Scotts Valley Water District

Service and Sphere of Influence Review

Adopted Version (May 5, 2021)

Local Agency Formation Commission of Santa Cruz County

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LAFCO

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EXECUTIVE SUMMARY

Introduction

This Service and Sphere of Influence Review provides information about the services and boundaries of the Scotts Valley Water District (SVWD). The report will be used by the Local Agency Formation Commission (LAFCO) to conduct a statutorily required review and update process. The Cortese-Knox-Hertzberg Act requires that LAFCO conduct periodic reviews and updates of Spheres of Influence for all cities and special districts in Santa Cruz County (Government Code section 56425). It also requires LAFCO to conduct a review of municipal services before adopting sphere updates (Government Code Section 56430). The District's last service review was adopted on November 2, 2016.

The municipal service review process does not require LAFCO to initiate changes of organization based on service review conclusions or findings; it only requires that LAFCO make determinations regarding the delivery of public services in accordance with the provisions of Government Code Section 56430. However, LAFCO, local agencies, and the public may subsequently use the determinations and related analysis to consider whether to pursue changes in service delivery, government organization, or spheres of influence.

Service and sphere reviews are informational documents and are generally exempt from environmental review. LAFCO staff has conducted an environmental review of the District's existing sphere of influence pursuant to the California Environmental Quality Act (CEQA) and determined that this report is exempt from CEQA. Such exemption is due to the fact that it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment (Section 15061[b][3]).

District Overview

The Scotts Valley Water District was formed in 1961 and operates under the County Water District Law (Sections 30000 et seq. of the California Water Code) for the purpose of developing and providing water for domestic use, fire protection, commercial/industrial use, and recreation in the Scotts Valley area. At present, SVWD provides water service to approximately 4,330 connections covering most of the City of Scotts Valley and the unincorporated communities north of Scotts Valley. The District also distributes recycled water from the Tertiary Treatment Plant owned and operated by the City of Scotts Valley. As of June 30, 2020, residential customers represent approximately 80% of the District's customer base and consume approximately 67% of the potable water produced annually by the District. The District currently has a total of six production wells with a maximum capacity of 1,400 gallons per minute. An overview map, depicting its current jurisdictional and sphere boundaries, is shown as **Figure 1** on page 5.

Sphere of Influence

Santa Cruz LAFCO adopted the first sphere of influence for SVWD on October 16, 1985. The current sphere excludes areas within the District's jurisdictional boundary. The last sphere update occurred in November 2016 as part of the District's last service and sphere review. LAFCO staff is recommending that the sphere boundary be amended to include the areas already served by SVWD, as shown in **Figure 8** on page 30.

Key Findings

The following are key findings of the 2021 Service and Sphere of Influence Review for the Scotts Valley Water District:

1. **The District provides water services to an estimated 12,000 constituents.**
   SVWD currently provides water service to a population of 11,800 through approximately 4,300 residential, commercial, and institutional connections, and fire services. The District operates and maintains a potable water distribution system that includes groundwater wells, treatment facilities, storage tanks, pump stations, pressure regulating stations and distribution mains and services to meet the potable water demands of its customers. The District delivers approximately 1,100 to 1,200 acre feet per year (AFY) of potable water to its customers. LAFCO staff projects that the entire population of SVWD will reach 12,200 by 2040.

2. **The District is financially sound.**
   SVWD's financial ability to provide services is well-established. The District has successfully kept operating costs below its operating revenue since 2017. Four of the last six audited financial statements had an overall annual surplus ranging from $260,000 to $2.2 million. As of June 30, 2020, the District is operating with a net fund balance of approximately $17 million.

3. **The District has a capital improvement plan in place.**
   SVWD adopts a capital improvement plan every year as part of its annual budget. A total of 15 capital improvement projects are planned to be completed by 2021. The District has also prepared a complete system condition assessment and a 10-year capital improvement plan. The purpose of this long-range plan is to identify and prioritize needs and project costs for planned repair and replacement to the infrastructure that will serve the affected ratepayers in an efficient and cost-effective manner.

4. **The District is complying with website requirements under State law.**
   State law now requires all independent special districts to maintain and operate a website as of January 1, 2020. SVWD continues to provide a large array of information on their website. LAFCO staff encourages the District to continue this effort and include other useful documents outlined in Senate Bill 929, including but not limited to LAFCO's adopted services reviews.

5. **The District is one of two agencies that provides water services to Scotts Valley.**
   The City of Scotts Valley currently receives water service primarily from the SVWD but also the San Lorenzo Valley Water District (SLVWD). By having two water providers, the residents of Scotts Valley are subject to two different boards, policies, and water rates. It may be beneficial for the City, the two water districts, and LAFCO to collaborate and determine the most efficient method of providing water service to the entire Scotts Valley community.

6. **The District's sphere of influence requires an update.**
   The last sphere amendment occurred in November 2016. Based on staff's analysis, a total of eight unserved areas that are substantially surrounded or immediately adjacent to the water district should be annexed in the foreseeable future. The size of these areas range from 0.24 to 96 acres. Additionally, there are some areas served by the District that are not reflected in the sphere boundary. LAFCO staff is recommending that the sphere boundary include these areas.

Recommended Actions

Based on the analysis and findings in the 2021 Service and Sphere of Influence Review for the Scotts Valley Water District, the Executive Officer recommends that the Commission:

1. Find that pursuant to Section 15061(b)(3) of the State CEQA Guidelines, LAFCO determined that the service and sphere of influence review is not subject to the environmental impact evaluation process because it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment and the activity is not subject to CEQA;

2. Determine, pursuant to Government Code Section 56425, the Local Agency Formation Commission of Santa Cruz County is required to develop and determine a sphere of influence for the Scotts Valley Water District, and review and update, as necessary;

3. Determine, pursuant to Government Code Section 56430, the Local Agency Formation Commission of Santa Cruz County is required to conduct a service review before, or in conjunction with an action to establish or update a sphere of influence; and

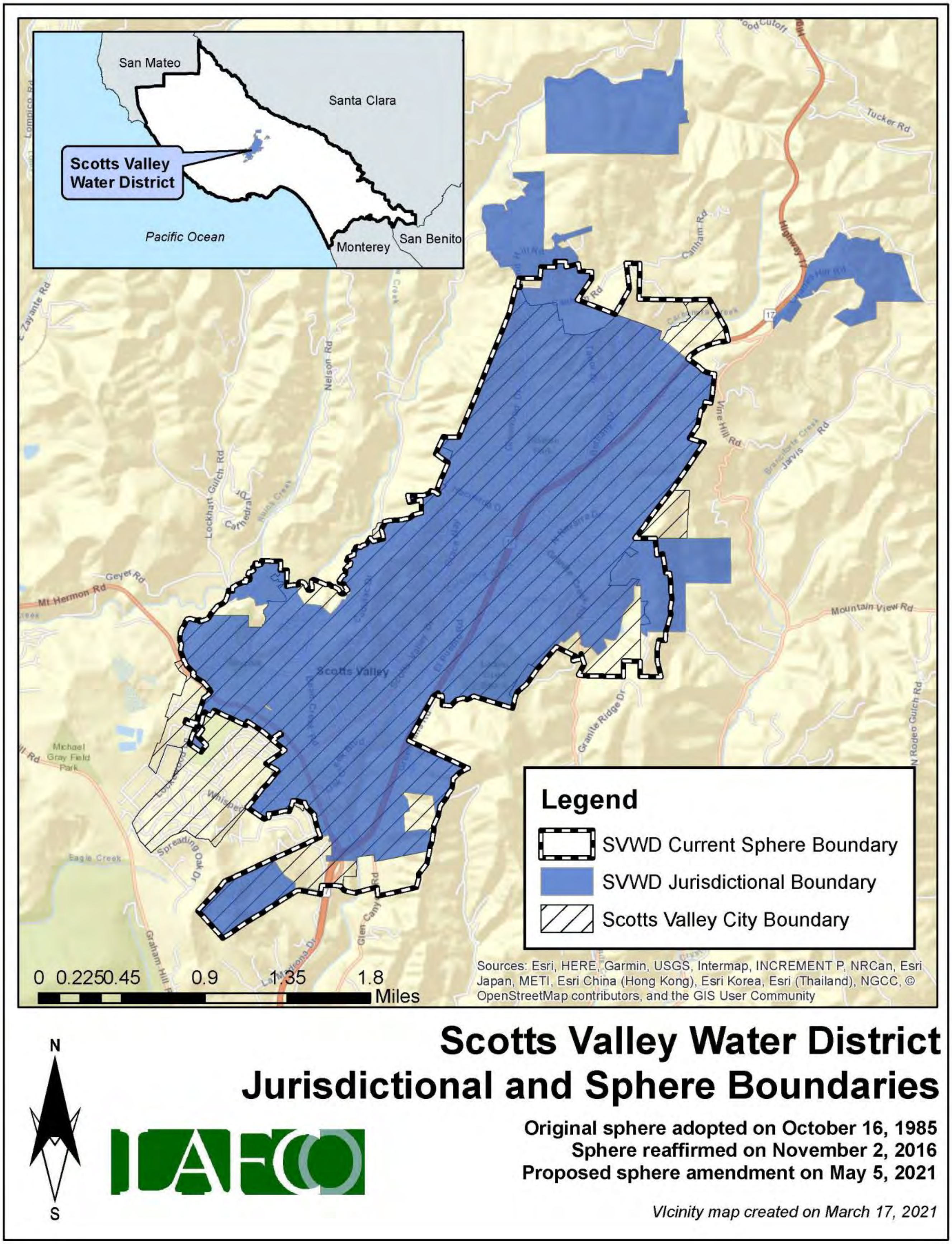
4. Adopt Resolution (LAFCO No. 2021-11) approving the 2021 Service and Sphere of Influence Review for Scotts Valley Water District with the following conditions:

   a. Update the District's current sphere of influence to include areas already served by SVWD and within the District's jurisdictional boundary;

   b. Coordinate with the SVWD to analyze possible annexations of the eight unserved areas substantially surrounded or immediately adjacent to the water district; and

   c. Direct the Executive Officer to distribute a copy of the adopted service and sphere review to the Scotts Valley Water District and any other interested or affected parties, including but not limited to the City of Scotts Valley and the San Lorenzo Valley Water District.

Figure 1: Current Sphere Map



DISTRICT OVERVIEW

History

The SVWD was formed in 1961 as a County Water District under the County Water District Act with the purpose of providing water for domestic, commercial, municipal and firefighting purposes. The District is located six miles north of the City of Santa Cruz, along State Highway 17 and covers approximately six square miles. The District is located in the Santa Cruz Mountains approximately five miles inland from the Monterrey Bay and the service boundary runs approximately five miles from north to south and one mile from east to west encompassing the majority of the incorporated area of the City of Scotts Valley and a portion of an unincorporated area north of the City. Notable exceptions to the service area include the Pasatiempo Pines and Mañana Woods subdivisions, Vista Del Lago Mobile Home Park that are served by the San Lorenzo Valley Water District.

The District's customer base is predominantly single and multi-family residential with some commercial, industrial, institutional, recreational and landscape customers. SVWD operates and maintains both a potable water and recycled water distribution system to serve customers within its service boundary. The District delivers approximately 1,100 to 1,200 acre feet per year (AFY) of potable water to its customers. In 2020, recycled water delivery was approximately 180 AFY totaling about 13% of the District's total demand.

A total of 42 boundary changes have been approved by LAFCO, with a 73-acre annexation being last recorded in July 2019. **Table 1**, on pages 7 and 8, provides an overview of all the approved boundary changes since 1965. Today, the District's service area encompasses approximately six (6) square miles, as shown in **Figure 1** on page 5.

Table 1: SVWD Past Boundary Changes

Project Number	Proposal Title	Action Date
60	Jud Annexation to SVWD	11/17/1965
67	Molina Annexation to SVWD	2/16/1966
68	Gregson Annexation to SVWD	2/16/1966
95	Stevens, Seuss, Martin, Gordon, PG & E Annexation to SVWD	9/21/1966
108	Sandhill Annexation No. 1 to SVWD	5/24/1967
132	Green Valley Annexation to SVWD	8/21/1968
145	Ow Annexation to SVWD	11/20/1968
146	Gordon Annexation to SVWD	11/20/1968
219	Glenwood Acres Annexation to SVWD	6/17/1970
248	Montevalle Annexation to SVWD	10/21/1971
249	Steinberg Annexation to SVWD	12/16/1970
304	Graham Annexation to SVWD	4/19/1972
305	Monteith / Church Annexation	3/15/1972
325	Mt. Hermon Rd. Annexation to SVWD	9/20/1972
330	Watkins-Johnson Annexation to SVWD	7/19/1972
341	Fox Annexation to SVWD	10/18/1972
348	Baker Annexation to SVWD	11/15/1972
361	Graham Reorganization from SLVWD to SVWD	6/20/1973
380	Bean Creek Detachment from SVWD	5/8/1974
398	Scottsborough Annexation to SVWD	9/11/1974
404	Lakin Annexation to SVWD	11/13/1974

Project Number	Proposal Title	Action Date
416	Rodriguez Annexation to SVWD	4/2/1975
431	Koon Annexation to SVWD	9/3/1975
445	Fontenay Annexation to SVWD	11/5/1975
516	Casa Way / Highgate Rd. Annexation to SVWD	2/1/1978
520	Kirkorian Annexation to SVWD	4/5/1978
537	Buse Annexation to SVWD	12/6/1978
560	Hatten Annexation to SVWD	7/11/1979
573	Crescent Court (B) Reorganization	7/2/1980
634	Granite Creek Annexation	12/19/1983
647	Interim SOI	10/16/1985
652	Hacienda Dr. / Mills No. 652 Reorganization	12/19/1983
717	Whispering Pines Dr. Reorganization	4/2/1986
743	Granite Creek / Wright Annexation	3/1/1989
782	Making Determinations & Authorizing Proceedings to Reorganize Territory Designated as Green Hills Reorganization	2/5/1992
791	Skypark Reorganization	3/10/1994
792	Valley Gardens Golf Course Reorganization	5/5/1993
792	SOI Amendment to SVWD	5/5/1993
831	Latos Reorganization & Subsequent Sphere Amendment	12/4/1996
923	3132 Glen Canyon Road Extraterritorial Water Service from SVWD	1/9/2008
965	Cumbre Lane Reorganization	3/6/2019
966	Heritage Parks Annexation to SVWD	1/9/2019

Services and Operations

The District operates and maintains a potable water distribution system that includes groundwater wells, treatment facilities, storage tanks, pump stations, pressure regulating stations and distribution mains and services to meet the potable water demands of its customers. The District operates its system facilities primarily through a radio based Supervisory Control and Data Acquisition (SCADA) system. District operators continually assess system supply and demand conditions throughout each day using the SCADA system and make adjustments to system operations as needed. A primary operational objective is ensuring uninterrupted and safe water supply to its customers at all times. The District relies on its local groundwater basin for its entire potable water supply. As a result, water systems operations are driven by groundwater well and treatment plant production. The following section provides a general description of the water system and its operating characteristics.

