based on Baseline Scenario analysis

South County Projects

Project	Lifecycle Cost (2016$)	Average Annual Yield (AF)	Average Annual Drought Year Yield (AF)	Cost/AF
Butterfield Recharge	$30 million	TBD	TBD	TBD
Church Ave Pipeline	$40 million	TBD	TBD	TBD
Morgan Hill Recycling*	$220 million	3,000	3,000	$1,500
San Pedro Ponds	$40 million	1,000	500	$1,000

*Incremental to planned costs for the South County Recycled Water Program

Note: Cost/AF estimates focus on average annual yield. Portfolio analysis is best for decision making regarding drought supply.

Wide range of yields and costs

Preliminary estimates based on Baseline Scenario analysis

Other Projects

Project	Lifecycle Cost (2016$)	Average Annual Yield (AF)	Average Annual Drought Year Yield (AF)	Cost/AF
Additional Potable Reuse	$500 million to $1,200 million	4,000 to 10,000	6,000 to 15,000	$3,500
Regional Desalination	$90 million	1,000	4,000	$4,000
Transfers/Dry Year Options	$250 million	2,000	8,000	$1,500
Water Rights Purchase	$800 million	12,000	5,000	$1,000
California WaterFix*	$1,800 million	30,000	18,000	$1,500

* California WaterFix was analyzed in the Trending Scenario

Note: Cost/AF estimates focus on average annual yield. Portfolio analysis is best for decision making regarding drought supply.

E. Potential Storage Options

Storage Project Summary

Preliminary estimates based on Baseline Scenario analysis

Project*	Lifecycle Cost (2016$)	Average Annual Yield (AF)	Average Annual Drought Year Yield (AF)	Cost/AF
Anderson	$1,900 million	10,000	20,000	$10,000
Pacheco	$1,500 million	6,000	24,000	$11,000
Calero	$510 million	3,000	5,000	$8,500
Uvas	$450 million	500	1,000	$46,000
Los Vaqueros	$340 million	2,000	7,000	$9,500
Sites	$230 million	16,000	40,000	$1,000
Groundwater Banking	$90 million	500	2,000	$5,000

* Other storage projects to be reviewed include Temperance Flat and Tulare Lake

Note: Cost/AF estimates focus on average annual yield. Portfolio analysis is best for decision making regarding drought supply.

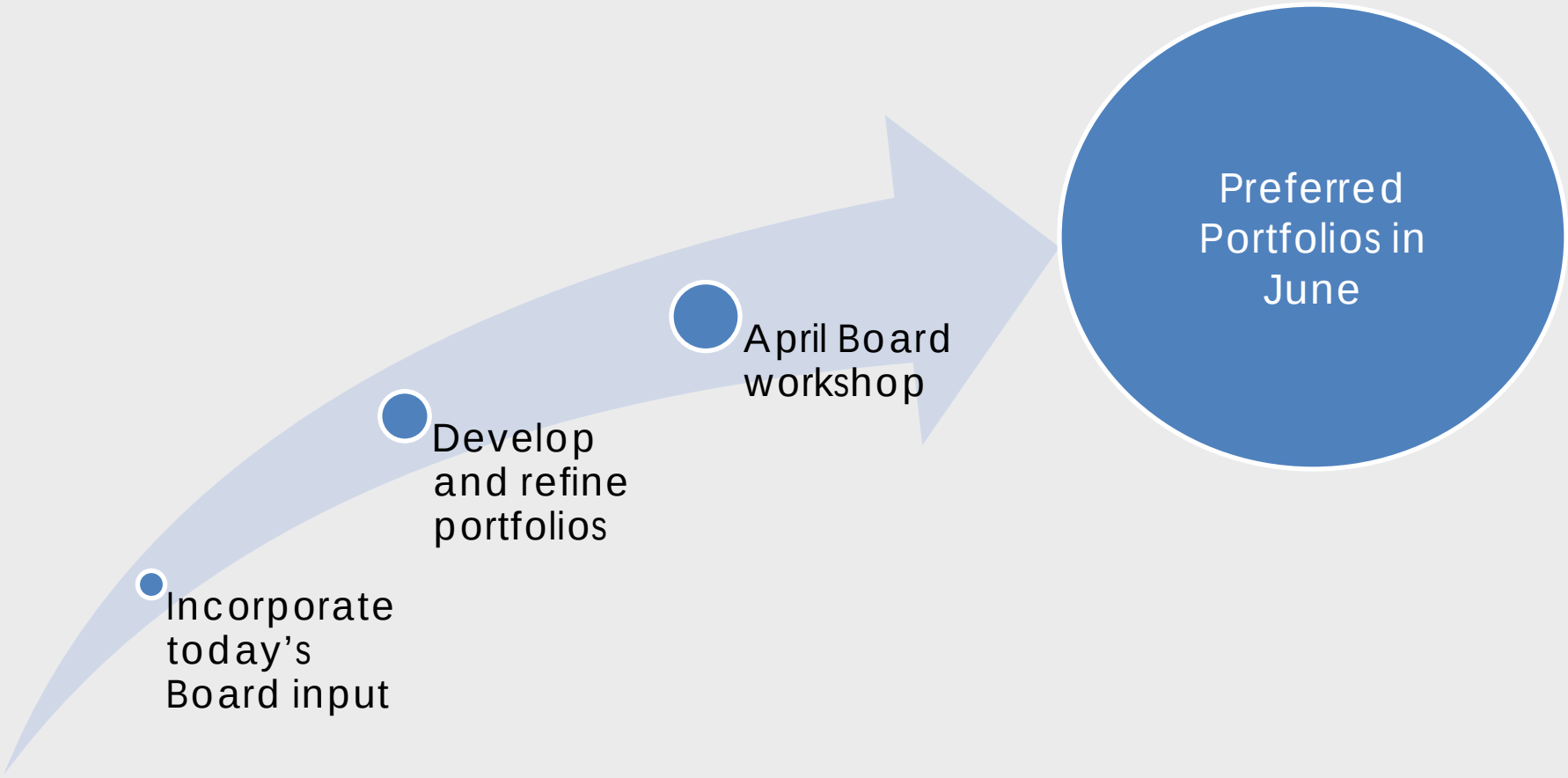
Expert Panel Input

Expert Panel Input to Date

- Look at portfolios of projects rather than individual projects
- Need to assess portfolios for their ability to achieve the District's objectives rather than just ranking them by cost effectiveness
- Consider multiple types of risk – cost risks, implementation risks, yield risks
- Consider the magnitude of risks and their potential impact on portfolio performance
- Apply consistent assumptions and methods

Next Steps and Summary

Next Steps


Incorporate today's Board input
Develop and refine portfolios
April Board workshop
Preferred Portfolios in June

2017 Water Master Plan Approach

Activity*	Scheduled Completion Date
Conduct Stakeholder Engagement	Ongoing
Establish Expert Panel	Completed
Develop Planning Objectives	Completed
Evaluate Risk Scenarios	January 2017
Update Model	January 2017
Prepare Baseline System Evaluation	January 2017
Define Projects and Programs	January 2017
Identify Recommended Portfolio	June 2017
Develop Implementation Program	October 2017
Prepare Water Supply Master Plan	December 2017

* Related Board discussion/decisions on WaterFix, Expedited Purified Water Program, storage, and other projects will occur in Calendar Year 2017

Summary of Findings to Date

- Investments above currently planned investments are needed to meet current level of service goal
- Level of service goal determines the level of investment needed
- No individual project meets the current level of service goal – need to consider portfolios and full range of benefits
- Some investment decisions will be required in the next 6-18 months to take advantage of windows of opportunity

File No.: 16-0908

Agenda Date: 1/31/2017
Item No.: 2.2.

BOARD AGENDA MEMORANDUM

SUBJECT:
Potential Expansion of Pacheco Reservoir and/or Anderson Reservoir, Proposition 1 Funding Opportunity, and Potential Single Source Consultant Agreement.

RECOMMENDATION:

A. Receive information on and discuss the merits of expanding Pacheco Reservoir and/or Anderson Reservoir;

B. Discuss the merits of preparing a Proposition 1 funding application for one or both of these projects;

C. Provide direction to staff to continue to evaluate Anderson Reservoir expansion as part of the 2017 Water Supply Master Plan update but not to proceed with studies or Proposition 1 application to expand the reservoir at this time; and

D. Authorize the Interim CEO to negotiate and execute a single source agreement with a consultant for up to $900,000 to prepare a Proposition 1 funding application for Pacheco Reservoir.

SUMMARY:

The potential expansion of Pacheco and Anderson Reservoirs was previously evaluated by the US Bureau of Reclamation and the District as part of the San Luis Low Point Improvement Project (SLLPIP). However, these two alternatives were screened out during the planning process because benefits were determined to be insufficient to justify projected costs. Recently updated modeling performed in preparation for the District's 2017 Water Master Plan update indicates that there may be greater water supply benefits than previously estimated, as well as potential ecosystem benefits for the Delta and local fisheries that could make the expansion of either of these reservoirs eligible for Proposition 1 funding. The recent modeling analysis considers these alternatives in the context of water supply portfolios that include options such as the California Water Fix and purified water indirect or direct potable reuse. The supply analysis also considers other storage alternatives including Los Vaqueros Expansion and Sites Reservoir, and Del Valle Reservoir expansion. A comprehensive analysis of various storage options and other water supply planning projects will not be complete until December 2017.

Staff performed preliminary assessments of both an expanded Pacheco Reservoir and an expanded Anderson Reservoir. The assessment indicates that expanding Anderson Reservoir would be nearly twice as expensive and likely result in delays in the critically important Anderson Dam Seismic Retrofit Project. Therefore, staff recommends that the District continue to evaluate Anderson Reservoir expansion as part of the 2017 Water Supply Master Plan update but not proceed with studies to expand the reservoir at this time, recognizing that the seismic retrofit project must proceed on schedule.