<u>Pressure Zones</u>

The District operates with a total of thirteen (13) pressure zones, each with a unique hydraulic gradient that provides water service within acceptable operating pressure ranges. Pressure zones are defined as areas of service that are supplied by a source (or combination of sources) that provide a constant hydraulic gradient. Pressure zone boundaries are determined by ground elevations and facility locations. Some of the pressure zones have similar hydraulic gradients but are hydraulically independent from one another due to the location of pump stations or storage tanks.

Each pressure zone is isolated by boundary conditions, such as pumps, pressure reducing stations, storage tanks, and normally closed valves. The hydraulic grade line (HGL) of each pressure zone is generally based on the high-water level of the storage tank serving each respective zone. **Table 2** identifies the District's potable water system pressure zones, their HGL designation, and the facility establishing the HGL for each zone.

Table 2: Pressure Zones (Listed by Distance)

Pressure Zone Name	HGL (distance by feet)	Pressure Zone Facility
1. Green Valley	565	Watkins Johnson PRV
2. Camp Evers (Sequoia)	820	MacDorsa Tank
3. Glenwood	946	Glenwood Tank
4. MacDorsa	961	MacDorsa Tank
5. Hacienda (Closed)	1,052	Hacienda Pump Station
6. Southwood	1,077	Southwood Tank
7. Bethany	1,082	Bethany Tank
8. Monte Fiore (Closed)	1,115	Monte Fiore Pump Station
9. Green Acres No. 2	1,160	Green Acres PRV #2 & #3
10. Villa Fonteney	1,178	Villa Fonteney Tank
11.Sand Hill	1,202	Sand Hill PRV
12. Green Acres No. 1	1,307	Green Acres PRV #1
13. Northridge	1,480	Mt. Roberta Tank

Footnote: PRV means pressure reducing valves

Groundwater Wells

SVWD relies solely on the local groundwater basin for its potable water supply, which is extracted by six (6) groundwater wells, all of which receive treatment to meet potable water quality requirements. **Table 3** provides a summary of the groundwater wells.

Table 3: Groundwater Wells (Listed by Alphabetical Order)

Groundwater Well	Nominal Production (gallons per minute)	Status (Active or Standby)	Water Treatment Plant
3B	320	Active	Orchard Run
Orchard Run	450	Active	Orchard Run
9	90	Active (Emergency)	WTP Well 9
10	0	Abandoned	-
10A	300	Active	WTP Well 10A
11A	100	Active	El Pueblo
11B	300	Active	El Pueblo

Groundwater Treatment Plants

There are four (4) groundwater treatment plants that remove various hazardous materials from the groundwater supply to meet State and Federal water quality requirements. **Table 4** provides a summary of the groundwater treatment plants.

Table 4: Groundwater Treatment Plants (List by Rated Capacity)

Treatment Plant	Rated Capacity (gallons per minute)	Sources	Hazardous Materials	Treatment Regime
Well 9	100	Well 9	Sulfate, MTBE, VOC's, Hydrogen Sulfide	Chlorination, Granular Activated Carbon Filtration
Well 10A	400	Well 10 & Well 10A	Iron, Manganese, VOC's, Hydrogen Sulfide	Air Stripper, Chlorination, Dual Media Filtration, Sequestering Agent, Standby GAC Filtration, PO4 Corrosion Inhibitor
El Pueblo	800	Well 11A & Well 11B	Iron, Manganese, Arsenic, VOC's	pH Adjustment, Chlorination, Dual Media Filtration, Sequestering Agent, PO4 Corrosion Inhibitor
Orchard Run	1,200	Well 3B & Well 7A	Iron, Manganese, Hydrogen Sulfide	Air Stripper, Chlorination, Dual Media Filtration, Sequestering Agent, PO4 Corrosion Inhibitor

Footnote: VOC means volatile organic compounds; a type of VOC is Methyl tertiary butyl ether or "MTBE." MTBE increases octane and oxygen levels in gasoline and reduces pollution emissions.

Pump Stations

SVWD relies on ten (10) pump stations to boost water to higher elevations and storage tanks within the Distribution System. The pumps range in size, type, and capacity. As previously noted, four of these pump stations are co-located at the groundwater treatment plants and convey treated water from the treatment plant sites to the upper hydraulic gradients. Pump stations are critical elements of the District's Distribution System, moving the source water to the higher elevations. **Table 5** provides a summary of these pump stations.

Table 5: Pump Stations (Listed by Number of Pumps)

Pump Station	Nominal Capacity (gallons per minute)	Number of Pumps	Pump Size (HP)	Auxiliary Power
1. Well 9 WTP Booster	200	1	40	Generator Receptacle
2. Sand Hill	240	2	40	Generator Receptacle
3. Crescent	280	2	15	Generator Receptacle
4. Bethany	230	2	15	Generator Receptacle
5. Southwood	150	2	15	Generator Receptacle
6. Monte Fiore	12-15	2	15	On-Site Diesel Generator
7. Hacienda	4-6	2	5	None
8. Well 10A WTP Booster	420	3	20	Generator Receptacle
9. El Pueblo WTP Booster	800	2	40	On-Site Diesel Generator
10. Orchard Run WTP Booster	720	3	75	On-Site Diesel Generator

Footnote: Energy imparted to water by the pump is called water horsepower (HP)

Storage Tanks

SVWD owns, operates, and maintains eight (8) potable water storage tanks, all of which are located above ground. These storage tanks are located on separate sites and range in capacity from 0.03 million gallons (MG) to 1.25 MG providing a total nominal storage capacity of 4.5 MG. The storage tanks provide storage to meet peak demands and emergency storage for fire protection. **Table 6** provides a summary of these water tanks.

Table 6: Storage Tanks (Listed by Nominal Capacity)

Tank	Nominal Capacity (MG)	Material	Pressure Zone Served
1. Villa Fonteney	0.03	Redwood	Villa Fonteney
2. Mt. Roberta	0.05	Redwood	Northridge
3. Bethany	0.40	Welded Steel	Bethany
4. El Pueblo	0.40	Welded Steel	N/A (Clear Well)
5. Southwood	0.52	Bolted Steel	Southwood
6. MacDorsa	0.75	Welded Steel	MacDorsa
7. Glenwood	1.09	Bolted Steel	Glenwood
8. Sequoia	1.25	Welded Steel	Camp Evers

Recycled Water System

The City of Scotts Valley operates the Water Reclamation Facility (WRF) which includes a Tertiary Treatment Plant (TTP). The TTP is used to treat secondary effluent to a tertiary level using chemical coagulation and flocculation, filtration, denitrification, and ultraviolet (UV) disinfection. The effluent meets the California State Water Resources Control Board (SWRCB) Division of Drinking Water Title 22 recycled water standards for disinfected tertiary recycled water. While the City is responsible for producing recycled water, SVWD is responsible for the distribution of the recycled water to irrigation customers in the City of Scotts Valley. The District owns, operates and maintains a storage tank, a recycled water pump station, a pressure reducing station and nearly 6 miles of recycled water distribution mains.

Water Rates

SVWD has established a goal of ensuring that the revenues generated from District customers are sufficient to support all District operations including capital project funding. Accordingly, water rates are reviewed periodically. Water rates are user charges imposed on customers for services and are the primary component of the District's revenue. Water rates are composed of a commodity (usage) charge and a fixed (readiness-to-serve) charge. **Tables 7 and 8** on pages 13-14 highlight the past and upcoming water rates for SVWD customers. SVWD also set appropriate charges for new connections, which is shown in **Appendix A**. Based on staff's analysis, water rates may increase by an average of 10% in the coming years. It is important to note that SVWD conducts rate studies on a continuous basis. The last rate study was conducted in 2016, as shown in **Appendix B**. It is LAFCO's understanding that the District is currently undertaking another rate study which is expected to lead into a Prop 218 hearing in early fall of 2021.

Table 7: Potable Water Rates (Bi-Monthly Rates)

	2016 (Adopted)	2017 (Adopted)	2018 (Adopted)	2019 (Adopted)	2020 (Adopted)
Basic Meter Charge (By Size)					
5/8”	$59.93	$68.92	$75.82	$78.09	$85.90
5/8” Rate Assistance (Residential)	n/a	n/a	$53.07	$54.67	$60.14
5/8” Fire Service (Residential/Commercial)	$16.30	$18.75	$20.63	$21.25	$23.38
3/4” (Multi-Residential, including Fire Service)	$76.23	$87.67	$96.45	$99.34	$109.27
3/4”	$94.29	$108.44	$119.29	$122.87	$135.16
1”	$101.43	$116.65	$128.32	$132.17	$145.39
1 1/2”	$238.39	$274.15	$301.57	$310.62	$341.68
2”	$323.68	$372.24	$409.47	$421.75	$463.93
3”	$577.08	$663.65	$730.02	$751.92	$827.11
4”	$1,009.03	$1,160.39	$1,276.43	$1,314.72	$1,446.19
6”	$2,155.44	$2,478.76	$2,726.64	$2,808.44	$3,089.28
Average Change (%)		*+15%*	*+10%*	*+3%*	*+10%*
Residential Tiered Rates (Per 1,000 Gal)					
Tiers for Residential Units with Individual Meters					
0 to 6,000	$4.89	$5.63	$6.20	$6.39	$7.03
6,001 to 12,000	$8.59	$9.82	$10.77	$11.09	$12.20
12,001 to 16,000	$13.72	$15.72	$17.26	$17.78	$19.56
Over 16,000	$16.56	$18.99	$20.86	$21.49	$23.64
Average Change (%)		*+15%*	*+10%*	*+3%*	*+10%*
Tiers for Multi-Residential Units with Master Meters					
0 to 6,000	$4.89	$5.63	$6.20	$6.39	$7.03
6,001 to 12,000	$8.59	$9.82	$10.77	$11.09	$12.20
12,001 to 16,000	$13.72	$15.72	$17.26	$17.78	$19.56
Over 16,000	$16.56	$18.99	$20.86	$21.49	$23.64
Average Change (%)		*+15%*	*+10%*	*+3%*	*+10%*
Uniform Rates (Per 1,000 Gal)					
Commercial, Industrial, Institutional	$11.45	$13.14	$14.44	$14.87	$16.36
Landscape Potable	$14.31	$16.43	$18.06	$18.60	$20.46
Other	$12.75	$14.64	$16.09	$16.57	$18.23
Qualifying Medical Needs Residential	$8.59	$9.82	$10.77	$11.09	$12.20
Rate Assistance (Residential)	n/a	n/a	$6.20	$6.39	$7.03
Average Change (%)		*+15%*	*+10%*	*+3%*	*+10%*

Table 8: Recycled Water Rates (Monthly Rates)

	2016 (Adopted)	2017 (Adopted)	2018 (Adopted)	2019 (Adopted)	2020 (Adopted)
Basic Meter Charge (By Size)					
5/8”	$6.00	$13.79	$22.75	$33.37	$45.88
3/4”	$9.43	$21.69	$35.79	$52.49	$72.18
1”	$10.15	$23.33	$38.50	$56.47	$77.64
1 1/2”	$23.84	$54.83	$90.48	$132.70	$182.46
2”	$32.37	$74.45	$122.85	$180.17	$247.74
3”	$57.71	$132.73	$219.01	$321.22	$441.67
4”	$100.91	$232.08	$382.93	$561.64	$772.25
6”	$215.55	$495.76	$818.00	$1,199.73	$1,649.63
Average Change (%)		*+130%*	*+65%*	*+47%*	*+38%*
Uniform Rates (Per 1,000 Gal)					
Landscape Recycled	$11.77	$12.64	$13.19	$13.37	$13.64
Average Change (%)		*+7%*	*+4%*	*+1%*	*+2%*

Population and Growth

Based on staff's analysis, the population of SVWD in 2020 was approximately 11,800. The Association of Bay Area Governments (ABAG) and the Association of Monterey Bay Area Governments (AMBAG) provide population projections for cities and counties in the Coastal Region. Official growth projections are not available for special districts. In general, the Coastal Region is anticipated to have a slow growth over the next twenty years. Based on this slow growth trend, the population for unincorporated lands and the City of Scotts Valley is expected to increase by 0.86% and 0.56%, respectively. **Table 9** shows the anticipated population within SVWD. The average rate of change for SVWD is 0.71% based on the combined average rate of change for the County and City.

<u>Population Projection</u>

Based on the projections for Santa Cruz County, LAFCO was able to develop a population forecast for SVWD. LAFCO staff increased the District's 2020 population amount by 0.71% each year. Under this assumption, our projections indicate that the entire population of SVWD will be approximately 12,300 by 2040.

Table 9: Projected Population

	2020	2025	2030	2035	2040	Average Rate of Change
Santa Cruz County (unincorporated area)	136,891	137,896	139,105	140,356	141,645	0.86%
City of Scotts Valley	12,145	12,214	12,282	12,348	12,418	0.56%
Scotts Valley Water District	**11,805**	**11,918**	**12,033**	**12,148**	**12,265**	**0.71%**

Source: AMBAG 2018 Regional Growth Forecast and FY 2019-20 SVWD Audited Financial Statement

Disadvantaged Unincorporated Communities

State law requires LAFCO to identify and describe all "disadvantaged unincorporated communities" (DUCs) located within or contiguous to the existing spheres of influence of cities and special districts that provide fire protection, sewer, and/or water services. DUCs are defined as inhabited unincorporated areas within an annual median household income that is 80% or less than the statewide annual median household income.

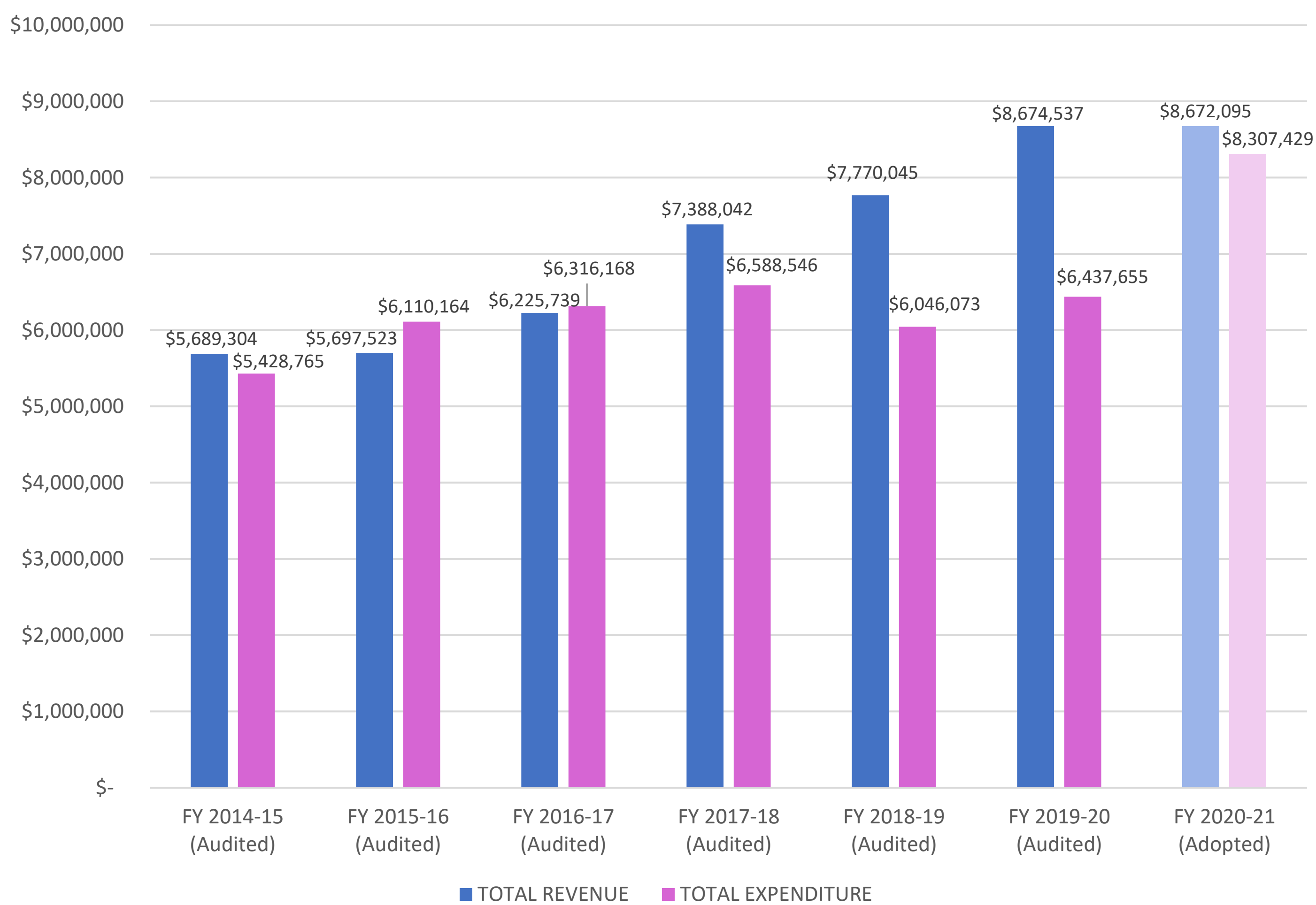
In 2017, the California statewide median household income was $67,169, and 80% of that was $53,735. LAFCO staff utilized the ArcGIS mapping program to locate any potential DUCs in the County. Based on the criteria set forth by SB 244, staff's analysis indicates that there are no areas within or surrounding the water district designated as a disadvantaged unincorporated community.

FINANCES

This section will highlight the District's financial performance during the most recent fiscal years. The most recent audited financial statements were prepared for Fiscal Year 2019-20. LAFCO evaluated SVWD's financial health from 2015 to 2020, including the last adopted budget for FY 2020-21. A comprehensive analysis of the District's financial performance during the past five years is shown in **Tables 13 and 14** on pages 20-21. The sources used by LAFCO are available in **Appendix C and D**.

At the end of Fiscal Year 2019-20, total revenue collected was approximately $8.6 million, representing a 12% increase from the previous year ($7.7 million in FY 18-19). Total expenses for FY 2019-20 were approximately $6.4 million, which decreased from the previous year by 6% ($6.0 million in FY 18-19). The District has ended each fiscal year with a surplus, excluding FYs 2015-16 and 2016-17, as shown in **Figure 2**. LAFCO staff believes that this positive trend will continue based upon the District's ongoing conservative budgetary practices which are also reflected in the FY 2020-21 adopted budget.

Figure 2: Statement of Revenues & Expenditures (FY 2014-15 to FY 2020-21)



Revenues

Operating Revenue

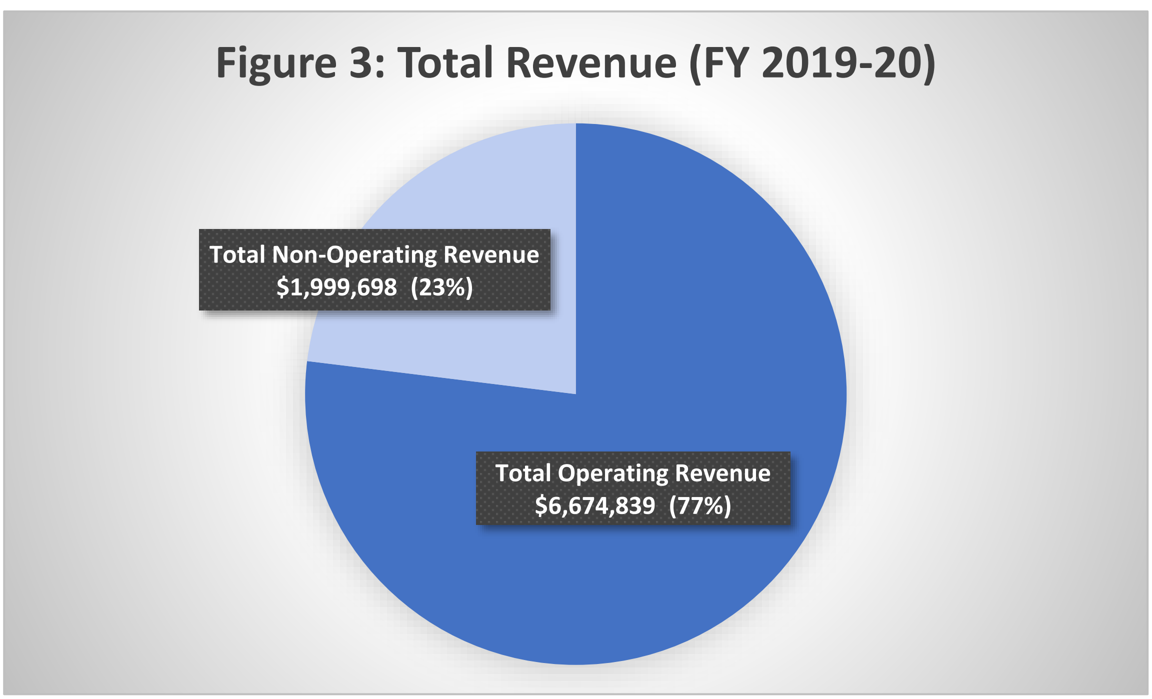
The District's primary source of revenue is from operating revenues, specifically water consumption sales. In FY 2019-20, Water Sales (appx. $4.5 million) and Water Service (appx. $2 million) represent approximately 76% of SVWD's entire revenue stream. Other operating revenue sources include additional fees and charges. These additional fees and charges represent less than 1% of total revenue. During FY 2019-20, total operating revenue represents approximately 77% of the District's entire revenue stream.

Non-operating Revenue

The remaining 23% of total revenue derive from non-operating revenue sources. These funds include Property Taxes, Capital Contributions, and Investment Earnings. **Table 10 and Figure 3** provide a breakdown of the District's revenue by category and source.

Table 10: Revenue Breakdown (FY 2019-20)

Revenue	Amount	Percentage
Operating Revenue		
Water Sales (Potable & Recycled)	$4,566,923	52.65%
Water Service (Charges)	$2,076,643	23.94%
Other Revenue (Fees & Charges)	$31,273	0.36%
Total Operating Revenue	$6,674,839	76.95%
Non-Operating Revenue		
Property Taxes	$1,030,321	11.88%
Capital Contributions	$783,284	9.03%
Other Revenue	$119,616	1.38%
Investment Earnings	$66,477	0.77%
Total Non-Operating Revenue	$1,999,698	23.05%
Total Revenue	**$8,674,537**	**100.00%**



Expenditures

Operating Expense

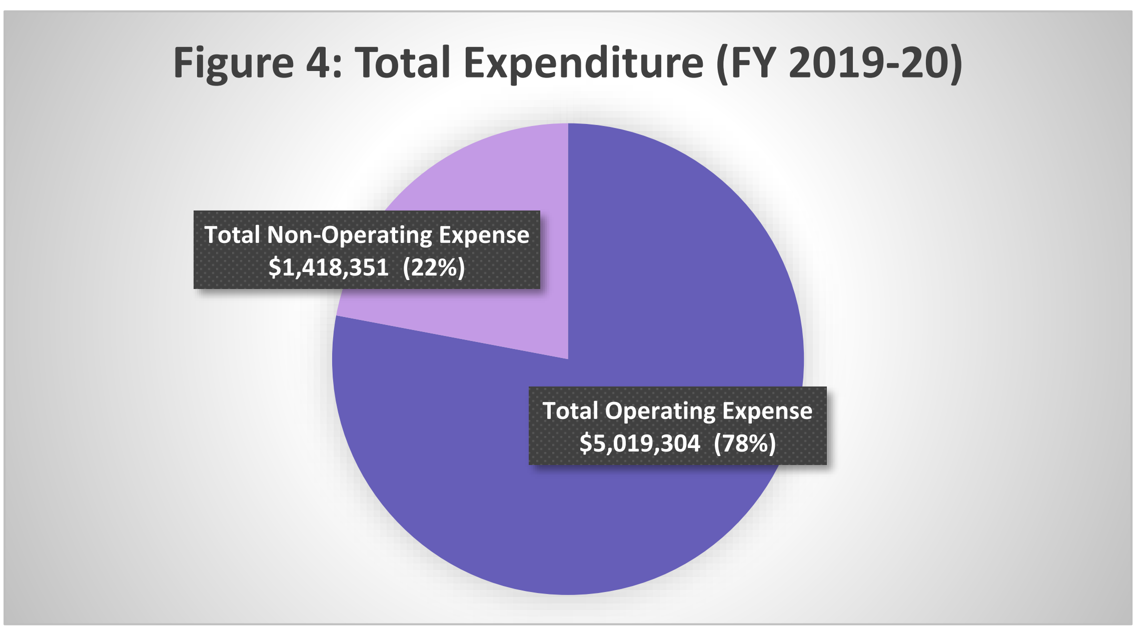
The District's operating expenses represented approximately 78% of total expenditure during FY 2019-20. Operating expenses include but are not limited to: Transmission & Distribution (appx. $2 million), General & Administration (appx. $994,000), Pumping (appx. $481,000) and Recycled Water (appx. $472,000).

Non-operating Expense

The remaining 22% of total expenses derive from non-operating revenue sources. These costs include Depreciation (appx. $1 million), Change in Investment (appx. $240,000), and Interest Expense ($86,000). **Table 11 and Figure 4** provide a breakdown of the District's costs by category and source.

Table 11: Expenditure Breakdown (FY 2019-20)

Expense	Amount	Percentage
Operating Expense		
Transmission & Distribution	$1,990,814	30.92%
General & Administration	$993,681	15.44%
Finance, Customer Service, & Conservation	$659,450	10.24%
Pumping	$480,655	7.47%
Recycled Water	$472,247	7.34%
Water Treatment	$239,722	3.72%
Source of Supply	$182,735	2.84%
Total Operating Expense	$5,019,304	77.97%
Non-Operating Expense		
Depreciation Expense	$1,069,751	16.62%
Change in Investment in SMGA-JPA	$240,719	3.74%
Interest Expense	$86,262	1.34%
Capital Contribution	$21,619	0.34%
Total Non-Operating Expense	$1,418,351	22.03%
Total Expenditure	**$6,437,655**	**100.00%**



Fund Balance / Net Position

As of June 30, 2020, the total net position balance ended with approximately $19 million. The following table highlights the net position balance from 2014 to 2021. As shown in **Table 12** and **Figure 5**, the District's fund balance has fluctuated slightly over the years but has maintained an annual balance above $15 million . Based on this historical trend, LAFCO staff believes the positive balance will continue. This healthy amount will be critical in the event that the District faces any unintended expenses, major capital improvements projects, or emergency repairs, such as the recent fires which will be discussed later in this report.

Table 12: Net Position (2014 to 2021)

	FY 14-15 (Audited)	FY 15-16 (Audited)	FY 16-17 (Audited)	FY 17-18 (Audited)	FY 18-19 (Audited)	FY 19-20 (Audited)	FY 20-21 (Projection)
Beginning Balance	$16,366,105	$16,626,644	$16,214,003	$14,562,508	$15,366,587	$17,090,559	$17,090,559
Ending Balance	**$16,626,644**	**$16,214,003**	**$16,123,574**	**$15,362,004**	**$17,090,559**	**$19,327,441**	**$17,455,225**
Change ($)		$(412,641)	$(90,429)	$(761,570)	$1,728,555	$2,236,882	$(1,872,216)

Figure 5: Net Position from 2014 to 2021 (Ending Balance)