Proposition 1 funding application requirements for storage projects are extensive. An application requires complex analyses of ecosystem, water supply, and water quality benefits, an economic evaluation, and analysis of two different climate change scenarios. The potential aggregate funding opportunity available through the Proposition 1 Water Storage Investment Program (WSIP) is $2.7 billion. There may ultimately be more than a dozen total applicants; the most significant applicants are the proponents of Sites Reservoir, Los Vaqueros Reservoir expansion project, and Temperance Flat for a combined project cost of roughly $8 billion. Given the number of potential applicants and aggregate cost of proposals, it may be prudent to assume that the funding level potentially awarded to the District will be less than 20% of the project cost. The remainder of project costs would be potentially funded by the District and prospective project partners. Pending determination of whether the project would provide water supply benefits and thus be eligible for funding through groundwater charges, the costs of the initial studies, including Proposition 1 application costs would be funded through non rate-related revenue sources.

Time available for performing the required analysis is extremely limited. Proposition 1 funding applications are due by June 30, 2017, and, for the Pacheco Reservoir expansion application, the District will need to secure a consultant, perform the extensive analysis required, and develop partnerships with San Benito County Water District, Pacheco Pass Water District, and other potential beneficiaries prior to that date. District staff does not have the immediate expertise or availability to complete the application before June 30, 2017. Therefore, consultant resources are needed to develop the application in the event the District decides to move forward; however, securing consultant resources and completing a complex funding application in the short time frame available will be challenging.

Potential Benefits to the District

The Proposition 1 solicitation provides an opportunity for the District to potentially receive millions of dollars towards costs associated with the expansion of Pacheco Reservoir. The expansion and acquisition of this reservoir could provide 100 Thousand Acre-Feet (TAF) of needed dry and critical year supply for the District.

Challenges and Issues

In addition to time constraints for securing a consultant and preparing a Proposition 1 funding agreement, the following issues and challenges must be addressed:

- The estimated capital cost of enlarging Pacheco Reservoir to 130 TAF is roughly $800 million in 2016 dollars, while the capital cost of enlarging Anderson Reservoir to 190 TAF is roughly $1.5 billion in 2016 dollars. Annual operations and maintenance costs are estimated at roughly $3.3 million and $4.3 million, respectively. The District must demonstrate that the expected benefits exceed the expected costs, among other requirements, in order to be eligible for funding.

- Only public benefits are eligible for funding under WSIP. Public benefits are defined as ecosystem improvements, water quality improvements in the Delta or other river system, flood control, emergency response, and recreation. Ecosystem improvements are defined as changing the timing of water diversions or improving flow conditions or temperature to contribute to the restoration of aquatic ecosystems and fish and wildlife in the Delta. Water supply benefits are defined as increases in volume and potentially changes in timing and location of water provided for human uses, such as agricultural, residential, commercial, public, industrial and institutional uses. This includes the delivery of water for groundwater recharge that provides a usable supply for future extraction and human use. Water supply benefits are not eligible for funding under WSIP.

- The public benefit cost share cannot exceed 50% of total benefits, and ecosystem improvements must provide for at least half of the public benefit cost share.

- The cost of preparing a Proposition 1 funding application may range from $500,000 to $900,000, depending on the extent of analysis determined to be necessary for either enlarging Pacheco Reservoir or Anderson Reservoir. The cost would be significantly greater if applications for both enlargement projects were prepared, although some level of economy could be achieved given that certain components of the analysis for both projects would be similar.

- The District has committed $100,000 to support development of the Prop 1 funding application and environmental documentation for expansion of Los Vaqueros Reservoir (LVE) and is working in good faith to participate in the Sites Reservoir project at a cost of roughly $900,000. The District can withdraw from participation in the Sites Reservoir project at any time and receive a refund of unused funds; funds committed for LVE are not refundable. An analysis of the relative benefits of these storage projects, along with an expanded Pacheco and/or Anderson Reservoir, will be presented as part of the Water Master Plan update.

- Staff is still analyzing a broad range of projects for meeting water supply goals under a variety of different scenarios as part of the 2017 Water Supply Master Plan update. Potential benefits for the Anderson and Pacheco Reservoir expansion projects will be better quantified once the analysis is completed and the Board considers these reservoir projects in the context of alternative strategies for providing a reliable water supply. The Water Supply Master Plan will not be completed until December 2017.

- The District would need, at a minimum, a formal resolution of concurrence from the

recently reestablished Pacheco Pass Water District Board to enlarge Pacheco Reservoir in order for a Proposition 1 funding application to be successful. Pacheco Pass Water District has virtually no staff and a five member board that was elected in November 2016 after several years in which there were no Board members; therefore, coordination and communication with this agency will be challenging.

- The $1.5 billion cost estimate for enlarging Anderson Reservoir to 190 TAF may vary depending on how the enlargement would be coordinated with the District's Anderson Dam Seismic Retrofit Project, a roughly $400 million project initiated in 2012 to address seismic deficiencies in the dam. If the enlargement takes place as part of this effort, there would likely be delays in the seismic retrofit activities. Such delays would have to be vetted with and approved by the state and federal dam regulators who are overseeing the seismic retrofit work.

Single source contract for preparation of a Proposition 1 funding application:

While the District is considering the costs and benefits of a variety of projects as part of the Water Master Plan update, the window of time for applying for Proposition 1 funding is short. If the District chooses to pursue Proposition 1 funding, consultant services are needed to further evaluate expansion opportunities and challenges in parallel with developing a Proposition 1 funding application. If at any time, it is recognized that the project is infeasible or that benefits do not justify costs, or if a timely concurrence resolution is not received from the Pacheco Pass Water District, work on developing the Proposition 1 funding application would be halted.

It may be possible to prepare a credible Proposition 1 funding application in the abbreviated time available if an experienced consultant already familiar with Anderson and/or Pacheco Reservoir is secured through a single source agreement. The capabilities of six consultants have been reviewed and staff has identified Montgomery Watson Harza (MWH) as the highest ranked choice to carry out the scope of services required for analysis and preparation of the Proposition 1 application for the preferred reservoir expansion project. MWH has previously analyzed the expansion of Pacheco and Anderson Reservoirs, has the experience and resources needed to perform the work, and has the most extensive knowledge regarding the Proposition 1 funding requirements and analysis procedures. MWH is currently preparing a Proposition 1 funding application for the Temperance Flat storage project and is also assisting with the Proposition 1 funding application for the Sites Reservoir project. If negotiations with MWH are not successful, then staff has identified CH2M as the first backup choice and AECOM as the second backup choice to perform the work. It is anticipated that a consultant could be secured through this process in about a month, leaving 4 months to produce the required work. See Attachment 1 for a more detailed justification regarding the choice of consultants for a single source contract.

The District could potentially receive up to an estimated $160 million in funding based on a successful grant application and substantiation of potential benefits. The remainder of project costs would be provided by the District and prospective project partners. The cost of initial studies, including Proposition 1 funding would come from non rate-related revenue sources.

BACKGROUND:

Pacheco Reservoir Expansion Project

Pacheco Reservoir is a 6 TAF reservoir owned by Pacheco Pass Water District (PPWD). It is located approximately 0.4 miles north of Pacheco Pass Highway (Highway 152) in Santa Clara County and is formed by the North Fork Dam, which was built in 1936 on the north fork of Pacheco Creek. On September 23, 2008, the Board of Directors approved "Principles of Agreement for a Joint Investigation of Future Alternatives for Pacheco Reservoir" (Principles of Agreement) (Attachment 2), which included a provision that reservoir enlargement would not impact Henry Coe State Park, among other principles of joint engagement. Although some of the investigations outlined in the Principles of Agreement were conducted, progress was delayed due to difficulty gaining access to private lands in the watershed for geologic and technical studies, and changing priorities. By 2011, other efforts that had been considering reoperation or enlargement of Pacheco Dam (San Luis Low Point Improvement Project and Santa Clara Valley Habitat Plan) were no longer considering this alternative or were discontinued, and in September 23, 2011, the Principles of Agreement expired. Between December 2012, when the terms of the last three remaining PPWD board members expired, and December 2016, when the election of 5 new board members was certified, there was no official governing body for PPWD. The Division of Safety of Dams has identified a need to replace the spillway wall of the North Fork Dam. In December 2011, the Santa Clara County Local Agency Formation Commission (LAFCO) adopted a Countywide Water Service Review Report that identified the following concerns with PPWD:

> "In summary, there are several concerns regarding the financing, operations and management of PPWD, including a lack of necessary revenue to complete essential capital improvements, lack of transparency and clarity in financial statements, inaccuracies in the District's accounting and State reporting, failure to submit a timely audited financial statement to the County, lack of a website to inform constituents of district activities and functions, lack of a means to track operations and water flows at the dams, extended board vacancies and a lack of contested elections."

Recent modeling and analysis performed by the District indicates that Pacheco Reservoir could be expanded to 130 TAF without inundating Henry Coe State Park, and that storage of imported water supplies in the enlarged reservoir and during extended drought periods integration of its operations with the District's water supply system may provide up to 100 TAF of critically dry year supply; however, benefits are reduced if the quantities of imported supplies decline and are not replaced with new water supply sources. An expanded reservoir may also provide water quality benefits, operational flexibility, emergency storage, flood protection, and ecosystem benefits. As stated previously, a determination will be made once studies are complete as to whether the project will provide water supply benefits eligible for cost recovery of benefits through groundwater charges. The capital cost of this expansion is currently estimated to be roughly $800 million; O&M costs are roughly estimated to be $3.3 million annually. Staff is evaluating if benefits will likely justify potential costs, and whether Proposition 1 funding opportunities may increase the affordability of this project.

San Benito County Water District (SBCWD) has expressed interest in partnering with the District if the decision is made to move forward with a funding application.

Pacheco Reservoir releases water to Pacheco Creek in Santa Clara County and drains to the Pajaro River and ultimately to Monterey Bay. The California Department of Fish and Game has indicated that enhancement of the South Central Coast Steelhead run on Pacheco Creek is important and that recovery and fishery enhancement actions that could be taken for that water course could improve the fisheries habitat value. If expanding Pacheco Reservoir could lower water temperatures and increase summer flows, fisheries habitat value of the stream could be improved. The National Marine Fisheries Service, however has previously expressed concern about releasing Delta water into local creeks.

Anderson Reservoir Expansion Project

The concept of expanding Anderson Reservoir, currently the District's largest local reservoir, was also studied as an alternative solution for the SLLPIP. The capital cost of expanding Anderson Reservoir from 90 TAF to 190 TAF is roughly estimated at $1.5 Billion in 2016 dollars; O&M costs are roughly estimated at $4.3 million annually. Potential benefits and limitations of expanding the reservoir are similar to those of an expanded Pacheco Reservoir and include water supply, water quality, operational flexibility, emergency storage, and ecosystem improvements. The additional storage capacity may also enhance flood protection. The expansion was screened out in 2002 because benefits did not justify the projected costs. Plans to expand Anderson Reservoir would likely delay the District's $400 million project initiated in 2012 to address seismic deficiencies in Anderson dam. Such delays would have to be vetted with and approved by the state and federal dam regulators who are overseeing the seismic retrofit work.

Proposition 1 Funding Available for Water Storage Projects

The California Water Commission (CWC), which is administering the $2.7 billion available in the Proposition 1 WSIP, finalized its regulations on December 14, 2016.
The due date for submittal is June 30, 2017, which is six months sooner than the date announced initially by the CWC. The CWC has identified multiple objectives that should be met in the application process, including more reliable water supplies, restoration of important species and habitat, and more resilient and sustainably managed water infrastructure. The WSIP allows for investment of public funds for public benefits associated with water storage. In other words, only the public benefits (environmental, flood protection, water quality, etc.) are eligible for funding. Water supply benefits are not eligible for funding under WSIP. Prior to approving funding, the CWC must make a determination that the project is feasible and that the expected benefits exceed the expected costs, among other requirements.

The most significant potential applicants for Proposition 1 WSIP funding are the proponents of Sites Reservoir, Los Vaqueros Reservoir expansion project, and Temperance Flat for a total project cost of roughly $8 billion. There may ultimately be in excess of a dozen total applicants, although given the stringent requirements for both qualifying for funding and for completing the required analyses, it will be challenging for smaller projects to complete the applications. The District could be eligible for up

to 50 percent of the total cost of a reservoir expansion project approved for Proposition 1 funding; however, ecosystem improvements must account for at least half of the public benefit cost share. Given the number and size of potential applicants, the potential funding level awarded to the District will likely be less than 20% of the project cost.

In order to receive WSIP funding, the District would have to enter into contract with each appropriate State agency, including potentially the California Department of Fish and Wildlife (CDFW), the State Water Resources Control Board (SWRCB), and the Department of Water Resources (DWR), to administer the public benefits of the project. The contract would require implementation of an adaptive management plan that identifies trigger levels that initiate adaptive management actions, a decision making process that includes the administering State agency, assurances as determined by the administering State agency and the District regarding operations and O&M, and monitoring and reporting requirements, among other obligations. Potential costs will need to be developed as the project is better defined and may need to be covered by the District.

Expansion of Anderson Reservoir versus Pacheco Reservoir

The District had previously evaluated and has documentation regarding the potential expansion of both Pacheco and Anderson Reservoirs. Both the Pacheco Reservoir Expansion and the Anderson Reservoir Expansion could potentially meet the requirements of the WSIP Proposition 1 funding. Constructing both projects would impose a very high financial burden within the planning horizon. The expansion of Anderson Reservoir by 100 TAF is estimated to cost nearly twice as much as expanding Pacheco to 130 TAF ($1.5 billion versus $800 million), while initial estimates indicate that the water supply benefits appear to be similar. Initiating plans for expansion of Anderson Reservoir will likely result in delays in the Anderson Dam Seismic Retrofit Project; such delays would have to be reviewed and approved by the state and federal dam regulators who are overseeing the seismic retrofit work. For these reasons, staff recommends that the District does not proceed with studies to expand Anderson Reservoir at this time.

For the Pacheco Reservoir Expansion if the District's planning studies and economic analysis continue to indicate that the project would be a suitable storage project for the District as part of its long-term water supply portfolio, a number of considerations and potential risks would have to be considered before a recommendation could be brought to the Board to proceed with further planning, environmental analysis, design and construction. The considerations include which entity holds title to the land upon which the project would be constructed, environmental documentation including CEQA, permitting requirements, operational requirements, partnership commitments, stakeholder support, and design/construction uncertainties.

NEXT STEPS:

If Board approves moving forward with a single source consultant contract for development of a Proposition 1 funding agreement for Pacheco Reservoir Expansion Project, staff would proceed with the following:

- Move forward with negotiations to secure the most qualified consultant as described in Attachment 1. If negotiations are not successful, then staff will enter into negotiations with the next most qualified consultant until a successful agreement is reached.

- Develop a funding application for expansion of Pacheco Reservoir, requiring the following activities:

    - A meeting (involving District Board representation) with Pacheco Pass Water District's newly elected Directors.

    - Secure a formal resolution by Pacheco Pass Water District's Board to support the Proposition 1 application for enlarging Pacheco Reservoir.

    - Development of a cost-share-and-coordination agreement with San Benito County Water District.

    - Staff development of updated Principles of Agreement for Joint Investigation of Pacheco Reservoir (see Attachment 2) and submittal to the District Board for approval.

    - Development of a memorandum of understanding between Pacheco Pass Water District, San Benito County Water District (SBCWD), and the District regarding objectives, interests, and coordination related to expanding Pacheco Reservoir.

    - Coordination with the resource agencies regarding quantification of fishery benefits.

    - Communication with potential stakeholders, such as United States Bureau of Reclamation (USBR), CDFW, National Marine Fisheries Service (NMFS), and interested non-governmental organizations (NGO's).

    - Exploration of partnerships with other potential partners, such as State of California, USBR, SBCWD and PPWD.

    - Coordination and oversight of the consultant to develop the Prop 1 funding application.

    - Meet with and obtain written support from resource agencies and potentially other entities in order to validate potential benefits described in a Proposition 1 funding application.

    - Submit an application for a Proposition 1 funding.

ESTIMATED COST:

All Proposition 1 funding applications must satisfy certain criteria and perform similar analyses utilizing the same or functionally similar modeling tools, and all must analyze the benefits to protected fish species in the Delta. Therefore, the estimated costs of preparing the Proposition 1 funding applications for other projects may be useful to estimate costs for developing funding applications for expanding Pacheco Reservoir. The costs of preparing a Proposition 1 funding application is significant and ranges from $900,000 for the Los Vaqueros Reservoir Expansion project to $15 million for the Sites Reservoir Project.

Staff anticipates that the preparation of a Proposition 1 funding application for an expanded Pacheco Reservoir and/or expanded Anderson Reservoir will be significantly less complex than the analysis of Sites Reservoir and therefore significantly less costly. The cost will be more comparable to the cost of analysis for Los Vaqueros Reservoir Expansion. Staff estimates that the cost of preparing a Proposition 1 application for expansion of Pacheco Reservoir would be $500,000 to $900,000, depending on the extent of analysis determined to be needed. The consultant contract would be staged to allow it to terminate without incurring additional costs if at any time during the analysis it is determined by the District that the costs of the project outweigh the potential benefits. Costs would be better defined through discussions with the consultant on the required level of work to accomplish the necessary tasks to complete the application.

FINANCIAL IMPACT:

If the Board approves moving forward with a single source consultant contract for development of a Proposition 1 funding agreement:

- The cost of the consultant agreement will be determined through a negotiated process as District staff work with MWH to define the scope of work. The cost is anticipated to be $500,000-$900,000 for submittal of a single Proposition 1 funding application. The contract will be staged to allow it to terminate without incurring additional costs if at any time during the analysis it is determined by the District that the costs of the project outweigh the potential benefits.

- Because the District does not own the reservoir or yet have a right to it, groundwater charge revenue will not be used to fund consultant services, consistent with the District Act. Instead non rate-related revenue sources will be used. A budget adjustment to fund consultant services will be presented to the Board.

- If the District succeeds in securing Proposition 1 funding, up to 50% of the cost of preparing the grant application may be reimbursable.

CEQA:
The recommended action does not constitute a project under CEQA because it does not have the potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

ATTACHMENTS:
Attachment 1: Single Source Consultant Justification
Attachment 2: 090908 SCVWD Board Agenda Memo
Attachment 3: PowerPoint

UNCLASSIFIED MANAGER:
Garth Hall, 408-630-2750

Attachment 1: Justification for choice of consultants for a single source contract

If the District chooses to pursue Proposition 1 funding through the Water Storage Investment Program, it will need the assistance of a qualified consulting firm because staff does not have the expertise or the staff availability required to prepare a comprehensive and compelling Proposition 1 application within the shortened time available. To address these time and resource limitations, staff recommends moving forward with a single source contract with a reputable consulting firm that is knowledgeable about the Proposition 1 funding application requirements and has experience with both proposed reservoir expansion projects. If negotiations with the best candidate for a single source contract are not successful, then staff has identified fallback consultants to provide for negotiations with a second choice and, if necessary, a third-choice candidate.

Justification for contracting with MWH

Review of Consultant firms for Proposition 1 Application and Reservoir expansion

Staff considered 6 firms' qualifications and expertise: 1) Montgomery Watson Harza (MWH) 2) CH2M Hill; 3) AECOM; 4) Black & Veatch; 5) CDM Smith and 6) Parsons. The firms were evaluated based on the following criteria: (a) knowledge of Proposition 1 application process, (b) expertise in planning and design of earth dams, (c) ability to complete feasibility studies and environmental documents that comply with State of California regulations, (d) CalSim modeling capability and (f) past experience and knowledge of Pacheco Reservoir and Anderson reservoir.

Staff's assessment is that MWH satisfies all of the requirements and is therefore is the highest ranked consultant, given the criteria assessed. MWD has extensive knowledge of the Prop 1 funding application process, is able to perform all of the necessary technical analyses, and has previous experience on both Anderson and Pacheco reservoirs. MWD's previous experience evaluating an enlarged Pacheco Reservoir and Anderson Reservoir is critical given the short time frame available to complete the application. Additional detail regarding MWH's qualifications are described below.