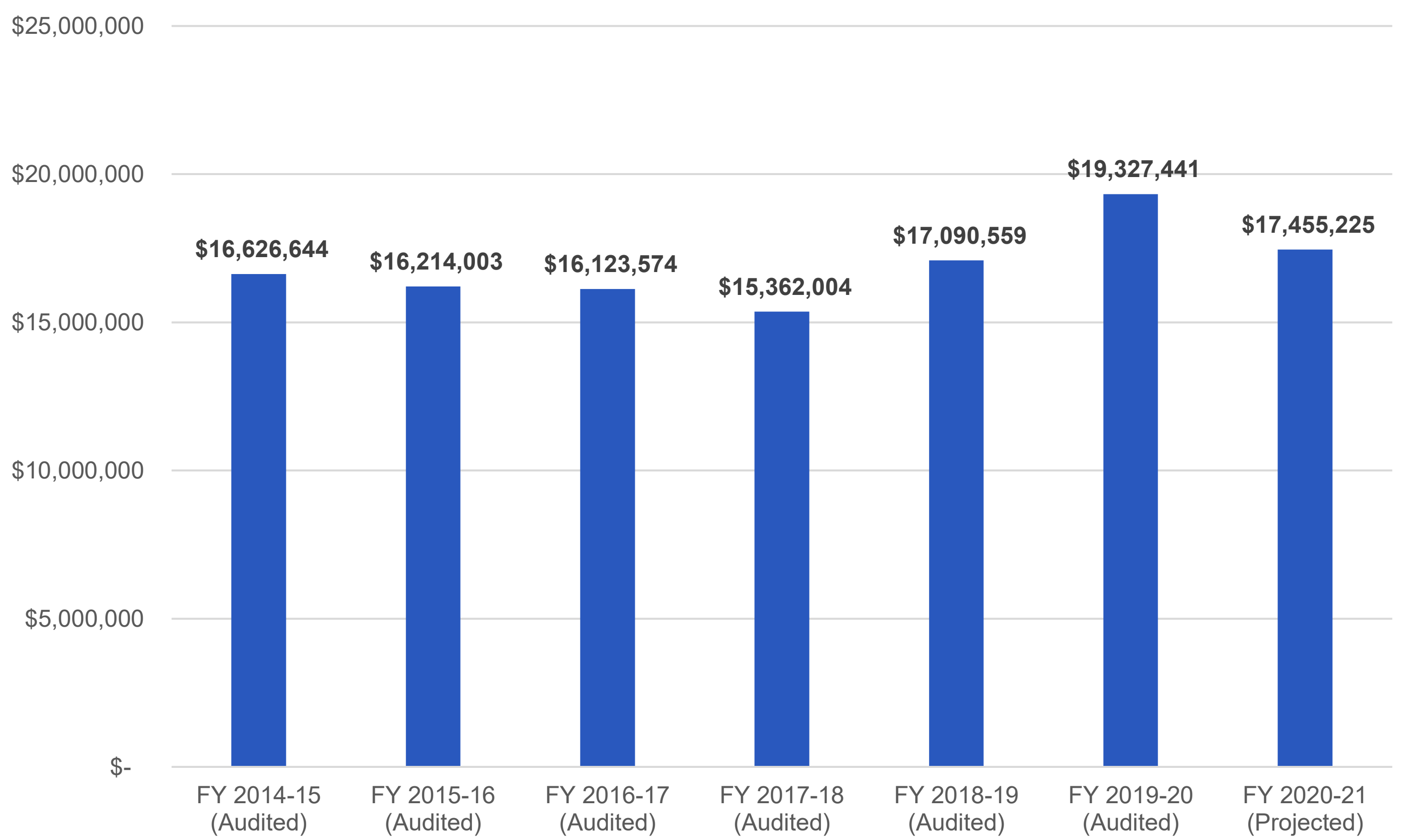


Table 13: Total Revenues & Expenditures

	FY 2014-15 (Audited)	FY 2015-16 (Audited)	FY 2016-17 (Audited)	FY 2017-18 (Audited)	FY 2018-19 (Audited)	FY 2019-20 (Audited)
REVENUE						
Operating Revenue						
Water Sales (Potable & Recycled)	$ 2,668,089	$ 2,625,008	$ 2,998,786	$ 3,959,771	$ 4,052,051	$ 4,566,923
Water Service (Service Charges)	$ 1,566,851	$ 1,348,590	$ 1,497,782	$ 2,293,336	$ 1,927,303	$ 2,076,643
New Connections	$ -	$ -	$ -	$ -	$ -	$ -
Other Revenue (Fees and Charges)	$ 264,919	$ 75,366	$ 53,170	$ 17,514	$ 46,311	$ 31,273
Total Operating Revenue	**$ 4,499,859**	**$ 4,048,964**	**$ 4,549,738**	**$ 6,270,621**	**$ 6,025,665**	**$ 6,674,839**
Non-Operating Revenue						
Capital Grants	$ 399,554	$ 246,704	$ 792,779	$ 720	$ 720	$ -
Capacity Buy-in Fee (Capital Contribution)	$ -	$ 89,000	$ 10,500	$ -	$ 669,772	$ 783,284
Gain on Disposal of Capital/Fixed Assets, Net	$ 19,822	$ 487,735	$ -	$ -	$ -	$ -
Property Taxes	$ 724,433	$ 775,679	$ 839,095	$ 923,894	$ 975,085	$ 1,030,321
Investment Earnings	$ 24,848	$ 39,106	$ 25,159	$ 22,574	$ 35,893	$ 66,477
Other Non-Operating Revenue	$ 20,788	$ 10,335	$ 8,468	$ 170,233	$ 62,910	$ 119,616
Total Non-Operating Revenue	**$ 1,189,445**	**$ 1,648,559**	**$ 1,676,001**	**$ 1,117,421**	**$ 1,744,380**	**$ 1,999,698**
TOTAL REVENUE	**$ 5,689,304**	**$ 5,697,523**	**$ 6,225,739**	**$ 7,388,042**	**$ 7,770,045**	**$ 8,674,537**
EXPENDITURE						
Operating Expense						
Source of Supply	$ 1,638	$ 97,655	$ 150,614	$ 163,709	$ 99,307	$ 182,735
Pumping	$ 478,911	$ 524,177	$ 536,653	$ 584,787	$ 466,512	$ 480,655
Water Treatment	$ 558,991	$ 688,601	$ 660,704	$ 829,736	$ 293,069	$ 239,722
Recycled Water	$ 102,152	$ 546,568	$ 472,105	$ 486,683	$ 434,404	$ 472,247
Transmission and Distribution	$ 1,129,053	$ 776,096	$ 797,494	$ 835,658	$ 1,849,596	$ 1,990,814
Conservation	$ 202,521	$ 241,892	$ 158,507	$ 163,778	$ -	$ -
Customer Accounts	$ 188,335	$ 207,833	$ 192,925	$ 198,613	$ -	$ -
Finance, Customer Service, and Conservation	$ -	$ -	$ -	$ -	$ 649,335	$ 659,450
General and Administrative Expenses	$ 1,522,036	$ 1,695,591	$ 1,706,288	$ 1,871,927	$ 837,784	$ 993,681
Total Operating Expense	**$ 4,183,637**	**$ 4,778,413**	**$ 4,675,290**	**$ 5,134,891**	**$ 4,630,007**	**$ 5,019,304**
Non-Operating Expense						
Deprectiation Expense	$ 883,615	$ 913,955	$ 937,847	$ 998,094	$ 1,085,254	$ 1,069,751
Capacity Buy-Back (Capital Contribution)	$ -	$ -	$ -	$ -	$ 235,856	$ 21,619
Interest Expense	$ 361,513	$ 417,796	$ 703,031	$ 107,603	$ 94,956	$ 86,262
Change in Investment in SMGA-JPA	$ -	$ -	$ -	$ -	$ -	$ 240,719
Loss on Disposal of Capital Assets	$ -	$ -	$ -	$ 347,958	$ -	$ -
Total Non-Operating Expense	**$ 1,245,128**	**$ 1,331,751**	**$ 1,640,878**	**$ 1,453,655**	**$ 1,416,066**	**$ 1,418,351**
TOTAL EXPENDITURE	**$ 5,428,765**	**$ 6,110,164**	**$ 6,316,168**	**$ 6,588,546**	**$ 6,046,073**	**$ 6,437,655**
Surplus/(Deficit)	**$ 260,539**	**$ (412,641)**	**$ (90,429)**	**$ 799,496**	**$ 1,723,972**	**$ 2,236,882**
NET POSITION						
Beginning Balance (as restated)	$ 16,366,105	$ 16,626,644	$ 16,214,003	$ 14,562,508	$ 15,366,587	$ 17,090,559
Ending Balance	**$16,626,644**	**$16,214,003**	**$16,123,574**	**$15,362,004**	**$17,090,559**	**$19,327,441**

Table 14: Total Assets & Liabilities

	FY 2014-15 (Audited)	FY 2015-16 (Audited)	FY 2016-17 (Audited)	FY 2017-18 (Audited)	FY 2018-19 (Audited)	FY 2019-20 (Audited)
ASSETS						
Current Assets						
Cash & Cash Equivalents	$ 5,251,395	$ 2,924,816	$ 2,331,365	$ 1,494,191	$ 2,519,128	$ 3,791,756
Accrued Interest Receivable	$ 6,221	$ 6,467	$ 6,649	$ 7,509	$ 7,098	$ 14,245
Accounts Receivable, Net	$ 763,700	$ 848,798	$ 1,105,970	$ 1,314,663	$ 1,404,967	$ 1,645,176
Property Taxes Receivable	$ 17,905	$ 42,991	$ 61,524	$ 54,828	$ 49,824	$ 84,758
Other Receivables	$ 840,565	$ 53,734	$ 183,620	$ 59,259	$ 52,053	$ 15,291
Notes Receivable	$ 11,512	$ 160,339	$ 161,784	$ 161,639	$ 173,019	$ 169,412
Inventory - Materials & Supplies	$ 180,040	$ 201,758	$ 160,614	$ 211,827	$ 232,601	$ 271,380
Prepaid Expenses	$ 76,558	$ 92,278	$ 93,345	$ 94,535	$ 68,430	$ 66,781
Total Current Assets	**$ 7,147,896**	**$ 4,331,181**	**$ 4,104,871**	**$ 3,398,451**	**$ 4,507,120**	**$ 6,058,799**
Non-Current Assets						
Restricted - Cash & Cash Equivalents	$ 932,329	$ 749,404		$ -	$ 516,092	$ 610,477
Notes Receivable	$ 118,023	$ 715,853	$ 554,070	$ 392,431	$ 267,745	$ 98,333
Investment in SMGA - JPA	$ -	$ -	$ -	$ -	$ 40,754	$ 91,291
Prepaid Contribution to SMGA - JPA	$ -	$ -	$ -	$ -	$ 291,256	$ 295,821
Capital Assets - Not Being Depreciated	$ 1,752,402	$ 3,185,716	$ 851,170	$ 733,176	$ 1,078,608	$ 1,213,219
Capital Assets - Being Depreciated	$ 17,769,454	$ 16,842,017	$ 19,948,767	$ 21,067,532	$ 20,563,817	$ 20,571,981
Deferred Outflows of Resources						
Loss on Defeasance of Debt	$ 603,814	$ 460,564	$ 40,190	$ 36,171	$ -	$ -
Net OPEB Obligation	$ -	$ -	$ -	$ -	$ 153,549	$ 142,970
Net Pension Liability	$ 619,531	$ 209,294	$ 456,821	$ 656,179	$ 680,989	$ 694,399
Total Non-Current Assets	**$21,795,553**	**$22,162,848**	**$21,851,018**	**$22,885,489**	**$23,592,810**	**$23,718,491**
TOTAL ASSETS	**$28,943,449**	**$26,494,029**	**$25,955,889**	**$26,283,940**	**$28,099,930**	**$29,777,290**
LIABILITIES						
Current Liabilities						
Accounts Payable & Accrued Expenses	$ 988,052	$ 325,292	$ 265,933	$ 342,344	$ 494,579	$ 683,344
Accrued Wages & Related Payables	$ 39,293	$ 53,896	$ 64,500	$ 80,885	$ -	$ -
Customer Deposits for Services	$ 105,468	$ 33,893	$ 110,346	$ 112,436	$ 166,905	$ 126,332
Accrued Interest Payable	$ 147,430	$ 125,557	$ 59,067	$ -	$ 47,513	$ 43,179
Long-Term Liabilities - Due Within One Year						
Notes Payable	$ 210,000	$ -	$ -	$ -	$ -	$ -
Compensated Asbences	$ 18,255	$ 22,051	$ 26,103	$ 25,862	$ 30,508	$ 40,998
Certificates of Participation	$ 160,000	$ 165,000	$ -	$ -	$ -	$ -
Bonds Payable	$ 150,000	$ -	$ -	$ -	$ -	$ -
Loan Payable	$ -	$ 215,000	$ 452,927	$ -	$ 468,579	$ 567,298
Total Current Liabilities	**$ 1,818,498**	**$ 940,689**	**$ 978,876**	**$ 561,527**	**$ 1,208,084**	**$ 1,461,151**
Non-Current Liabilities						
Unearned Revenue	$ 3,542	$ 1,770	$ 10,178	$ 8,142	$ -	$ -
Long-Term Liabilities - Due in More Than 1 Yr						
Compensated Absences	$ 54,764	$ 66,154	$ 78,305	$ 77,585	$ 91,522	$ 122,992
Loan Payable	$ -	$ 4,110,000	$ 5,596,621	$ 5,136,591	$ 4,668,012	$ 4,100,714
Net OPEB Obligation	$ 1,211,880	$ 1,184,517	$ 1,173,326	$ 2,848,438	$ 2,758,814	$ 2,245,495
Net Pension Liability	$ 1,329,971	$ 1,233,015	$ 1,782,379	$ 2,106,130	$ 2,070,658	$ 2,304,037
Notes Payable	$ 4,325,000	$ -	$ -	$ -	$ -	$ -
Bonds Payable	$ 630,769	$ -	$ -	$ -	$ -	$ -
Certificates of Participation	$ 2,495,449	$ 2,332,413	$ -	$ -	$ -	$ -
Deferred Inflows of Resources						
Net Pension Liability	$ 446,932	$ 411,468	$ 212,630	$ 183,523	$ 212,281	$ 215,460
Total Non-Current Liabilities	**$10,498,307**	**$ 9,339,337**	**$ 8,853,439**	**$10,360,409**	**$ 9,801,287**	**$ 8,988,698**
TOTAL LIABILITIES	**$12,316,805**	**$10,280,026**	**$ 9,832,315**	**$10,921,936**	**$11,009,371**	**$10,449,849**
NET POSITION						
Net Investment in Capital Assets	$ 12,154,452	$ 13,665,884	$ 14,790,579	$ 16,700,288	$ 16,974,413	$ 17,684,486
Restricted for Debt Service	$ 932,329	$ 749,404	$ -	$ -	$ -	$ -
Unrestricted (Deficit)	$ 3,539,863	$ 1,798,715	$ 1,332,995	$ (1,338,284)	$ 116,146	$ 1,642,955
Total Net Position	**$16,626,644**	**$16,214,003**	**$16,123,574**	**$15,362,004**	**$17,090,559**	**$19,327,441**

GOVERNANCE

Legal Authority

The District operates under the County Water District Law (Sections 30000 et seq. of the California Water Code; Division 12) for the purpose of developing and providing water for domestic use, fire protection, business use (commercial and industrial), and recreation in the Scotts Valley area.

Local Accountability & Structure

SVWD is governed by a five-member Board of Directors, which are elected to four-year terms by the registered voters within the District's boundaries. The Board of Directors are responsible for the establishment of policy relative to the District's mission, goals, and operations. The current Board is as follows:

Table 15: Board of Directors

Board Member	Term of Office
William Ekwall, President	Elected: November 2018 Term Ends: December 1, 2022
Ruth Stiles, Vice-President*	Appointed: January 2015 Term Ends: December 1, 2022
Wade Leishman, Director	Appointed: July 17, 2017 Term Ends: December 1, 2022
Chris Perri, Director*	Appointed: January 2007 Term Ends: December 1, 2024
Danny Reber, Director*	Appointed: November 2012 Term Limit Ends: December 1, 2024

Footnote: Board member originally appointed then subsequently elected.

The General Manager administers the day-to-day operations of the District in accordance with policies and procedures established by the Board of Directors. The Scotts Valley Water District employs a full-time staff of 18 employees. The District's Board of Directors meet regularly, meetings are publicly noticed, and citizens are encouraged to attend. Board meetings are typically held on the second Thursday of each month at 6:00 p.m. The District's administrative offices are located in the City of Scotts Valley.

Website Requirements

Senate Bill 929 was signed into law in September 2018 and requires all independent special districts to have and maintain a website by January 1, 2020. SVWD continues to provide a large array of information on their website, which recently experienced a full revamp. LAFCO staff encourages the District to continue this effort and include other useful documents outlined in SB 929, such as copies of LAFCO's services reviews.

Anticipated Capital Improvement Projects

SVWD adopts a capital improvement plan every year as part of its annual budget. The District has also conducted a complete system condition assessment and developed a 10-year capital improvement plan. The purpose of this long-range plan is to identify and prioritize needs and project costs for planned repair and replacement to the infrastructure that will serve the affected ratepayers in an efficient and cost-effective manner throughout the next 10-years of growth and change. A total of 15 capital improvement projects are budgeted for FY 2020-21, as shown below. **Appendix E and F** also provide a copy of the District's 2017 Master Plan and the proposed 10-Year CIP Plan.