Staff's assessment is that CH2M Hill and AECOM are the second and third ranked consultants (see table below).

	Experience						
Firm	Large Earth Dams	NEPA/CEQA Environmental	Prop 1 Application	Delta System Modeling	Anderson Dam	Pacheco Dam	Rank
MWH	x	x	x	x	x	x	1
CH2M Hill	x	x	x	x			2
AECOM	x	x	xx				3
Black & Veatch	x	x			x		4
CDM Smith	x	x				x	5
Parsons	x	x					6

MWH's Proposition 1 Application Expertise:
MWH has been involved with the development of Proposition 1 guidelines since 2009 and is currently developing a Proposition 1 funding application for the Temperance Flat storage project. For the Los Vaqueros Reservoir expansion, MWH is assisting Contra Costa Water District with the Proposition 1 funding application. For Sites Reservoir, MWH is acting in a review and advisory role. MWH's immediate familiarity with the Proposition 1 requirements will enable it to prepare an application for enlargement of either Pacheco Reservoir or Anderson Reservoir, which would provide significant time savings and could be more cost effective than using another consultant with less familiarity. District staff will work closely with the Office of the District Counsel to ensure adequate language is provided in the contractual language to avoid conflict of interest with other Proposition 1 applicants.

MWH's experience evaluating Pacheco Reservoir expansion:
MWH previously performed research, geotechnical analysis, cost estimates, and modeling specifically for an enlarged Pacheco Reservoir. The District awarded a contract to MWH in 1999, through a competitive bid process, to prepare a feasibility study for the SLLPIP. The 2002 feasibility study was completed with approximately $3M of work performed by MWH under a grant from Department of Water Resources (DWR) that evaluated a wide range of alternatives, including multiple enlargement options for Pacheco Reservoir that would allow for greater water storage for the District to avoid low-point conditions in San Luis Reservoir. This effort was used by the US Bureau of Reclamation (Reclamation) to prepare draft environmental documents, including several versions of a draft EIR/EIS. Staff understands that some of the key technical staff involved in the 2002 feasibility study, which includes the Pacheco Reservoir evaluation, are still employed by MWH and would be available to assist in the preparation of a Proposition 1 application.

MWH's experience evaluating Anderson Reservoir expansion:
MWH also previously researched an enlarged Anderson Reservoir as part of the 2002 feasibility study for the SLLPIP. To avoid low-point conditions in San Luis Reservoir, MWH looked at the alternative of raising Anderson Dam by 35 feet, which would increase storage capacity by 100 TAF. MWH's analysis included proposed dam modifications, conveyance system constraints, land purchase requirements, constructability issues (landslide and seismic), environmental effects, permitting and compliance requirements, cost estimates, an estimated project schedule, as well as project benefits and risks. Staff understands that some of the key technical staff involved in the 2002 feasibility study, which includes the Anderson Reservoir evaluation, are still employed by MWH and would be available to assist in the preparation of a Proposition 1 application.

MWH's expertise in Planning and Design of Dams and Reservoirs:
MWH has completed the planning and design of nearly 100 reservoir projects across the United States that are of similar scope and complexity to Anderson and Pacheco Reservoir enlargements. The firm has specialized expertise in embankment and concrete dams, and provide comprehensive services for geotechnical and structural

engineering, geology, hydrology, hydraulics, electrical, and mechanical equipment. MWH has centers of expertise for dam design in Walnut Creek, Chicago, Denver, and Belleville. It is expected that the MWH Walnut Creek and Sacramento offices will assist the District during this effort.

MWH's California Reservoir Feasibility Study Experience:
MWH has experience in preparing feasibility reports and associated NEPA and CEQA documents for new or enlarged reservoirs in California, including the enlargements of Shasta Lake, Los Vaqueros Reservoir, and Temperance Flat Reservoir. These feasibility studies involved multiple-purpose alternatives formulation and evaluation, including cost estimates and extensive numerical analysis. MWH also has expertise in the development and application of models that may be necessary to complete a Proposition 1 application, including CALSIM and other numerical models to evaluate hydraulics, reservoir and river water temperature and water quality, fishery and other ecosystem conditions, hydropower generation and energy use, recreation, flood operations, groundwater, and economics; all relevant components of the Proposition 1 Application.

THIS PAGE INTENTIONALLY LEFT BLANK

Santa Clara Valley Water District SM

Meeting Date:	09/23/08
Agenda Item :	8.
Manager:	G. Zlotnick
Extension:	2081
Director:	All

BOARD AGENDA MEMO

☒ Discussion ☒ Action ☐ Consent ☐ Information

SUBJECT: Principles of Agreement for Joint Investigation of Future Alternatives for Pacheco Reservoir

RECOMMENDATION:

That the Board approve Principles of Agreement for a Joint Investigation of Future Alternatives for Pacheco Reservoir (Attachment 1) as the basis of negotiation for an agreement with Pacheco Pass Water District and San Benito County Water District.

RATIONALE:

The subject Principles of Agreement for a Joint Investigation of Future Alternatives for Pacheco Reservoir ("Principles of Agreement") would inform negotiations of an agreement that would;

(a) facilitate investigation of the Pacheco Reservoir alternative under consideration as part of the San Luis Low Point Improvement Project ("SLLPIP); and,

(b) provide information to support future water supply investment planning.

Approval of the Principles of Agreement would, therefore, support:

Policy E-2.1.2: There is a reliable supply of healthy, clean drinking water.
Policy E-2.1.3: The water supply is reliable to meet future demands in Santa Clara County, consistent with the County's and cities' General Plans and other appropriate regional and statewide projections.

In addition, Pacheco Reservoir has been identified as a site of interest in the Santa Clara Valley Habitat Conservation Plan ("Valley Habitat Plan") currently under development with District participation, as there may be a potential for re-operations to support a run of steelhead in Pacheco Creek and downstream in the Pajaro River. Other opportunities for environmental enhancement in the watershed could be identified through investigations contemplated by the Principles of Agreement. Consequently, approval of the Principles of Agreement would also support:

Policy E-3.2: Environmental enhancements are implemented to improve watersheds, streams and the natural resources therein.

SUBJECT: Principles of Agreement for Joint Investigation of Future Alternatives for Pacheco Reservoir

Policy E-3.2.1: Potential environmental enhancement opportunities are identified to the Board.

EL-3.7 COMPLIANCE:

This is not a proposed consultant contract so EL-3.7 is not applicable.

SUMMARY:

In response to a request from the Pacheco Pass Water District ("Pacheco Pass"), representatives from San Benito County Water District ("San Benito") and the District met with Pacheco Pass on May 19, 2008, to explore collective interests in Pacheco Reservoir. The scope of the discussion included the watershed, operation of Pacheco Dam, flows in Pacheco Creek, existing facilities and potentially relocated or expanded facilities.

As a result of this meeting, staff drafted a set of principles for negotiation of an agreement that would give the parties three years to jointly investigate feasible alternatives for the future of Pacheco Reservoir. After completion of relevant studies, the agreement would also provide an option for the District and San Benito to purchase the existing Pacheco Reservoir and Pacheco Pass lands, subject to appropriate environmental review. Both Pacheco Pass and San Benito have reviewed the Principles of Agreement contained in Attachment 1 and confirmed that they reflect discussions held to date, and outline what the parties hope to achieve through a potential negotiated agreement.

Drivers for Investigation of Pacheco Reservoir

A. San Luis Low Point Improvement Project

The San Luis Low Point Improvement Project ("SLLPIP") is authorized by the CALFED Bay-Delta Authorization Act (October 25, 2004, 118 Stat. 1694). It specifically authorizes the Secretary of the Interior to "expend funds for feasibility studies, evaluation and implementation of the San Luis Low Point Improvement Project, except that Federal participation in any construction of the expanded Pacheco Reservoir shall be subject to future congressional authorization."

From the outset, an expanded Pacheco Reservoir was identified as a possible SLLPIP alternative. Providing a capability for San Felipe Division water to be stored during winter months in an enlarged Pacheco Reservoir would allow the San Luis Reservoir to be further drawn down during summer months, without reducing water quality or exacerbating water supply risks for the District and San Benito.

Central Valley Project (CVP) water supplies for the District and San Benito must be conveyed through San Luis Reservoir to the federal Pacheco Pumping Plant and San Felipe Division

facilities. When storage in the reservoir drops below 300,000 acre-feet, increased turbidity and algae reduces water quality and causes problems at the District's treatment plants. CVP deliveries to the San Felipe Division may become limited by reduced pumping capacity at Pacheco Pumping Plant if the reservoir drops to a low enough level. Ultimately, if the drop is far enough or quality is so deteriorated, deliveries could be interrupted entirely. The SLLPIP seeks to resolve these problems, along with accomplishing other planning objectives that would benefit all south-of-Delta water contractors.

In August 2008, the U.S. Bureau of Reclamation (Reclamation) completed a Draft SLLPIP Plan Formulation Report. Alternatives carried forward and evaluated in that report include: (1) lowering the San Felipe (Pacheco Pumping Plant) intake facilities; (2) expanding Pacheco Reservoir; and, (3) implementing a combination of expanding the use of local groundwater, desalination, institutional measures, and re-operation of the District's and San Benito's existing facilities.

Reclamation conducted EIS/EIR scoping meetings in San Jose on September 10 and in Sacramento and Los Banos on September 11, 2008. The Draft Feasibility Report and EIS/EIR is currently scheduled to be completed by summer 2009, and the Final Feasibility Report and EIS/EIR is scheduled to be completed by the end of 2009 or early 2010.

However, this schedule is heavily dependent on obtaining sufficient access to Pacheco Reservoir and private lands in its watershed for further geologic and technical studies. Approval of the Principles of Agreement and successful negotiation of an agreement with Pacheco Pass and San Benito would aid a more timely completion of the SLLPIP, by, among other things, helping to facilitate the requisite access for investigations. It could also facilitate effective use of remaining State Proposition 13 funds that are currently available until March 9, 2009, for reimbursement of certain SLLPIP costs.

B. Valley Habitat Plan

The Valley Habitat Plan is a cooperative effort by six Santa Clara County government agencies to provide an effective framework to protect, enhance, and restore natural resources in Santa Clara County, while improving and streamlining the environmental permitting process related to mitigating impacts on threatened and endangered species. The Valley Habitat Plan will provide incidental take permits for a broad suite of public works and development. Pacheco Reservoir is being discussed in the development of the Valley Habitat Plan, both as a covered activity and as a potential conservation measure.

1.) The covered activity includes relocating Pacheco Dam and expanding Pacheco Reservoir as an alternative in the SLLPIP, or as a future activity that could be undertaken independently by the District to optimize local water storage in its integrated water management portfolio.

2.) The conservation measure would entail re-operation of either the existing Pacheco Reservoir or an expanded Pacheco Reservoir to improve fishery resources. Some participants in the Valley Habitat Plan, including the federal resource agencies, are

interested in establishing a run of steelhead in Pacheco Creek and downstream in the Pajaro River. While the Principles of Agreement contemplate investigating the feasibility of Pacheco Reservoir re-operation for this purpose, any actual change in operations during the proposed agreement's three-year timeframe would be subject to the approval of Pacheco Pass, coordination with the Valley Habitat Plan, and appropriate environmental review. Other opportunities for environmental enhancements may also be identified through related investigations in the watershed.

C. Relationship To Future Water Supply Investment Decisions

The District's Integrated Water Resource Planning 2003 Report (IWRP 2003) recommended protecting existing water supplies and making modest near term investments in a "no regrets" portfolio of additional conservation, groundwater recharge, and water banking. For longer term investments, IWRP 2003 found that the District's water supply portfolio should include investments in all-weather supplies (i.e., recycling and conservation), storage, and dry-year transfers. Subsequently, in December 2005, the Board adopted Policy E-2.1.4.2, which states; "the District's water supply sources are further diversified by making new investments in a mix of all weather supplies, storage, and dry year transfers or option agreements."

The District needs to consider how best to balance all weather supplies and storage, as well as the type of storage, for future water supply reliability. These considerations will be better informed with additional information on different water supply alternatives. Improved understanding of the feasibility of Pacheco Reservoir as a potential future storage option will provide important perspective as the District undertakes analyses and considers decisions regarding the appropriate mix of future water supply investments.

Moreover, investigations related to Pacheco Reservoir as envisioned under the Principles of Agreement could also contribute significantly to the District's developing dam retrofit strategy to address pressing and increasing seismic requirements.

CEQA REQUIREMENTS:

Approval of the Principles of Agreement provides only a basis for negotiation and has no environmental impact; therefore, it is not a project, as defined by CEQA.

ADVISORY COMMITTEE INPUT:

The proposed Principles of Agreement have not been presented to any Advisory Committees.

PUBLIC OUTREACH:

Public outreach related to investigation of Pacheco Reservoir is, in part, achieved through the EIS/EIR process for the SLLPIP. Public scoping meetings were held in San Jose on September

10 and in Sacramento and Los Banos on September 11, 2008. The Valley Habitat Plan process also includes public meetings in which Pacheco Reservoir has been discussed.

FINANCIAL IMPACT:

Approval of the Principles of Agreement has no immediate financial impact.

Pacheco Pass would continue to own and operate Pacheco Dam and Reservoir during the term of the agreement. However, successful negotiation of an agreement based on these principles could lead to commitments and costs that are not currently included in the District's FY09 budget and long range forecast. Because discussions among the parties related to the subject Principles of Agreement did not commence until May of this year, it was not possible to include resources in the current year budget with any level of precision. Consequently, none were provided.

It is anticipated that certain investigations covered by a joint agreement would be conducted and paid for under the existing SLLPIP, including potential Proposition 13 funds referenced above, while others might be coordinated through the Valley Habitat Plan process. While there are no funds dedicated to such activities in the Valley Habitat Plan effort, it is possible that grants or other sources of funds might become accessible in the future for studies related to activities consistent with the Valley Habitat Plan, e.g. reservoir reoperation.

Should the Board authorize moving forward, an agreement subject to the proposed principles will provide for cost-sharing of additional investigations of mutual interest. Consistent with Board policy, any financial commitment that would exceed Executive Limitation EL-5.7 will be brought back to the Board for discussion and decision.

Principles of Agreement
for
Joint Investigation of Pacheco Reservoir

DRAFT #2 June 18, 2008

1. Parties: Pacheco Pass Water District (Pacheco Pass), San Benito County Water District (San Benito) and Santa Clara Valley Water District (Santa Clara).

2. Interests of the Parties

a. San Benito and Santa Clara are seeking alternatives that will improve their ability to manage water supply, water quality, and operational risks related to federal water deliveries from San Luis Reservoir.
b. As a participant in the Santa Clara County Habitat Conservation Plan, Santa Clara is seeking alternatives that will improve fish habitat and other environmental values in the watershed.
c. Pacheco Pass is seeking to ensure the continuation of operational benefits from Pacheco Dam and Reservoir, including groundwater recharge in Pacheco Creek upstream of the Highway 156 crossing.

3. Purpose of the Agreement

a. Establish a process and time period for Santa Clara and San Benito to investigate feasible alternatives for the future of Pacheco Dam and Reservoir.
b. Establish an option for Santa Clara and San Benito jointly to acquire Pacheco Dam and Reservoir, or to enter into a long-term lease or other arrangement with Pacheco Pass that would provide long-term benefits.
c. Establish a process to explore and potentially implement mutually agreed upon near-term operational changes.

4. Term: Three years from date of execution (expected July 2008).

5. Work Plan to Investigate Feasible Alternatives

a. Santa Clara and San Benito will jointly develop and agree upon a work plan to be accomplished during the term of the Agreement, including a scope of work, schedule, resources and budget, project management, methods of communication and coordination.
b. Santa Clara and San Benito will form a policy-level steering committee and a management committee to facilitate development and implementation of the work plan.

6. Coordination

a. Santa Clara and San Benito will consult Pacheco Pass in the development of the work plan, keep them informed of progress and make work products available for their review prior to release to others.
b. Santa Clara and San Benito will coordinate the investigations and analyses with the Bureau of Reclamation's ongoing San Luis Reservoir Low Point Improvement Project.
c. Santa Clara and San Benito will seek input from partners in the Santa Clara County Habitat Conservation Plan on the range of issues that should be studied, participation in workgroups to carry out investigations, and review of work products.

7. **Alternatives to be Evaluated**
   a. Alternatives to be evaluated will include remediation and re-operation of the existing Pacheco Dam and Reservoir, reconstruction and enlargement, or other possibilities.
   b. Feasible alternatives must maintain operational benefits for Pacheco Pass, including groundwater recharge in Pacheco Creek upstream of the Highway 156 crossing, at least equal to those that would have existed absent implementation of the alternative.
   c. Feasible alternatives will have no unacceptable impact on Henry Coe State Park.

8. **Funding and Cost Sharing**
   a. Santa Clara will seek to utilize an appropriate share of State grant funding available for the San Luis Reservoir Low Point Improvement Project to carry out the work plan.
   b. Santa Clara will seek cost-share funding from the Santa Clara County Habitat Conservation Plan for interim operational changes or investigations related to improvement of Pacheco Creek fish habitat.
   c. Santa Clara and San Benito will share remaining costs of the work plan equally, provided that when the option decisions provided by the Agreement are exercised, these cost shares will be adjusted to reflect the districts' respective long-term benefits.

9. **Access for Investigations**
   a. Pacheco Pass will provide access to the existing Pacheco Dam and adjacent property that the district owns or has rights of entry, for the purpose of investigating structural, geologic, environmental and other aspects of proposed alternatives.
   b. Pacheco Pass will facilitate, to the extent they are able, access by Santa Clara and San Benito to property in the watershed owned by others, as necessary to carry out investigations.
   c. Pacheco Pass will provide access to any relevant records that may assist with the evaluation of alternatives, including records of Pacheco Dam operation and maintenance and diversions in the watershed.
   d. Santa Clara and San Benito will each provide any relevant records or previous studies that may assist with evaluation of alternatives, including records of San Felipe Division operation and maintenance and diversions in the watershed.

10. **Operations During the Term of the Agreement**
   a. Pacheco Pass will continue to own and operate Pacheco Dam and Reservoir during the term of the Agreement.
   b. The parties will explore and, subject to mutual agreement and appropriate environmental review, may implement near-term operational changes to achieve water management and/or environmental objectives.
   c. Santa Clara and/or San Benito may provide resources to accomplish near-term operational changes, subject to appropriate indemnification by Pacheco Pass.

11. Exercise of Option

a. Before the end of the Agreement, Santa Clara and San Benito may jointly exercise an option to acquire Pacheco Dam and Reservoir, or to enter into a long-term lease or other arrangement with Pacheco Pass that provides long-term benefits.
b. If either Santa Clara or San Benito decides that it does not want to participate in an acquisition, long-term lease or other arrangement with Pacheco Pass, then the other district may independently exercise the option.
c. Neither Santa Clara nor San Benito is obligated to exercise any option provided by the Agreement.