Table 16: Capital Improvement Projects (FY 2020-21)

Project Name	Description	Budget
Transmission Mains		
1. Main Replacement Program – Potable	Replace and upgrade potable water mains based on leak history, service life, and size	$625k
Treatment Plants		
2. Orchard Run Water Treatment Plant Improvements	Implement esthetic taste & odor improvements to treatment process by adding new GAC filter and chlorine analyzer injection system. Infrastructure improvements include replacing ammonia based H2S air scrubbing system with a Bio Filtration scrubber. Replace 40,000 gallon bolted steel back wash tank and install new sewer lateral.	$2.2 Million
3. El Pueblo Water Treatment Plant Improvements	Replace manual 1980's filter control system with programmable automated control system linked with SCADA.	$30k
4. Well 10 WTP Water Quality Improvements	Implement esthetic taste & odor improvements by adding additional filter bed and Chlorine analyzer equipment.	$113k
5. Treatment Facility for New Production Well	New Lompico Formation Production Well and Treatment Plant.	$100k
Storage Tanks		
6. Bethany Tank Rehabilitation	Construct additional tank on-site to allow for roof reconstruction and interior and exterior coating replacement of 400,000 gallon Bethany Tank. Project extends tank service life and provides additional permanent storage and redundancy.	$200k

Project Name	Description	Budget
Pump Stations		
7. Polo Ranch Pump Station	Polo Ranch Flow control station has been modified to provide booster pumping into the Southwood pressure zone when needed. The Southwood Booster station on Granite Creek Road will be retired.	$75k
Wells		
8. Lompico Formation Production Well (Well 9 Replacement)	Construct a new production well that is needed to offset lost production capacity from Well 9 & Well 11A. The replacement well will in part be sited to provide for a more balanced withdrawal rate from the Lompico Aquifer.	$100k
Recycled Water Supply		
9. Purified Recycled Water Recharge	Supplemental supply project to increase groundwater reliability, especially in dry years (climate change related change). Could be shifted to SMGWA or replaced with conjunctive use.	$525k
Meters		
10. Automated Metering Infrastructure (AMI)	Install AMI transmitters on all meters over 3-4 year period.	$100k
11. Meter Replacement Program	Replace all meters installed before 2012 at the rate of 800-1000 meters per year.	$75k
Technology		
12. Utility Billing Software Improvements	Improvements and/or enhancements to Utility Billing (UB) and Payment Processing software.	$30k
Fleet		
13. Vehicle Replacement Program	Replace aging fleet: one vehicle per year on average, starting FY 2019.	$42k
14. Specialized Operations Equipment	Replace heavy equipment and specialized vehicles on as needed basis.	$25k
Buildings		
15. Administrative Building Improvements	Repairs and modifications to the office facility to support business operations.	$30k

Opportunities and Challenges

SVWD is financially sound and has been operating in an efficient manner over the recent years. It is LAFCO staff's position that public agencies should always prepare and consider future opportunities and potential challenges. The following sections explore possible actions that may be considered by the District.

Potential Consolidation

The recent fires in California, and within Santa Cruz County, have been the most destructive fires in State history and will have a profound impact on the governmental services provided within the San Lorenzo Valley area. Fortunately, SVWD and the Scotts Valley community were not greatly impacted by the fires. However, neighboring water agencies including San Lorenzo Valley Water District (s), have begun the recovery effort. During this time, SVWD and SLVWD have held preliminary discussions about the possibility of consolidation during public meetings. The two districts are currently analyzing the potential benefits and/or constraints involving consolidation. Such analysis will be presented to their respective boards by May 2021. It is LAFCO staff's experience that collaborative efforts, including consolidation, historically occur during challenging times (i.e. natural disasters; fiscal distress) because neighboring agencies look towards one another to ensure their residents continue to receive adequate level of service.

It is important to recognize that while LAFCO will play an important role in the consolidation effort if initiated, it will be up to SVWD and SLVWD to determine whether they decide to proceed in this change of governance. Therefore, it is LAFCO staff's position that it may be premature to analyze a potential consolidation in this report since the two water districts are currently within the preliminary stage of exploration. It may be beneficial to highlight the Districts' progress sometime in late-2021 if discussions have advanced. This will give the two water districts an opportunity to evaluate the benefits and challenges associated with consolidation and discuss their initial findings during public meetings without input from LAFCO staff unless requested.

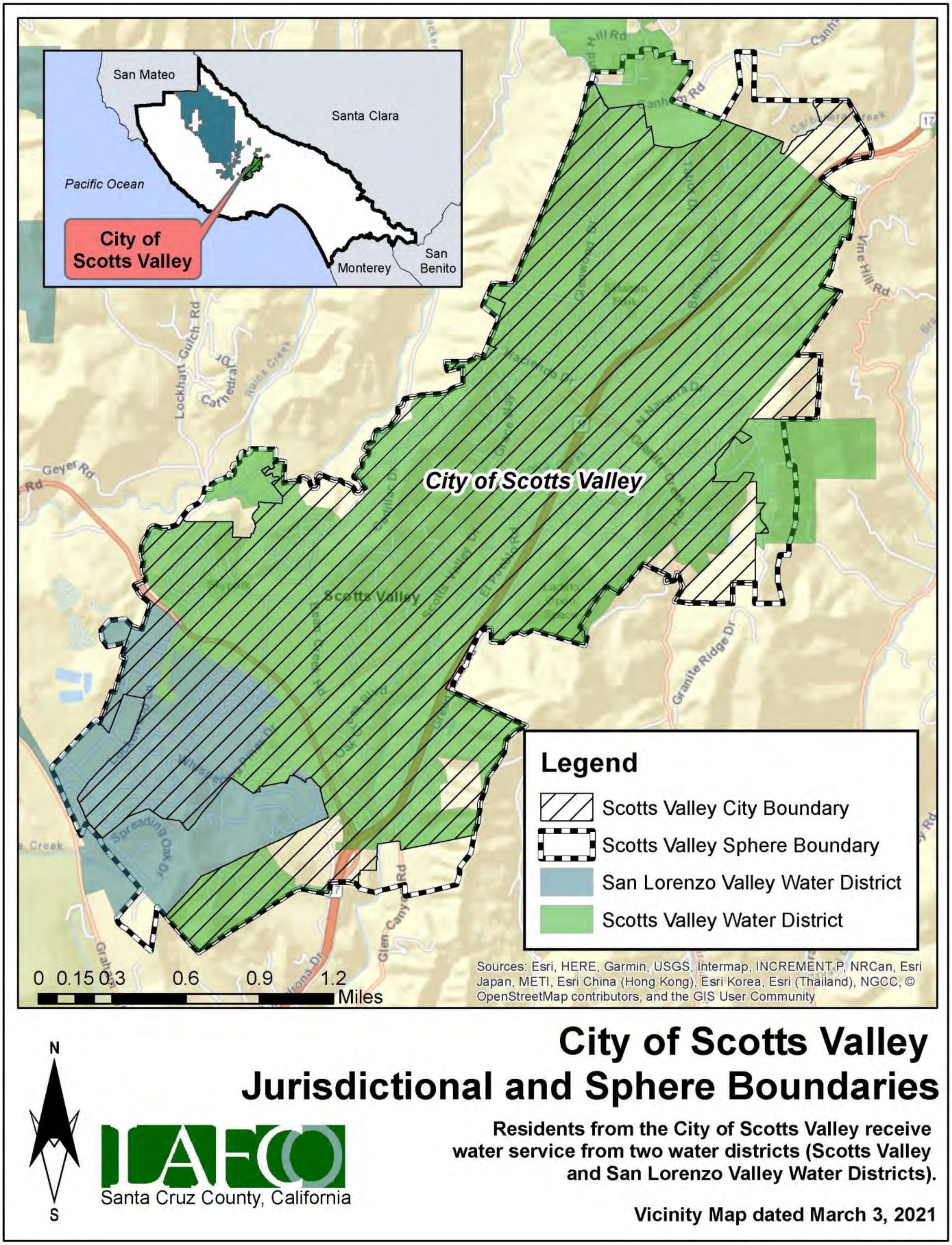
LAFCO Staff Recommendation: *LAFCO staff should continue to collaborate with the two water districts and provide assistance when needed. LAFCO staff may provide the Commission a status update on the effort by November 2021.*

Water Service Providers

The Scotts Valley community currently receives water service from either SVWD or SLVWD. **Figure 6** on page 26 shows that the majority of Scotts Valley residents receive water from SVWD. Only a portion of the City gets water from SLVWD. By having two water providers, the residents of Scotts Valley are subject to two different board members, policies, and water rates. It may be beneficial if the City, the two water districts, and LAFCO collaborate to determine the most efficient method to provide water service to the entire Scotts Valley community. This joint effort may lead to potential boundary changes, an improvement in water distribution, or a consistent water rate for constituents within the entire city.

LAFCO Staff Recommendation: *Coordination between the City of Scotts Valley, San Lorenzo Valley Water District, Scotts Valley Water District and LAFCO to determine whether there is a more efficient way to provide water service to the Scotts Valley community beyond the status quo.*

Figure 6: Water Providers



Potential Annexations

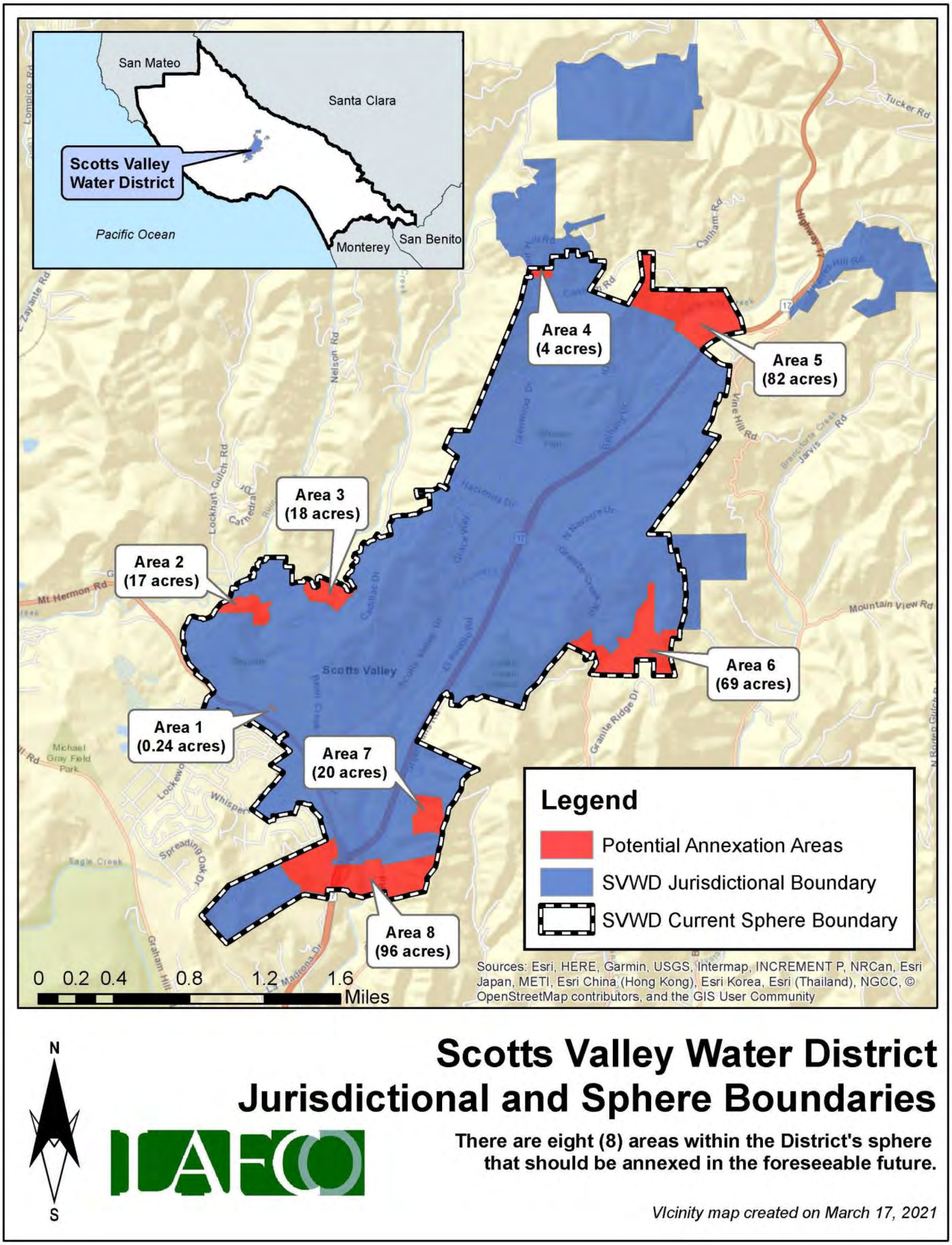
A sphere of influence is designated for each city and special district indicating the probable physical boundaries and service area for that agency. The current sphere of influence for SVWD includes eight (8) areas totaling over 300 acres that should be annexed in the foreseeable future. **Table 17** provides an overview of each area and **Figure 7** on page 28 shows the location within the District's sphere.

LAFCO Staff Recommendation: *Encourage SVWD to consider annexation of these eight unserved areas, if desired by the Districts and the affected residents.*

Table 17: Areas within District's Current Sphere of Influence

Area	Size	Land Use Designation
Area 1	0.24 acres	Shopping Center (City General Plan)
Area 2	17 acres	Mountain Residential (County General Plan)
Area 3	18 acres	Residential, Estate (City General Plan)
Area 4	4 acres	Mountain Residential (County General Plan)
Area 5	82 acres	Rural Residential & Residential Mountain (City General Plan) Mountain Residential (County General Plan)
Area 6	69 acres	Rural Residential (City General Plan) Rural Residential (County General Plan)
Area 7	20 acres	Rural Residential (City General Plan)
Area 8	96 acres	Rural Residential & Mountain Residential (County General Plan) Service, Professional, Rural Residential, & Open Space (City General Plan)

Figure 7: Potential Annexation Areas



SPHERE OF INFLUENCE

Cortese-Knox-Hertzberg Act

City and special district spheres of influence define the probable physical boundaries and service area of a local agency, as determined by the Commission (Government Code Section 56076). The law requires that spheres be updated at least once every five years either concurrently or subsequently to the preparation of Municipal Service Reviews. Spheres are determined and amended solely at the discretion of the Commission. In determining the sphere of influence for each local agency, the Commission is required by Government Code Section 56425(e) to consider certain factors, including:

- The present and planned uses in the area, including agricultural and open-space lands;
- The present and probable need for public facilities and services in the area;
- The present capacity of public facilities and adequacy of public services that the agency provides or is authorized to provide;
- The existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency; and
- For an update of a sphere of influence of a city or special district that provides public facilities or services related to sewers, municipal and industrial water, or structural fire protection, that occurs pursuant to subdivision (g) on or after July 1, 2012, the present and probable need for those public facilities and services of any disadvantaged unincorporated communities within the existing sphere.