Pacheco and Anderson Reservoir Expansion, Proposition 1 Funding Application, and Single Source Consultant Agreement

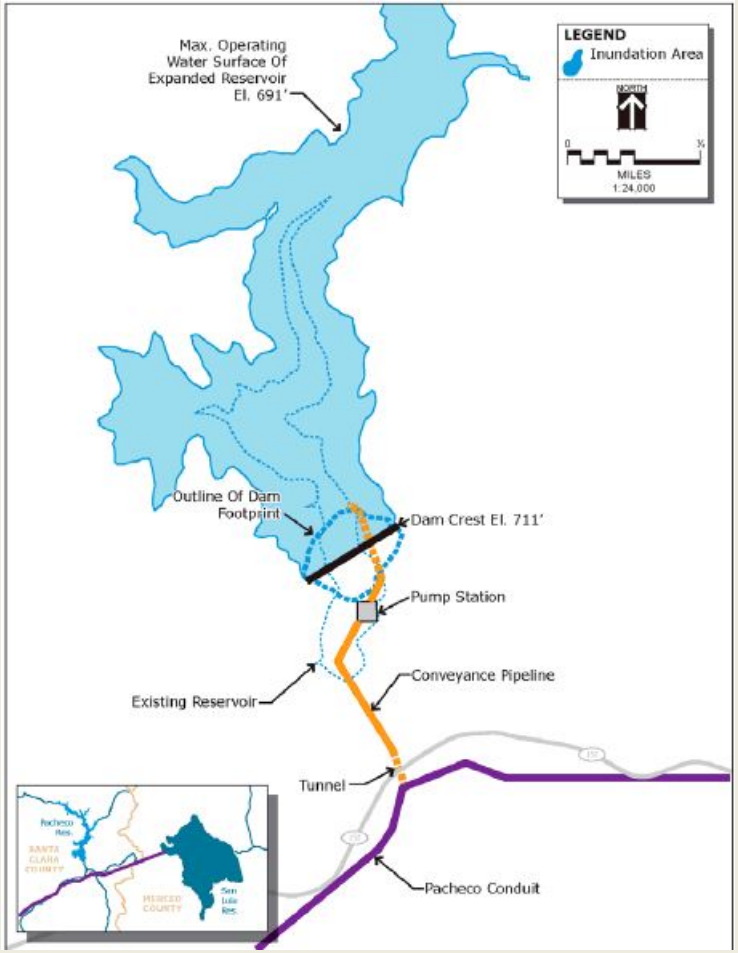
January 31, 2017

Santa Clara Valley Water District

Recommendation

- Receive information on and discuss expanding Pacheco/Anderson Reservoirs.
- Discuss merits of preparing a Prop 1 funding application.
- Do not proceed with Prop 1 application for Anderson Reservoir expansion at this time; doing so would likely delay the seismic retrofit project.
- Authorize the Interim CEO to negotiate and execute a single source consultant agreement for up to $900,000 to prepare a Prop 1 funding application for Pacheco Reservoir.

Reservoirs may be eligible for Prop 1 funding



Expand Pacheco Reservoir from
6 TAF to 130 TAF

Expand Anderson Reservoir from
90 TAF to 190 TAF

Potential Benefits of Local Reservoir Expansion

Expansion of Anderson or Pacheco Reservoirs could offer:

- Drought year supply
- Improved water quality
- Increased operational flexibility
- Local and Delta ecosystem enhancement
- Emergency supply
- Flood protection

Challenges and Issues

- ***High capital cost***: 130 TAF Pacheco Reservoir at roughly $800 million; 190 TAF Anderson Reservoir at roughly $1.5 billion.
- ***Proposition 1 funding criteria***: Expected benefits must exceed expected costs; ecosystem improvements must provide for at least half of funding.
- ***Partners***: Pacheco Pass Water District (owns Pacheco Reservoir); San Benito County Water District (potential partner); possibly others.
- ***Seismic retrofit activities***: Enlarging Anderson Reservoir may impact ongoing seismic retrofit activities.
- ***Water Master Plan update:*** Staff is still analyzing a range of projects in the 2017 Water Supply Master Plan update.
- ***Limited time:*** Prop 1 applications due June 30, 2017.

Prop 1 funding – opportunities

- $2.7 Billion available in the Water Storage Investment Program (WSIP)
- Sites, Los Vaqueros Expansion, and Temperance Flat project costs: $8 Billion; most likely no more than 25% funding for these projects
- Possibly a dozen or more total number of applicants.
- Given number and size of applicants, it may be prudent to assume District could receive less than a 20% funding level, or roughly $160 Million.

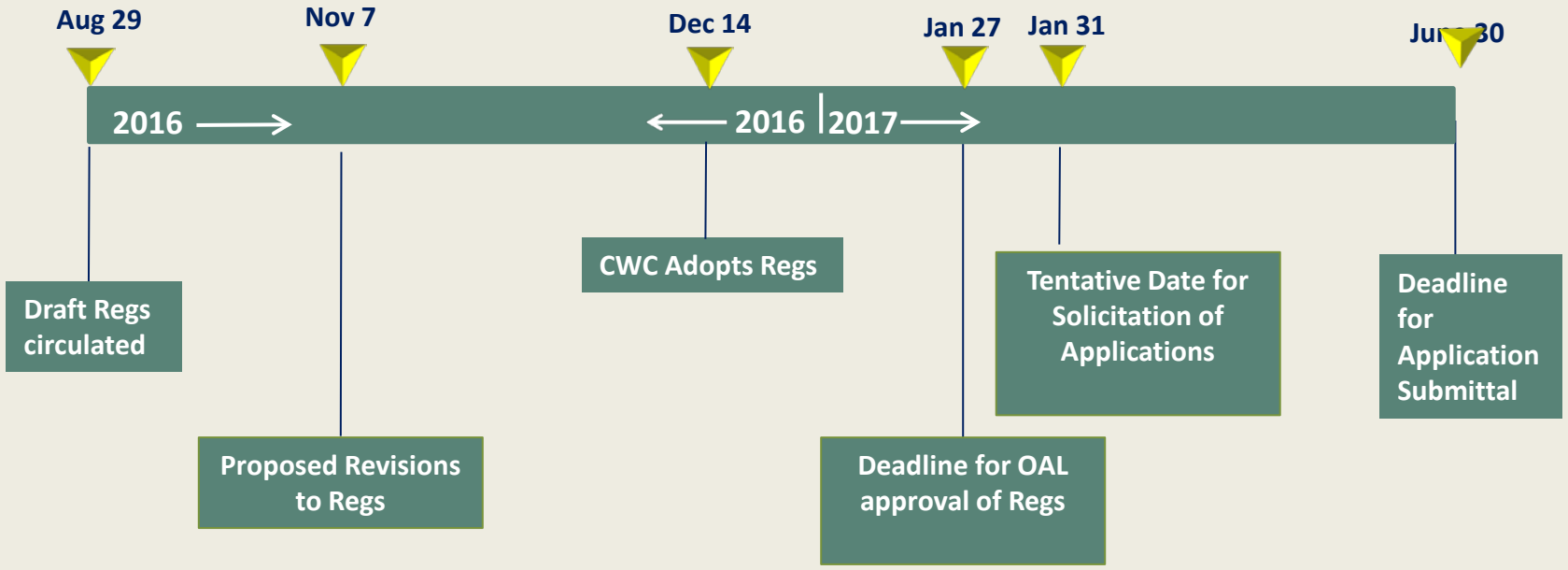
Prop 1 funding – general limitations

- Balance of water supply and ecosystem benefits driven by Prop 1 funding.
- District must enter into a contract with each appropriate State agency to administer public benefits of the project that includes:
  - Adaptive management plan required with trigger levels that initiate adaptive management actions
  - State agency decision making process
  - Funding sources and financial commitments for adaptive management
  - Reporting requirements
  - Assurances determined by State agency and District regarding operation and O&M.

Extensive Prop 1 application requirements

- Public Benefits quantified through multiple models for with and without project conditions
- Benefits monetized for each public benefit category
- Allocation of benefits for each stakeholder
- Adaptive management and monitoring plan for public benefits
- Environmental documentation
- Preliminary operations plan
- Permit inventory and list of agency agreements
- Cost estimate
- Environmental mitigation and compliance obligations
- Project schedule
- Ecosystem and water quality priority worksheets (80 pages)

Proposition 1 application timeline



As of Dec 29, 2016. Schedule is subject to change.

Preparation of Prop 1 application requires consultant support

Pursue an single source agreement with a consultant for up to $900,000 to prepare and submit Prop 1 application

- Consultant secured in roughly 1 month.
- Of six consultants considered, MWH best satisfies District's criteria to prepare Prop 1 application
- Negotiate with MWH for a single source contract. If negotiations are not successful, negotiate with next highest ranked consultant.
- If at any time it is determined project is not feasible or desirable, or if a timely support resolution cannot be obtained from Pacheco Pass Water District, stop consultant work.
- Funding to be provided by non rate-related revenue sources

Recommendation

- Do not proceed with studies or Prop 1 funding to expand Anderson Reservoir at this time.
- Authorize the Interim CEO to negotiate and execute a single source agreement with a consultant for up to $900,000 to prepare a Prop 1 funding application for Pacheco Reservoir.

Santa Clara Valley Water District

File No.: 17-0069

Agenda Date: 1/31/2017
Item No.: 2.3.

BOARD AGENDA MEMORANDUM

SUBJECT:
Resolution Calling for a Water Use Reduction Target Equal to 20 Percent of 2013 Water Use.

RECOMMENDATION:
Adopt the Resolution CALLING FOR A 20 PERCENT WATER USE REDUCTION TARGET AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, SUPPORTING LOCAL ENFORCEMENT OF THE WATER WASTE PROHIBITIONS CURRENTLY IN EFFECT BY THE STATE WATER RESOURCES CONTROL BOARD, OR AS MAY BE AMENDED.

SUMMARY:
As a result of ongoing drought conditions, the Board of Directors (Board) approved a resolution (Attachment 1) to call for short term water use reductions of 20 percent on June 14, 2016, which is in effect through January 31, 2017. Staff provided the Board an update on 2016 water supply conditions and 2017 outlook scenarios on January 24, 2017. The Board directed staff to return on January 31, 2017 with a resolution that includes a call for a 20 percent reduction in water use (compared to 2013), a three day per week watering restriction, and that supports local enforcement of the water waste prohibitions that are in effect by the State Water Resources Control Board. Accordingly, a proposed resolution is provided in Attachment 2 (redline/strikeout version) and Attachment 3 (identical but without redline/strikeout).

FINANCIAL IMPACT:
There is no impact to any of the fund reserves. For the Board's information, since February 2014, the drought emergency has incurred costs totaling approximately $46 million detailed in the table that follows:

District Labor	$ 6.1 million
District Services and Supplies	$12.6 million • Includes percolation pond clean-up and mercury removal

Board and CEO approval budget adjustments	$27.3 million, the breakdown is as follows: • Conservation - $16.4 million (which includes the $4.0 million funded by anticipated incremental FY 16 Ad Valorem tax revenue and $0.9 million from Water Utility operations cost savings as approved by the Board at its October 27, 2015 meeting) • Outreach - $2.4 million • Imported Water - $8.5 million for purchased water and reverse flow consultant
Total	**$46.0 million**

CEQA:
The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

ATTACHMENTS:
Attachment 1: SCVWD Resolution 16-55
Attachment 2: Proposed Resolution, with Redlines
Attachment 3: Resolution

UNCLASSIFIED MANAGER:
Garth Hall, 408-630-2750

BOARD OF DIRECTORS
SANTA CLARA VALLEY WATER DISTRICT

RESOLUTION NO. 16- 55

CALLING FOR A 20% WATER USE REDUCTION THROUGH JANUARY 31, 2017, AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, RECOMMENDING THAT WATER RETAILERS, LOCAL MUNICIPALITIES AND THE COUNTY OF SANTA CLARA CONTINUE TO IMPLEMENT MANDATORY MEASURES AS NEEDED TO ACHIEVE A 20% WATER USE REDUCTION TARGET

WHEREAS, in California, water is a precious and limited resource that must be used wisely; and

WHEREAS, calendar year 2013 was the driest year on record and precipitation in 2014 and 2015 has been insufficient to restore local water supplies; and

WHEREAS, on March 24, 2015, the Santa Clara Valley Water District (District) Board of Directors adopted Resolution 15-24 calling for water use reduction of 30 percent for Santa Clara County in calendar year 2015 as compared to 2013 and a restriction on outdoor watering with potable water to no more than two days a week through December 2015; and

WHEREAS, on November 24, 2015, by Resolution 15-70, the District continued its call for 30 percent water use reduction and restrictions on outdoor irrigation through June 30, 2016; and

WHEREAS, Santa Clara County relies on water supply imported from the State Water Project and Central Valley Project to provide water for the drinking water treatment plants, replenish the local groundwater basin, and prevent the return of historic overdraft and land subsidence that could damage Bay-front levees and other critical infrastructure in northern Santa Clara County; and

WHEREAS, local watershed runoff was extremely low in the 2015 water year, and the District's ability to augment reservoir storage with imported water is limited because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, in 2015, State Water Project allocations were reduced to 20 percent of contract quantity; Central Valley Project water allocations for agricultural water service contractors South-of-Delta were allocated zero percent of their contract quantity; and Central Valley Project water allocations for municipal and industrial (M&I) water service contractors South-of-Delta received enough water to meet their health and safety needs or at least 25 percent of their historic use, whichever is greater; and

WHEREAS, in 2016, the most recent State Water Project allocations are 60 percent of contract quantity; Central Valley Project preliminary allocations for agricultural water service contractors South-of-Delta are 5 percent of their contract quantity; and Central Valley Project preliminary allocations for M&I water service contractors South-of-Delta are 55 percent; and

WHEREAS, the District's Water Shortage Contingency Plan, contained within its Urban Water Management Plan, guides the District's water supply management actions for supply augmentation, increased water use reduction measures, and the use of local reserve supplies; and

WHEREAS, through careful water management, Santa Clara County groundwater reserves at the start of 2014 were well within the "Normal" stage of the District's Water Shortage Contingency Plan, but due to limited recharge and increased groundwater pumping, these reserves were reduced by approximately 81,000 acre-feet by the end of 2014 and another 23,000 acre-feet by the end of 2015; and

WHEREAS, groundwater reserves at the end of 2016 are estimated to fall within the low end of the "Alert" stage of the District's Water Shortage Contingency Plan despite significant countywide water use reduction of approximately 27 percent in 2015 and improved water supply conditions in 2016; and

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to meet local demands and cope with supply interruptions from natural disasters and catastrophic events such as an earthquake; and

WHEREAS, even though normal hydrology returned in 2016, continued water use reductions are needed to protect groundwater reserves, which have yet to recover to the "Normal" stage of the District's Water Shortage Contingency Plan; and

WHEREAS, the District through coordination with retail water agencies, local municipalities and the County of Santa Clara is continuing public outreach and education to create greater awareness of countywide water supply challenges and need for efficient water use; and

WHEREAS, the District must rely on the actions of the retail water agencies, local municipalities and the County of Santa Clara to support community and customer water use reduction measures; and

WHEREAS, the State Water Resources Control Board extended its Emergency Regulation for Urban Water Conservation on May 18, 2016, allowing for locally developed water use reduction targets based on local conditions. Further, agencies like the District are required to provide analysis of water supply conditions assuming three additional dry years, and retailers may self certify the level of conservation necessary to assure adequate supply over that time; and

WHEREAS, the District continues to work closely with retail water agencies, untreated surface water customers, regulatory agencies, state and federal project operators and other water districts to manage District operations and continuing drought response. However, in consideration of the reduced groundwater reserves as a result of four years of drought, water

use reduction of 20 percent is needed to improve groundwater storage, minimize the risk of land subsidence resuming, and position District reserves for future dry years.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Santa Clara Valley Water District calls for a water use reduction target equal to 20 percent of 2013 water use and a restriction on outdoor watering of ornamental landscapes or lawns with potable water to a maximum of three days a week (odd numbered and no addresses may water on Mondays, Thursdays and Saturdays; even numbered addresses may water on Tuesdays, Fridays and Sundays) through January 31, 2017, effective July 1, 2016, and it is further recommended that retail water agencies, local municipalities and the County of Santa Clara continue to implement mandatory measures as needed to achieve the 20 percent water use reduction target.

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on June 14, 2016:

AYES: Directors N. Hsueh, T. Estremera, B. Keegan, G. Kremen R. Santos, J. Varela

NOES: Directors L. LeZotte

ABSENT: Directors None

ABSTAIN: Directors None

SANTA CLARA VALLEY WATER DISTRICT

By: _____
BARBARA KEEGAN
Chair/Board of Directors

ATTEST: MICHELE L. KING, CMC

_____
Clerk/Board of Directors

THIS PAGE INTENTIONALLY LEFT BLANK

BOARD OF DIRECTORS
SANTA CLARA VALLEY WATER DISTRICT

RESOLUTION NO. 17~~6-55~~

CALLING FOR A 20 PERCENT~~%~~ WATER USE REDUCTION TARGET ~~THROUGH JANUARY 31, 2017,~~ AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, ~~RECOMMENDING THAT WATER RETAILERS, LOCAL MUNICIPALITIES AND THE COUNTY OF SANTA CLARA CONTINUE TO IMPLEMENT MANDATORY MEASURES AS NEEDED TO ACHIEVE A 20% WATER USE REDUCTION TARGET~~SUPPORTING LOCAL ENFORCEMENT OF THE WATER WASTE PROHIBITIONS CURRENTLY IN EFFECT BY THE STATE WATER RESOURCES CONTROL BOARD, OR AS MAY BE AMENDED

WHEREAS, in California, water is a precious and limited resource that must be used wisely; and

WHEREAS, calendar year 2013 was the driest year on record and precipitation in 2014 and 2015 has been insufficient to restore local water supplies; and

WHEREAS, on March 24, 2015, the Santa Clara Valley Water District (District) Board of Directors adopted Resolution 15-24 calling for water use reduction of 30 percent for Santa Clara County in calendar year 2015 as compared to 2013 and a restriction on outdoor watering with potable water to no more than two days a week through December 2015; and

WHEREAS, on November 24, 2015, by Resolution 15-70, the District continued its call for 30 percent water use reduction and restrictions on outdoor irrigation through June 30, 2016; and

WHEREAS, on June 14, 2016, by Resolution 16-55, the District reduced its call for 30 percent water use reduction to 20 percent and increased the days per week restriction from two days per week to three days per week, through January 31, 2017; and

WHEREAS, Santa Clara County relies on water supply imported from the State Water Project and Central Valley Project to provide water for the drinking water treatment plants, replenish the local groundwater basin, and prevent the return of historic overdraft and land subsidence that could damage Bay-front levees and other critical infrastructure in northern Santa Clara County; and

WHEREAS, local watershed runoff was extremely low in the 2015 water year, and the District's ability to augment reservoir storage with imported water is limited because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, in 2015, State Water Project allocations were reduced to 20 percent of contract quantity; Central Valley Project water allocations for agricultural water service contractors South-of-Delta were allocated zero percent of their contract quantity; and Central Valley Project water allocations for municipal and industrial (M&I) water service contractors South-of-Delta received enough water to meet their health and safety needs or at least 25 percent of their historic use, whichever is greater; and

WHEREAS, in 2016, the ~~most recent~~ State Water Project allocations ~~are~~ were~~45~~ 60 percent of contract quantity; Central Valley Project ~~preliminary~~ allocations for agricultural water service contractors South-of-Delta ~~are~~ were 5 percent of their contract quantity; and Central Valley

Project ~~preliminary~~ allocations for M&I water service contractors South-of-Delta ~~are~~ were 55 percent, and

WHEREAS, in 2017, the most recent State Water Project allocations are 60 percent of contract quantity; Central Valley Project allocations have not been announced; and

WHEREAS, the District does not have its final State Water Project or Central Valley Project contract allocations for 2017, and other uncertainties could result in lower than expected allocations; and

WHEREAS, the District's Water Shortage Contingency Plan, contained within its Urban Water Management Plan, guides the District's water supply management actions for supply augmentation, increased water use reduction measures, and the use of local reserve supplies; and

WHEREAS, through careful water management, Santa Clara County groundwater reserves at the start of 2014 were well within the "Normal" stage of the District's Water Shortage Contingency Plan; however, ~~, but~~ due to limited recharge and increased groundwater pumping, these reserves were reduced by approximately 81,000 acre-feet by the end of 2014 and another 23,000 acre-feet by the end of 2015; and