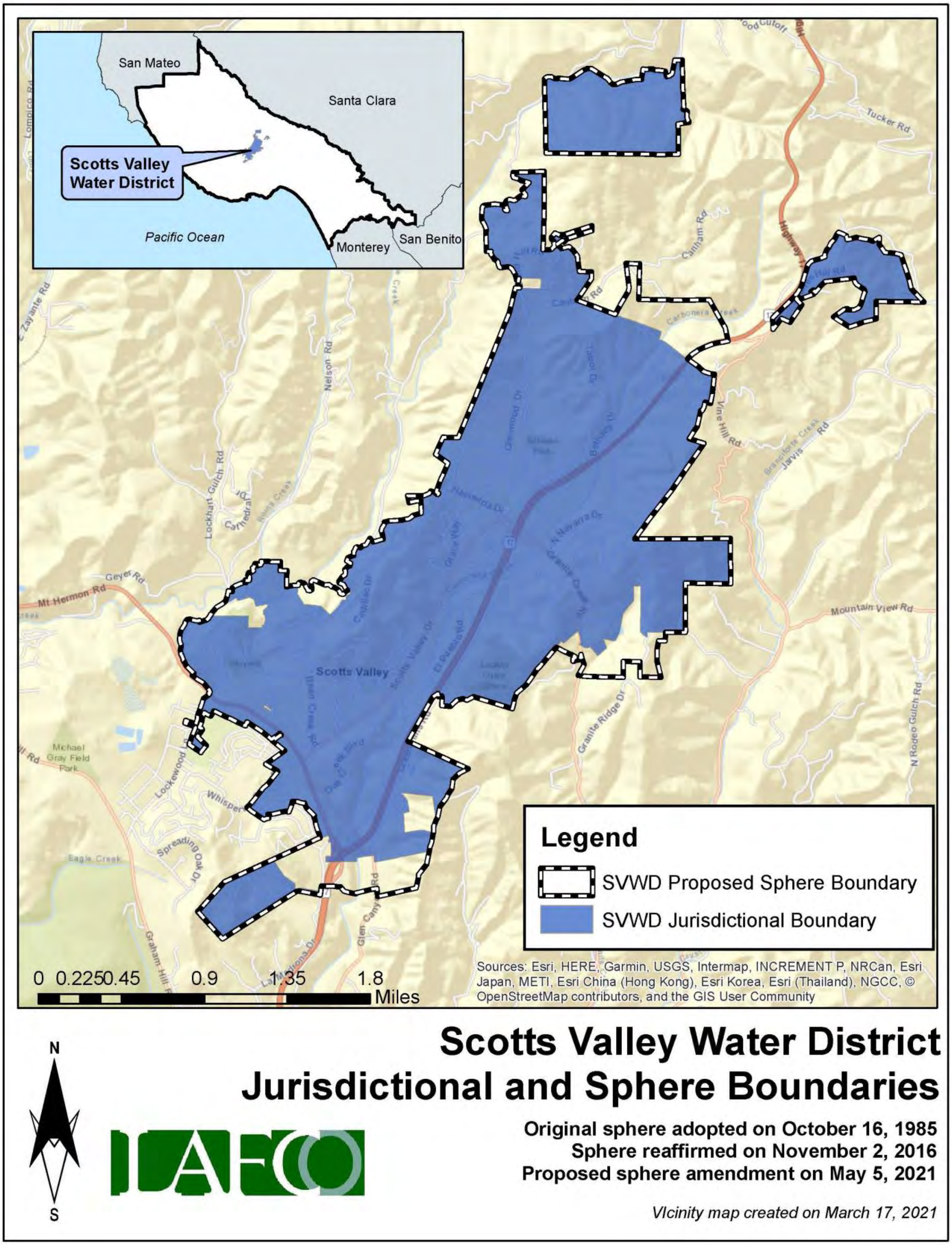
Current Sphere Boundary

Santa Cruz LAFCO adopted SVWD's first sphere of influence on October 16, 1985. The current sphere excludes areas within the District's jurisdictional boundary. The last sphere update occurred in November 2016 during the last service and sphere review cycle. **Figure 1** on page 5 shows the current sphere of influence boundary.

Proposed Sphere Boundary

Based on staff's analysis, a total of eight (8) unserved islands are either substantially surrounded or immediately adjacent to the water district and should be annexed. The size of these areas range from 0.24 to 96 acres. Additionally, there are areas outside the District's sphere but within SVWD's jurisdictional boundary. LAFCO staff is recommending that the sphere boundary be expanded to include the areas already served by SVWD. The District should also consider annexing the eight identified areas, if desired by their Board and affected residents. **Figure 8** on page 30 shows the proposed sphere boundary.

Figure 8: Proposed District Sphere Map



DISTRICT SUMMARY

Scotts Valley Water District	
Formation	California Water Code, section 30,000 et seq.
Board of Directors	Five members, elected at-large to four-year terms
Contact Person	Piret Harmon, General Manager
Employees	18 Full-Time Employees
Facilities	60 miles of pipeline, 4 groundwater treatment plants, 6 groundwater wells, 8 storage tanks, 10 pump stations, and 13 pressure zones.
District Area	6 square miles (appx. 4,000 acres)
Sphere of Influence	Smaller than the District (i.e., sphere boundary does not include the District's existing jurisdictional boundary)
FY 2020-21 Budget	Total Revenue = \$8,672,095 Total Expenditure = \$8,307,429 Projected Net Position (Beginning Balance) = \$19,327,441
Contact Information	Mailing Address: 2 Civic Center Drive, Scotts Valley, CA 95066 Phone Number: (831) 438-2363 Email Address: PHarmon@svwd.org Website: https://www.svwd.org/
Public Meetings	Meetings are held on the second Thursday of each month at 6:00 p.m.
Mission Statement	"Scotts Valley Water District delivers a sustainable high quality water service in an environmentally responsible and financially sound manner."
Vision	"Scotts Valley Water District is a results-driven, data-oriented public agency that provides effective actions, superior customer service and visionary leadership."

SERVICE AND SPHERE REVIEW DETERMINATIONS

The following service and sphere review determinations fulfill the requirements outlined in the Cortese-Knox-Hertzberg Act.

Service Provision Determinations

Government Code Section 56430 requires LAFCO to conduct a municipal service review before, or in conjunction with, an action to establish or update a sphere boundary. Written statements of determination must be prepared with respect to each of the following:

1. **Growth and population projections for the affected area.**
   SVWD currently provides water service to a population of 11,800. A slow growth is projected to occur in the unincorporated county area for the next twenty years. LAFCO staff estimates that the entire population of SVWD will reach 12,200 by 2040.

2. **The location and characteristics of any disadvantaged unincorporated communities within or contiguous to the sphere of influence.**
   LAFCO did not identify any DUCs within or contiguous to the District's sphere boundary. That said, SVWD has adopted strategic plans and capital improvement plans to ensure the adequate delivery of water service to its constituents.

3. **Present and planned capacity of public facilities, adequacy of public services, and infrastructure needs or deficiencies including needs or deficiencies related to sewers, municipal and industrial water, and structural fire protection in any disadvantaged, unincorporated communities within or contiguous to the sphere of influence.**
   The City of Scotts Valley's General Plan designates the land use of the community for mountain residential, rural residential, and parks and recreational uses.

4. **Financial ability of agencies to provide services.**
   SVWD's financial ability to provide services is well-established. The District has successfully kept costs below its revenue stream since 2017. Four of the last six audited financial statements had an overall surplus ranging from $260,000 to $2.2 million. As of June 30, 2020, the District is operating with a net fund balance of approximately $17 million.

5. **Status of, and opportunities for, shared facilities.**
   SVWD continues to explore for collaborative efforts to improve efficiencies. There have been preliminary discussions about exploring the consolidation between SVWD and San Lorenzo Valley Water District. LAFCO will support the districts should they decide to move forward with this change in governance.

6. **Accountability for community service needs, including governmental structure and operational efficiencies.**
   Consolidation is currently being discussed. Such change in governance would involve various communities of social and economic differences. If consolidation is explored, it would be the responsibility of the two water districts to include these residents before, during, and after the consolidation effort.

7. **Any other matter related to effective or efficient service delivery, as required by commission policy.**
   No additional local LAFCO policies are specifically relevant to this service review.

Sphere of Influence Determinations

Government Code Section 56425 requires LAFCO to periodically review and update spheres of influence in concert with conducting municipal service reviews. Spheres are used as regional planning tools to discourage urban sprawl and encourage orderly growth. Written statements of determination must be prepared with respect to each of the following:

1. **The present and planned land uses in the area, including agricultural and open-space lands.**
   The present and planned land uses are based on the general plan from the City of Scotts Valley, which range from urban to rural uses. General plans anticipate growth centered on existing urban areas and the maintenance of agricultural production, rural residential uses, and environmental protection in rural areas. The planned land uses within the City's General Plan are a mix of urban, rural and mountain residential, public recreation, and open-space lands.

2. **The present and probable need for public facilities and services in the area.**
   Scotts Valley Water District's planning for current and future water needs has led to a counter-intuitive reality: improved technologies, changed behavior on the part of its customers and evolved attitudes communitywide. This has led to far less use of water than in the past, even though the community continues to grow. Since 2000, groundwater pumping (the District's sole source of potable water) in the Scotts Valley area has decreased 46%.

3. **The present capacity of public facilities and adequacy of public services that the agency provides or is authorized to provide.**
   SVWD currently provides water service to a population of 11,800 through approximately 4,300 residential, commercial, and institutional connections. The District operates and maintains a potable water distribution system that includes groundwater wells, treatment facilities, storage tanks, pumping stations, pressure reducing stations and distribution mains and services to meet the potable water demands of its customers.

4. **The existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency.**
   Scotts Valley Water District and San Lorenzo Valley Water District are considering the concept of consolidation. Such change in governance would involve various communities of social and economic differences. If consolidation is explored, it would be the responsibility of the two districts to include these residents before, during, and after the consolidation effort.

5. **For an update of a sphere of influence of a city or special district that provides public facilities or services related to sewers, municipal and industrial water, or structural fire protection, that occurs pursuant to subdivision (g) on or after July 1, 2012, the present and probable need for those public facilities and services of any disadvantaged unincorporated communities within the existing sphere of influence.**
   LAFCO did not identify any DUCs within the District's sphere boundary. That said, SVWD has adopted strategic plans and capital improvement plans to ensure the adequate delivery of water service to its constituents.

APPENDICES

Appendix A: Rate Study (2016)

Appendix B: New Connection Fee Schedule (2020)

Appendix C: Audited Financial Source (2015 to 2021)

Appendix D: Adopted Budget (FY 2020-21)

Appendix E: Water System Assessment & Master Plan (2017)

Appendix F: Capital Improvement Plan (10-Year Projection)

APPENDIX A:

Rate Study
(2016)

SCOTTS VALLEY WATER DISTRICT

Water and Recycled Water Rate Study

December 12, 2016

RAFTELIS FINANCIAL CONSULTANTS, INC.

SCOTTS VALLEY WATER DISTRICT

445 S. Figueroa Street
Suite 2270
Los Angeles, CA 90071

Phone 213.262.9300
Fax 213.262.9303

www.raftelis.com

October 13, 2016

Ms. Piret Harmon
Scotts Valley Water District
2 Civic Center Drive
Scotts Valley, CA 95066

Subject: 2016 Water and Recycled Water Rates Study

Dear Ms. Harmon,

Raftelis Financial Consultants, Inc. (RFC) is pleased to provide the Water and Recycled Water Rate Study Report (Report) for the Scotts Valley Water District (District or Scotts Valley).

The major objectives of the study include the following:

1. Calculate capacity fees for new potable water and recycled water development in the sevice area.
2. Develop financial plans for the Potable Water and Recycled Water Funds to ensure financial sufficiency, ability to fund operation and maintenance (O&M) needs and secure sufficient funding for capital replacement and improvement.
3. Conduct a cost-of-service analysis for potable water and recycled water, and proportionately allocate the costs of providing service in accordance with Proposition 218.
4. Revise and propose fair and equitable potable and recycled water rates for the different customer types and perform customer impact analysis.
5. Analyze the implications of drought on water demand and propose drought rates to recover the potential revenue losses.

This Report summarizes the key findings and recommendations related to the development of the financial plans for the Water and Recycled Water Funds and the development of the associated water, drought, and recycled water rates in addition to the capacity fees.

It has been a pleasure working with you, and we thank you and District staff for the support provided during the course of this study.

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

Sanjay Gaur	**Khanh Phanh**	**Gabriella Stoyanova-Rozenova**
Vice President	Senior Consultant	Consultant

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GLOSSARY

Terms	Descriptions
AF	Acre foot / Acre feet
AWWA	American Water Works Association
CII	Commercial / Industrial / Institutional
CIP	Capital Improvement Projects
COS	Cost of Service
CPI	Consumer Price Index/Indices
CY	Calendar Year
District	Scotts Valley Water District
EMU	Equivalent Meter Unit
ENR CCI	Engineering News-Record Construction Cost Indices
FY	Fiscal Year (July 1 – June 30)
GPCD	Gallons per capita per day
kGal	Kilogallons or thousand gallons
M1 Manual	"Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1", 6th edition published by AWWA
MD	Max Day Peaking Factor
MFR	Multi-Family Residential
MH	Max Hour Peaking Factor
O&M	Operations and Maintenance
PAYGO	Pay-As-You-Go
R&R	Repair and Replacement
RFC	Raftelis Financial Consultants, Inc.
RW	Recycled Water
SFR	Single Family Residential
YOY	Year over Year

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1. INTRODUCTION

1.1 STUDY BACKGROUND

In early 2016, Scotts Valley Water District (District) engaged Raftelis Financial Consultants (RFC) to conduct a comprehensive water and recycled water rate study (Study) including 5-year financial plan, capacity fees, cost of service analysis and rate design. The primary goal of the Study was assessment of the financial sustainability of the District and development of equitable rates compliant with Proposition 218. The period covered by the Study is fiscal year (FY) 2016 through FY 2021.

Scotts Valley Water District was established in 1961 to provide water for household consumption and commercial, municipal and firefighting purposes. The District serves most of the City of Scotts Valley and some unincorporated areas north of the City. It is governed by a publicly elected five-member Board of Directors. Directors are elected for a period of four-years and serve overlapping terms.

The District provides potable and recycled water to its customers, while the sewer service is provided by the City of Scotts Valley. The District covers an area of about six square miles, with a population of 10,500. Customers are predominantly single family residences (SFR) but there are also multifamily residences (MFR), industrial and business customers, as well as institutions such as schools and medical facilities. In addition, there are landscape customers who use either potable or recycled water for irrigation. The District provides fire protection through public and private fire connections.

The only source of potable water for the District is the groundwater in the Santa Margarita Groundwater Basin. The District shares the basin with neighboring San Lorenzo Valley Water District, Lompico Water District, and Mount Hermon Association. The recharge of the basin depends only on rainfall and currently there are no other options such as in-lieu recharge or injection of water.

From the early 1980s, population growth and increased pumping, along with the urbanization of the region and droughts caused a significant drop in the groundwater levels, especially in Lompico – one of the largest aquifers of the Santa Margarita Groundwater Basin. The measures taken since the beginning of this century were focused on water conservation, active water management and production of recycled water in order to stop the overdraft of the water aquifers. Those measures helped to stabilize the Lompico aquifer level but the recharge of the depleted aquifer depends solely on natural groundwater replenishment.

Cooperation between the District and the City of Scotts Valley resulted in the development of a recycled water system and, since 2002, recycled water has been provided as an offset of the potable water demand. Recycled water is essentially wastewater generated within the District service area, collected and treated in the Scotts Valley Water Reclamation Facility (WRF), and distributed by the District. A portion of the wastewater is treated to the standards of tertiary disinfected recycled water, suitable for unrestricted non-potable use, and is sold to the customers. The remainder is disinfected and discharged into the ocean.

Demand for recycled water depends on the type of usage and has a very strong seasonality, with a peak in the summer and very low levels in winter. To improve the utilization of the available capacity throughout the year, a groundwater recharge project (GWR) has been developed to replenish the groundwater basin through injection of treated recycled water in the aquifer. The GWR project will ensure a reliable and drought-poof water replenishment source, will provide water storage which could be tapped during drought years, would have a positive effect on the environment, and would help to decrease some of the operating costs associated with water distribution, such as pumping.

1.2 OBJECTIVES OF THE STUDY

Recent drought and the statewide reduction in water consumption presented a serious challenge to the District with respect to ensuring sufficient revenues to operate, maintain and reinvest in the water system. Furthermore, the water shortage led to adoption of water conservation practices and use of more efficient appliances which constrain the water consumption rebound after the end of the drought spell. The structure of current water rates and their levels were adopted in 2012 and therefore, they do not reflect the circumstances under which the utility currently operates. The District engaged RFC to conduct a comprehensive Water and Recycled Water Study to account for the new factors affecting the utility finances. The major objectives of the Study include the following:

1. Calculate capacity fees for new potable water and recycled water development in the service area.
2. Develop financial plans for the Potable Water and Recycled Water Funds to ensure financial sufficiency, ability to fund operation and maintenance (O&M) needs and secure sufficient funding for capital replacement and improvement.
3. Conduct a cost-of-service analysis for potable water and recycled water, and proportionately allocate the costs of providing service in accordance with Proposition 218.
4. Revise and propose fair and equitable potable and recycled water rates for the different customer types and perform customer impact analysis.
5. Analyze the implications of drought on water demand and propose drought rates to recover the potential revenue losses.

1.3 LEGAL REQUIREMENTS AND RATE SETTING METHODOLOGY

1.3.1 *California Constitution - Article XIII D, Section 6 (Proposition 218)*

Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water service are as follows:

1. A property-related charge (such as water and recycled water rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property related service.
2. Revenues derived by the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

As stated in AWWA's *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1*, 6th edition *(M1 Manual)*, "water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." Prop 218 requires that water rates cannot be "arbitrary and capricious," meaning that the rate-setting methodology must be sound and that there must be a nexus between the costs and the rates charged. RFC follows industry standard rate setting methodologies set forth by the *M1 Manual* to ensure this study meets Proposition 218 requirements and develops rates that do not exceed the proportionate cost of providing water services.

1.3.2 *California Constitution - Article X, Section 2*

Article X, Section 2 of the California Constitution (established in 1976) states the following:
"It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."

Article X, Section 2 of the State Constitution institutes the need to preserve the State's water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, Section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. The District wishes to establish tiered rates based on the availability of water from each source to incentivize customers to use water as wisely as possible, while based on the proportionate costs incurred to provide water to customer classes to achieve compliance with Proposition 218.

Tiered Rates – "Inclining" tier rate structures (synonymous with "tiered" rates) when properly designed and differentiated by customer class, and allow a water utility to send consistent price signals to customers. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service to users in each *tier*.

1.3.3 *Cost-Based Rate-Setting Methodology*

As stated in the M1 Manual, "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." To develop utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the utility, there are four major steps discussed below.

Calculate Revenue Requirement

The rate-making process starts by determining the test year (rate setting year) revenue requirement, which for this study is fiscal year ending (FY) 2016. The revenue requirement should sufficiently fund the utility's O&M, debt service, capital expenses, and reserves.

Cost Of Service Analysis (COS)

The annual cost of providing water service is distributed among customer classes commensurate with their service requirements. A COS analysis involves the following:

1. Functionalize costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
2. Allocate functionalized costs to cost causation components. Cost causation components include base, maximum day, maximum hour[1], conservation, public fire protection, meter service, and customer servicing and billing costs.
3. Distribute the cost causation components. Distribute cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour

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[1] *Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.*

demands).[2] Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those imposing such costs on the utility. In other words, not all customer classes share the same responsibility for peaking related costs.

Rate Design and Calculations

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of various utility objectives, such as promoting water conservation, affordability for essential needs, and revenue stability among other objectives. Rates may also act as a public information tool in communicating these objectives to customers.

Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. RFC documents the rate study results in this study report to serve as the District's administrative record and a public education tool about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts in lay terms.

[2] System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class's relative demands during the peak month, day, and hour event.

2. GENERAL ASSUMPTIONS

2.1 INFLATION

The Study period is for Fiscal Years (FY) 2017 to FY 2021, with the Fiscal Year beginning July 1 of the previous calendar year. Various types of assumptions and inputs were incorporated into the Study based on discussions with and/or direction from District staff. These assumptions include account and usage growth rates for different customer classes, inflation factors, and other assumptions. The District's inflationary and other escalatory assumptions are presented in Table 2-1, below.

The salary and benefits escalation factors are based on negotiations between the District and its employees concluded in June2016. Pursuant to the Memorandum of Understanding (MOU), certain classifications that were significantly under market were subject to one-time compensation increases of 9-10%. All non-exempt classifications are subject wage increase equal to the Consumer Price Index for all urban consumers (CPI-U) average percent change in addition to the 5% step increases due to advancement within the salary range.

Table 2-1: Inflation and Other Escalation Factor Assumptions

INFLATION FACTORS	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
CPI	1%	1%	1%	1%	1%
General	3%	3%	3%	3%	3%
Salaries	8%	6%	6%	5%	5%
Benefits	10%	8%	8%	8%	8%
Capital	2%	2%	2%	2%	2%
Electricity	5%	5%	5%	5%	5%
Chemicals	5%	5%	5%	5%	5%
Property Tax	2%	2%	2%	2%	2%
Interest on Reserves	0.5%	0.5%	0.5%	0.5%	0.5%

2.2 PROJECTED DEMAND AND GROWTH

Projecting water demand relies on two variables — the number of accounts and demand per account. In Fiscal Year (FY) 2015, the District served 10,500 customers and expects to add 2,100 more by FY 2040, resulting in 12,600 total customers at buildout according to Urban Water Management Plan 2015 (UWMP 2015). Since account growth projections within the study period (FY 2016-2017) are highly uncertain and may considerably overestimate the revenues from new connections, for the purpose of the financial plan, the District assumes no revenues collected for capacity fees from FY 2017 to FY 2021.

In response to the State's current drought conditions, many District customers have curtailed their potable water use. As drought conditions improve, the District anticipates an increase in water use as behaviors revert back to non-drought conditions. Overall, it is anticipated that water demand will climb by 8.6 percent above FY 2016 sales in FY 2017, averaging 4 percent growth year over year (YOY) each year thereafter until FY 2021, when it will increase by only 0.2 percent. These annual projected demands for the utilities for each year, shown below in Table 2-2, are based on UWMP 2015 projections provided by District staff.

Recycled water use will see greater increases as current customers convert more potable water use to recycled water. Recycled water use increases were also projected by Staff based on the Urban Water Management Plan. The District does not project the addition of any new recycled water accounts during the Study period.

Table 2-2: Projected Annual Water and Recycled Water Demand in Acre Feet

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Potable Water (AF)	1,106 AF	1,201 AF	1,253 AF	1,304 AF	1,355 AF	1,358 AF
Potable Water (YOY)		8.6%	4.3%	4.1%	3.9%	0.2%
Recycled Water	160 AF	175 AF	189 AF	203 AF	218 AF	232 AF
Recycled Water (YOY)		9.4%	8.2%	7.6%	7.0%	6.6%

2.3 RESERVE POLICY ASSUMPTIONS

A reserve policy is a written document that establishes reserve goals/targets. It provides guidelines for sound financial management with an overall long-range perspective to maintain financial solvency and mitigate financial risks associated with revenue instability, volatile capital costs and emergencies. Adopting and adhering to a sustainable reserve policy enhances financial management transparency and helps achieve or maintain a certain credit rating for future debt issues. Reserves can offset unanticipated reductions in revenues, offset fluctuations in costs of providing services, and fiscal emergencies such as revenue shortfalls, asset failure, and natural disaster. Capital reserves set funds aside for replacement of capital assets as they age and for new capital projects.

The appropriate amount of reserves and reserve types are determined by a variety of factors, such as the size of the operating budget, the amount of debt, the type of rate structure, frequency of customer billing, and risk of natural disaster. However, reserves tend to fall into the following categories: operations & maintenance (O&M), rate stabilization, capital repair and replacement (R&R), and emergency.

The District provided FY 2016 budgets for its potable and recycled water services. The District currently use four funds in managing its services:

1. **Fund 01 (Water Fund):** Includes revenue and expenses related to potable water production and delivery;
2. **Fund 02 (Recycled Water Fund):** Includes revenues and expenses related to recycled water production and delivery
3. **Fund Capacity Fees (New Development Fees):** Revenues from capacity fees (proposed infrastructure fees) and expenses for CIP projects related to new development;

4. **Fund Impact Fees (Water Demand Offset Fee**s): Revenues from water demand offset fees and expenses for recycled water treatment plant debt service and funding of CIP projects

Table 2-3 below lists the fund beginning balances as of July 1, 2015, the beginning of FY 2016.

Table 2-3: Reserve Balances

Beginning Fund Balances	Source	7/1/2015
Fund 01: Potable Water		$5,129,875
Fund 02: Recycled Water		$121,520
Capacity Fees		$0
Impact Fees		$218,169
Total Unrestricted	*[1] + [2] + [3] + [4]*	**$5,469,565**

RFC's proposed target levels for FY 2016 are summarized below in Table 2-4 and described in detail in the following subsections.

Table 2-4: Target Reserve Balances for FY 2016

FY 2016	Reserve Targets	Whole District	Fund 01: Potable Water	Fund 02: Recycled Water	Fund Impact Fees
Operating Reserve	90 days of O&M expenses	$1,102,685	$994,120	$108,565	
Rate Stabilization Reserve	20% of commodity revenue	$561,385	$486,814	$74,571	
Capital Emergency Reserve	2.5% of assets value	$459,823	$308,755	$151,068	
Capital R&R Reserve	1yr depreciation	$883,616	$709,294	$174,322	
Debt Service Reserve	100% debt service	$629,094	$355,681	$0	$273,413
Total		**$3,636,602**	**$2,854,665**	**$508,525**	**$273,413**
Reserves as of Jul 1, 2015 Beginning FY 2016		$5,469,565	$5,129,875	$121,520	$218,169

2.3.1 *O&M Reserve*

The purpose of an O&M reserve is to provide working capital to support the operation, maintenance, and administration of the utility. From a risk management perspective, the O&M reserve supports the District's cash flow needs during normal operations and ensures that operations can continue should there be significant events that impact cash flows. As it is unlikely for a utility to perfectly predict the revenues and revenue requirements for each billing period, a reserve set aside to hedge the risk of monthly negative cash positions is prudent in financial planning. Another factor to consider when creating a cash flow reserve is the frequency of billing. A utility that bills once a month would require less minimum reserves than a utility that bills semi-annually.

RFC recommends that the District maintain 90 days cash (25 percent of annual operating budget) to ensure adequate working capital for operating expenses. The District bills bimonthly, thus 90 days are the minimum to provide sufficient working capital to account for when expenses occur and revenues are collected. Additionally, this accounts for revenues varying seasonally while expenses remain relatively static.

The O&M expenses for Potable Water fund for FY 2016 are $3.976M, which translated into $994K of cash reserves for the Potable Water Fund.

Similarly, the Recycled Water Fund budgeted O&M expenses for FY 2016 are $434K, resulting in a necessary cash operating reserve of $109K.

2.3.2 *Capital R&R Reserve*

Capital R&R reserves are used to fund future obligations that are necessary for maintaining a reliable infrastructure. Because water and recycled water utilities are highly capital-intensive enterprises, it is important to accurately estimate long-term R&R costs and develop a reserve to fund the eventual replacement of the system and new capital projects.

RFC proposed that the District maintain a target level for the Capital R&R reserve equal to the annual depreciation expenses.

The Capital R&R reserve for Potable Water Fund for FY 2016 was equal to $709K.

The Capital R&R reserve for Recycled Water Fund was for FY 2016 totals $174K.

2.3.3 *Capital Emergency Reserve*

The purpose of an emergency fund is to allow the utility to provide uninterrupted service in light of a fiscal emergency, natural disaster, or facility failure. An emergency reserve decreases risk by recognizing the high capital cost of the utilities and setting aside adequate funds to restart the system after an event or replace an essential facility. Based on discussions with staff, the capital emergency reserve was set at 2.5 percent of the book net value of assets in the respective year.

The book net value of assets for the Potable Water Fund was estimated at $12.35M in FY 2016 or $309K for capital emergency reserve.

The book net value for assets for the Recycled Water Fund was estimated at $6.042M in FY 2016 yielding a capital emergency reserve of $151K.

2.3.4 *Rate Stabilization and Operating Emergency Reserve*

While it is not typical for utilities to have substantial rate increases in a short period of time, factors such as declining water sales and unexpected increase in short-term O&M expenses may result in large rate increases. In order to minimize rate shocks, a rate stabilization reserve could be set up in order to smooth rate increases through gradual increases in rates as opposed to abrupt and large rate increases.

A rate stabilization reserve acts as a buffer to protect customers from experiencing large shifts in their bills.

RFC recommends that the District maintain 20 percent of water sales (commodity) revenues as a rate stabilization reserve.

The water sales revenues for FY 2016 for the Potable Water Fund are $2.434M results in to $487K of rate stabilization reserve for the Potable Water Fund.

The water sales revenues for FY 2016 for the Recycled Water Fund are $373K, which amounts to $75K of rates stabilization reserve for the Recycled Water Fund.

2.3.5 *Debt Service Reserve*

The purpose of the debt service reserves is to secure cash assets for full and timely payment of debt obligations in periods of reduced revenue. Reserves signal to creditors that the utility has a sound debt servicing capacity and add to the District's good reputation.

The Debt Service reserve is set to be equal to 100 percent of the annual debt service for the current year.

The debt service reserve for Potable Water Fund results in $356K and the debt service reserve for the Impact Fees Fund is $273K.

2.4 KEY INFORMATION

The study utilized the following key documents and figures:

1. FY 2015/16 operating budgets for Fund 01 and Fund 02 provided by the District staff in March, 2016;
2. 5-year project budget 2017-20121 received in April 2016 for projected capital projects (CIP);
3. Customer information database and individual bimonthly consumption for FY2015 received in March 2016 and subsequent updates in April 2016 regarding outside district customers and in June 2016 regarding recycled water meter sizes and fire connections;
4. Fund 01 and Fund 02 cash balance received in April 2016;
5. Debt service schedules received in February 2016;
6. Fixed assets for potable and recycled water, received in February 2016;

3. CAPACITY FEES

3.1 LEGAL AND ECONOMIC FRAMEWORK

For publicly owned water systems, most of the assets are typically paid for by the contributions of existing customers through rates, charges, and taxes. In service areas that incorporate new customers, the infrastructure developed by previous customers is generally extended towards the service of new customers. Existing customers' investment in the existing system allows newly connecting customers to take advantage of unused surplus capacity. To further economic equality among new and existing customers, in turn, new connectors will typically buy-in to the existing and pre-funded facilities based on the percentage of remaining available system capacity, effectively putting them on par with existing customers. In other words, the new users are buying into the existing system through a payment for the portion of facilities that has already been constructed in advance of new development.