WHEREAS, the estimated end-of-year 2016 storage is within Stage 1 (Normal) of the Water Shortage Contingency Plan due to the significant countywide water use reduction of 28 percent and improved water supply conditions in 2016; and

~~WHEREAS, groundwater reserves at the end of 2016 are estimated to fall within the low end of the "Alert" stage of the District's Water Shortage Contingency Plan despite significant countywide water use reduction of approximately 27 percent in 2015 and improved water supply conditions in 2016; and~~

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to meet local demands and cope with supply interruptions from natural disasters and catastrophic events such as an earthquake; and

WHEREAS, even though normal hydrology returned in ~~2016~~the early part of the 2017 water year, ~~, continued water use reductions are needed to protect groundwater reserves, which have yet to recover to the "Normal" stage of the District's Water Shortage Contingency Plan~~ the District does encourage water retailers and the community to continue their efforts in managing and using water prudently and efficiently; and

WHEREAS, the District through coordination with retail water agencies, local municipalities and the County of Santa Clara is continuing public outreach and education to create greater awareness of countywide water supply challenges and need for efficient water use; and

WHEREAS, the District must rely on the actions of the retail water agencies, local municipalities and the County of Santa Clara to support community and customer water use reduction measures; and

WHEREAS, the State Water Resources Control Board extended its Emergency Regulation for Urban Water Conservation on May 18, 2016, requiring locally developed water use reduction targets based on local conditions. Further, agencies like the District ~~are~~ were required to provide analysis of water supply conditions assuming three additional dry years, and water retailers ~~are~~ were required to self-certify the level of conservation necessary to assure adequate supply over that time~~,~~; and

WHEREAS, the State Water Resources Control Board's Emergency Regulation includes the following prohibitions of water use:

- The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
- The application of potable water to driveways and sidewalks;
- The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;
- The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;
- The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served. and/or purchased;
- The irrigation with potable water of ornamental turf on public street medians; and
- The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by

the California Building Standards Commission and the Department of Housing and Community Development.

WHEREAS, the District continues to work closely with retail water agencies, untreated surface water customers, regulatory agencies, state and federal project operators and other water districts to manage District operations and continuing drought response. ~~However, in consideration of the reduced groundwater reserves as a result of four years of drought, water use reduction of 20 percent is needed to improve groundwater storage, minimize the risk of land subsidence resuming, and position District reserves for future dry years.~~

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Santa Clara Valley Water District calls for: (i) a water use reduction target equal to 20 percent of 2013 water use; (ii) a restriction on outdoor watering of ornamental landscapes or lawns with potable water to a maximum of three days a week (odd numbered and no addresses may water on Mondays, Thursdays and Saturdays; even numbered addresses may water on Tuesdays, Fridays and Sundays); and (iii) local enforcement of the water waste prohibitions currently in effect by the State Water Resources Control Board, or as may be amended; through ~~January 31, 2017, effective July 1~~ commencing February 1, 2017~~6~~. and ~~it is further recommended that retail water agencies, local municipalities and the County of Santa Clara continue to implement mandatory measures as needed to achieve the 20 percent water use reduction target.~~

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on ~~June 14~~January 31, 2017~~6~~:

AYES: Directors

NOES: Directors

ABSENT: Directors

ABSTAIN: Directors

SANTA CLARA VALLEY WATER DISTRICT

By: ~~BARBARA KEEGAN~~JOHN L. VARELA
Chair/Board of Directors

CALLING FOR A 20 PERCENT WATER USE REDUCTION TARGET, AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, SUPPORTING LOCAL ENFORCEMENT OF THE WATER WASTE PROHIBITIONS CURRENTLY IN EFFECT BY THE STATE WATER RESOURCES CONTROL BOARD, OR AS MAY BE AMENDED
~~**Calling For a 20% Water Use Reduction Through January 31, 2017, and a Restriction on Outdoor Watering of Ornamental Landscapes or Lawns With Potable Water to a Maximum of Three Days a Week; Further, Recommending That Water Retailers, Local Municipalities and the County of Santa Clara Continue to Implement Mandatory Measures as Needed to Achieve the 20% Water Use Reduction Target**~~

Resolution No. ~~16-55~~17-

ATTEST: MICHELE L. KING, CMC

_____
Clerk/Board of Directors

THIS PAGE INTENTIONALLY LEFT BLANK

BOARD OF DIRECTORS
SANTA CLARA VALLEY WATER DISTRICT

RESOLUTION NO. 17-

CALLING FOR A 20 PERCENT WATER USE REDUCTION TARGET AND A RESTRICTION ON OUTDOOR WATERING OF ORNAMENTAL LANDSCAPES OR LAWNS WITH POTABLE WATER TO A MAXIMUM OF THREE DAYS A WEEK; FURTHER, SUPPORTING LOCAL ENFORCEMENT OF THE WATER WASTE PROHIBITIONS CURRENTLY IN EFFECT BY THE STATE WATER RESOURCES CONTROL BOARD, OR AS MAY BE AMENDED

WHEREAS, in California, water is a precious and limited resource that must be used wisely; and

WHEREAS, calendar year 2013 was the driest year on record and precipitation in 2014 and 2015 has been insufficient to restore local water supplies; and

WHEREAS, on March 24, 2015, the Santa Clara Valley Water District (District) Board of Directors adopted Resolution 15-24 calling for water use reduction of 30 percent for Santa Clara County in calendar year 2015 as compared to 2013 and a restriction on outdoor watering with potable water to no more than two days a week through December 2015; and

WHEREAS, on November 24, 2015, by Resolution 15-70, the District continued its call for 30 percent water use reduction and restrictions on outdoor irrigation through June 30, 2016; and

WHEREAS, on June 14, 2016, by Resolution 16-55, the District reduced its call for 30 percent water use reduction to 20 percent and increased the days per week restriction from two days per week to three days per week, through January 31, 2017; and

WHEREAS, Santa Clara County relies on water supply imported from the State Water Project and Central Valley Project to provide water for the drinking water treatment plants, replenish the local groundwater basin, and prevent the return of historic overdraft and land subsidence that could damage Bay-front levees and other critical infrastructure in northern Santa Clara County; and

WHEREAS, local watershed runoff was extremely low in the 2015 water year, and the District's ability to augment reservoir storage with imported water is limited because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, in 2015, State Water Project allocations were reduced to 20 percent of contract quantity; Central Valley Project water allocations for agricultural water service contractors South-of-Delta were allocated zero percent of their contract quantity; and Central Valley Project water allocations for municipal and industrial (M&I) water service contractors South-of-Delta received enough water to meet their health and safety needs or at least 25 percent of their historic use, whichever is greater; and

WHEREAS, in 2016, the State Water Project allocations were 60 percent of contract quantity; Central Valley Project allocations for agricultural water service contractors South-of-Delta were 5 percent of their contract quantity; and Central Valley Project allocations for M&I water service contractors South-of-Delta were 55 percent, and

WHEREAS, in 2017, the most recent State Water Project allocations are 60 percent of contract quantity; Central Valley Project allocations have not been announced; and

WHEREAS, the District does not have its final State Water Project or Central Valley Project contract allocations for 2017, and other uncertainties could result in lower than expected allocations; and

WHEREAS, the District's Water Shortage Contingency Plan, contained within its Urban Water Management Plan, guides the District's water supply management actions for supply augmentation, increased water use reduction measures, and the use of local reserve supplies; and

WHEREAS, through careful water management, Santa Clara County groundwater reserves at the start of 2014 were well within the “Normal” stage of the District’s Water Shortage Contingency Plan; however, due to limited recharge and increased groundwater pumping, these reserves were reduced by approximately 81,000 acre-feet by the end of 2014 and another 23,000 acre-feet by the end of 2015; and

WHEREAS, the estimated end-of-year 2016 storage is within Stage 1 (Normal) of the Water Shortage Contingency Plan due to the significant countywide water use reduction of 28 percent and improved water supply conditions in 2016; and

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to meet local demands and cope with supply interruptions from natural disasters and catastrophic events such as an earthquake; and

WHEREAS, even though normal hydrology returned in the early part of the 2017 water year, the District does encourage water retailers and the community to continue their efforts in managing and using water prudently and efficiently; and

WHEREAS, the District through coordination with retail water agencies, local municipalities and the County of Santa Clara is continuing public outreach and education to create greater awareness of countywide water supply challenges and need for efficient water use; and

WHEREAS, the District must rely on the actions of the retail water agencies, local municipalities and the County of Santa Clara to support community and customer water use reduction measures; and

WHEREAS, the State Water Resources Control Board extended its Emergency Regulation for Urban Water Conservation on May 18, 2016, requiring locally developed water use reduction targets based on local conditions. Further, agencies like the District were required to provide analysis of water supply conditions assuming three additional dry years, and water retailers were required to self-certify the level of conservation necessary to assure adequate supply over that time; and

WHEREAS, the State Water Resources Control Board's Emergency Regulation includes the following prohibitions of water use:

- The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures; and
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use; and
- The application of potable water to driveways and sidewalks; and
- The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system; and
- The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall; and
- The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served. and/or purchased; and
- The irrigation with potable water of ornamental turf on public street medians; and
- The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

WHEREAS, the District continues to work closely with retail water agencies, untreated surface water customers, regulatory agencies, state and federal project operators and other water districts to manage District operations and continuing drought response.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Santa Clara Valley Water District calls for: (i) a water use reduction target equal to 20 percent of 2013 water use; (ii) a restriction on outdoor watering of ornamental landscapes or lawns with potable water to a maximum of three days a week (odd numbered and no addresses may water on Mondays, Thursdays and Saturdays; even numbered addresses may water on Tuesdays, Fridays and Sundays); and (iii) local enforcement of the water waste prohibitions currently in effect by the State Water Resources Control Board, or as may be amended; commencing February 1, 2017.

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on January 31, 2017:

AYES: Directors

NOES: Directors

ABSENT: Directors

ABSTAIN: Directors

SANTA CLARA VALLEY WATER DISTRICT

By: _____
JOHN L. VARELA
Chair/Board of Directors

ATTEST: MICHELE L. KING, CMC

_____
Clerk/Board of Directors