3.1.1 *Economic Framework*

The basic economic philosophy behind capacity fees is that the costs of providing water service should be paid for by those that receive utility from the product. In order to effect fair distribution of the value of the system, the fee should reflect a reasonable estimate of the cost of providing capacity to new users, and not unduly burden existing users. Accordingly, many utilities make this philosophy one of their primary guiding principles when developing their capacity fee structure.

The philosophy that service should be paid for by those that receive utility from the product is often referred to as "growth-should-pay-for-growth." The principal is summarized in the American Water Works Association (AWWA) Manual M26, Water Rates and Related Charges:

> *The purpose of designing customer-contributed- [connection fees] is to prevent or reduce the inequity to existing customers that results when these customers must pay the increase in water rates that are needed to pay for added plant costs for new customers. Contributed capital reduces the need for new outside sources of capital, which ordinarily has been serviced from the revenue stream. Under a system of contributed capital, many water utilities are able to finance required facilities by use of a 'growth-pays-for-growth' policy.*

3.1.2 *Legal Framework*[3]

The District reserves broad authority over the pricing of water capacity fees. The most salient limitation on this authority is the requirement that recovery costs on new development bear a reasonable relationship to the needs and benefits brought about by the development. Courts have long used a standard of reasonableness to evaluate the legality of capacity fees. The basic statutory standards governing water capacity fees are embodied by Government Code Sections 66013, 66016, 66022 and 66023. Government Code Section 66013, in particular, contains requirements specific to pricing water capacity fees:

> *Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue.*

Section 66013 also includes the following general requirements:

- Local agencies must follow a process set forth in the law, making certain determinations regarding the purpose and use of the fee; they must establish a nexus or relationship between a development project and the public improvement being financed with the fee.
- The capacity fee revenue must be segregated from the general fund in order to avoid commingling of capacity fees and the general fund.

3.2 APPROACH

There are two primary steps in calculating capacity fees: (1) determining the cost of capital related to new service connections, and (2) allocating those costs equitably to various types of connections. There are several available methodologies for calculating capacity fees. The various approaches have evolved largely around the basis of changing public policy, legal requirements, and the unique and special circumstances of every local agency. However, there are four general approaches that are widely accepted and appropriate for water capacity fees. They are the “system buy-in”, “capacity buy-in”, “incremental-cost” and “hybrid” approaches.

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[3] RFC does not practice law nor does it provide legal advice. The above discussion means to provide a general review of apparent state institutional constraints and is labeled “legal framework” for literary convenience only. The District should consult with its counsel for clarification and/or specific review of any of the above or other matters.

3.2.1 *Asset Valuation Approach*

As stated earlier, the first step is to determine the asset value of the capital improvements required to furnish services to new users. However, under the equity buy-in approach, the facilities have already been constructed, therefore the goal is to determine the value of the existing system/facilities. To estimate the asset value of the existing facilities required to furnish services to new users, various methods are employed. The principal methods commonly used to value a utility's existing assets are original cost and replacement cost.

1. **Original Cost (OC).** The principal advantages of the original cost method lie in its relative simplicity and stability, since the recorded costs of tangible property are held constant. The major criticism levied against original cost valuation pertains to the disregard of changes in the value of money, which are attributable to inflation and other factors. As evidenced by history, prices tend to increase rather than remain constant. Because the value of money varies inversely with changes in price, monetary values in most recent years have exhibited a definite decline; a fact not recognized by the original cost approach. This situation causes further problems when it is realized that most utility systems are developed over time on a piecemeal basis as demanded by service area growth. Consequently, each additional asset was paid for with dollars of different purchasing power. When these outlays are added together to obtain a plant value the results can be misleading.

2. **Replacement Cost (RC).** Changes in the value of the dollar over time, at least as considered by the impact of inflation, can be recognized by replacement cost asset valuation. The replacement cost represents the cost of duplicating the existing utility facilities (or duplicating its function) at current prices. Unlike the original cost approach, the replacement cost method recognizes price level changes that may have occurred since plant construction. The most accurate replacement cost valuation would involve a physical inventory and appraisal of plant components in terms of their replacement costs at the time of valuation. However, with original cost records available, a reasonable approximation of replacement cost plant value can most easily be ascertained by trending historical original costs. This approach employs the use of cost indices to express actual capital costs experienced by the utility in terms of current dollars. An obvious advantage of the replacement cost approach is that it gives consideration to changes in the value of money over time.

3. **Original Cost Less Depreciation (OCLD) or Replacement Cost Less Depreciation (RCLD).** Considerations of the current value of utility facilities may also be materially affected by the effects of age and depreciation. Depreciation takes into account the anticipated losses in plant value caused by wear and tear, decay, inadequacy, and obsolescence. To provide appropriate recognition of the effects of depreciation on existing utility facilities, both the original cost and reproduction cost valuation measures can also be expressed on an OCLD and RCLD basis. These measures are identical to the aforementioned valuation methods, with the exception that accumulated depreciation is computed for each asset account based upon its age or condition, and deducted from the respective total original cost or replacement cost to determine the OCLD or RCLD measures of plant value.

The District directed RFC to use the RC method to determine the asset value of the water system. Using the RC method will evaluate the capacity fees based on the replacement cost of the assets in today's dollars.

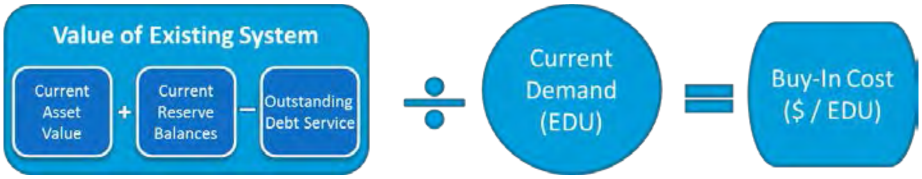
3.2.2 *Capacity Fee Calculation Approach*

3.2.2.1 Equity Buy-In Approach

The equity buy-in approach rests on the premise that new customers are entitled to service at the same water rates as existing customers. However, existing customers have already developed the facilities that will serve new customers, including the costs associated with financing those services. Under this approach, new customers pay only an amount equal to the net investment already made by existing users. This net equity investment figure is then divided by the current demand of the system – number of customers (or equivalent dwelling units) – to determine the buy-in cost per equivalent dwelling unit (EDU).

For instance, if an existing system has 100 equivalent units of average usage and the new connector uses an equivalent unit, then the new customer would pay 1/100th of the total value of the existing system. By contributing this capacity fee, the new connector has bought into the existing system. The user has effectively acquired a financial position on par with existing customers and will face future capital challenges on equal financial footing with those customers. This approach is suited for agencies that have capacity in their system and are essentially close to full build-out. Figure 3-1 shows the framework to calculate the system buy-in capacity fees.

Figure 3-1: Formula for System Buy-In Capacity Fees



Under this approach, the value of the system is increased by the balance of the reserves. Reserves are included because they represent the health of the utility and more specifically add value to the system as they may be used to maintain the system at the current level of service. Conversely, a utility with no reserves or a negative fund balance would reduce the value of the system as a whole since there is no assurance that the current level of service can be maintained.

Debt funded through existing customer rates (i.e. non-AFC debt) is also accounted for under the equity buy-in approach as it is an obligation that is secured by the value of the system. When debt is issued to finance capital improvements, the obligation is typically paid over time by the existing customers through rates. To avoid double-charging of these debts, the debt obligation is subtracted to determine the net value of the existing system.

3.2.2.2 Capacity Buy-In Approach

The capacity buy-in approach (Figure 3-2) is based on the same premise as that for the equity buy-in approach – that new customers are entitled to service at the same water rates as existing customers. The difference between the two approaches is that for the capacity buy-in approach, for each major asset, the value is divided by its capacity. This approach has two major challenges. First, to determine the capacity of each major asset is problematic, as the system is designed for peak use and customer behavior fluctuates based on economic and weather conditions. Second, it does not address the financial equity that the current user has contributed into reserves. For instance, all else equal, a larger operating reserve balance would be a positive benefit for a new user, since it would produce lower rates in the future. If this were not taken into account, current users would be subsidizing future user rates.

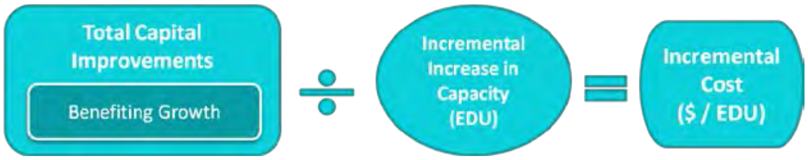
Figure 3-2: Formula for Capacity Buy-In Capacity Fees

3.2.2.3 Incremental Cost Approach

The incremental method (Figure 3-3) is based on the premise that new development (new users) should pay for the additional capacity and expansions necessary to serve the new development. This method is typically used where there is little or no capacity available to accommodate growth and expansion is needed to service the new development. Under the incremental method, growth-related capital improvements are allocated to new development based on their estimated usage or capacity requirements, irrespective of the value of past investments made by existing customers.

For instance, if it costs X dollars ($X) to provide 100 additional EDUs of capacity for average usage and a new connector uses one of those equivalent units, then the new user would pay $X/100 to connect to the system. In other words, new customers pay the incremental cost of capacity. As with the equity buy-in approach, new connectors will effectively acquire a financial position that is on par with existing customers. Use of this method is generally considered to be most appropriate when a significant portion of the capacity required to serve new customers must be provided by the construction of new facilities.

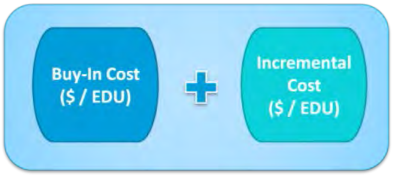
Figure 3-3: Formula for Incremental Cost Capacity Fees



3.2.2.4 *Hybrid Approach*

The hybrid approach (Figure 3-4) is typically used where some capacity is available to serve new growth but additional expansion is still necessary to accommodate new development. Under the hybrid approach the capacity fee is based on the summation of the existing capacity and any necessary expansions. In utilizing this methodology, it is important that system capacity costs are not double-counted when combining costs of the existing system with future costs from the CIP. CIP costs associated with repair and replacement of the existing system should not be included in the calculation, unless specific existing facilities which will be replaced through the CIP can be isolated and removed from the existing asset inventory and cost basis. In this case, the rehabilitative costs of the CIP essentially replace the cost of the relevant existing assets in the existing cost basis. Capital improvements that expand system capacity to serve future customers may be included proportionally to the percentage of the cost specifically required for expansion of the system. Figure 3-4 illustrates the hybrid approach, adding the buy in cost to the incremental cost per equivalent dwelling unit.

Figure 3-4: Formula for Hybrid Capacity Fees



3.3 CURRENT FEES

The District currently has separate "new service connection fees" for the new potable and recycled water customers. The new service connection fee for new potable water customers consists of three components:

1. Connection charge: to recover incurred costs for the District's potable water infrastructure and assets.
2. Impact fee[4]: to recover costs for additional water supply needed as a result of new development.
3. Meter and installation fee[5] – based on the District's actual meter purchase and installation costs.

The District has lower impact fee and connection charge for individual apartments, condominiums, or other small-size residential units with low water consumption and for Water Efficient units (WEU).

The recycled water new service capacity fee has two components:

1. Connection charge: to recover incurred costs for the District's potable water infrastructure and assets.
2. Meter and installation fee – based on the District's actual meter purchase and installation costs.

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[4] There is a surplus fee at 1½ times the normal fee for projects outside the District boundaries; Board Item 2.2 Impact Fees July 2011.pdf

[5] This component is usually included in the connection charge. However, for the purpose of the analysis, the District Staff provided meter and installation fee separately from connection charge.

The component costs are the same for both potable and recycled service. The total fees are summarized below in Table 3-1. The existing fees for new fire service connections are summarized in Table 3-2, which vary depending on whether the new capacity also has potable or RW service.

Table 3-1: Existing Fees for New Service Connections

Meter Size	Capacity Charge	Impact Fee	Meter & installation Fee	Potable Water New Service Capacity Fee	Recycled Water New Service Capacity Fee
A	B	C	D	E=B+C+D	F=B+D
5/8"	$9,221	$11,526	$363	$21,110	$9,584
5/8" WEU	$5,534	$6,915	$363	$12,812	n/a
Small System	$9,221	$11,526	$741	$21,488	n/a
Small System WEU	$5,534	$6,915	$741	$13,190	n/a
3/4"	$13,830	$17,288	$396	$31,514	$14,226
1"	$23,046	$28,812	$452	$52,310	$23,498
1 1/2"	$46,108	$57,626	$1,595	$105,329	$47,703
2"	$73,756	$92,199	$1,806	$167,761	$75,562
3"	$138,262	$172,877	$2,230	$313,369	$140,492
4"	$230,436	$288,126	$3,714	$522,276	$234,150

Table 3-2: Existing Fees for New Fire Service Connections

Line No.	Meter Size	Impact Fee	Meter & installation Fee	Connection Charge	Fire Service New Service Capacity Fee
	A	B	C	D	E=B+C+D
Fire Service Connection Fees with Potable or RW Service					
1	Private Fire Service (any size)	$0	$377	$0	$377
2	Fire Hydrant – Public	$0	$0	$3,430	$3,430
3	Fire Hydrant – Private	$0	$0	$3,430	$3,430
Fire Service Connection Fees without Potable or RW Service					
4	2"	$0	$377	$3,430	$3,807
5	3"	$0	$377	$6,430	$6,807
6	4"	$0	$377	$10,717	$11,094
7	6"	$0	$377	$21,435	$21,812
8	Fire Hydrant – Public	$0	$0	$3,430	$3,430
9	Fire Hydrant - Private	$0	$0	$3,430	$3,430

3.4 PROPOSED FEES FRAMEWORK

Much like the District's existing framework, the proposed framework for potable and RW new capacity fees contains several components that are allocated to either potable capacity fees, RW capacity fees, or both. The components are as follows.

1. Potable System Equity Buy-In/Infrastructure Fee
2. Recycled Treatment System Reimbursement/Treatment Fee
3. Recycled Distribution System Equity Buy-In Distribution Fee
4. Groundwater (GW) Recharge / Storage Program Contribution

Each component is described in greater detail in the following sections.

3.4.1 *Potable System Equity Buy-In/Infrastructure Fee*

The infrastructure fee is a one-time charge, paid by new customers, to access the potable water system infrastructure capacity. The charge is based on the value of major backbone infrastructure assets of the potable water system, converted into 2016 dollars by using the ENR 20-city Construction Cost Index. The purpose of the fee is to recover the cost incurred by current customers for investing in system capacity which will serve new customers. The fee increases with the meter size (hydraulic capacity or max safe capacity) of the new connection.

3.4.2 *Recycled Treatment System Reimbursement/Treatment Fee*

In April of 1996, the District entered into an agreement with the City of Scotts Valley (City) for the joint construction of a 1 million gallons per day (MGD) tertiary water treatment plant, to provide RW to City and District customers. Both the City and the District made investments to develop the system.

The treatment fee is a one-time charge, to be paid by new customers of both potable and recycled water systems. This fee is based on the cost (approximated by the total debt service amount) of the recycled water treatment facility and the expected consumption of the new customer. The fee is paid by the new recycled water customers to buy-in a proportionate share of capacity from the recycled water treatment system. New potable water customers will also pay that fee proportional to their potable water connection capacity since the usage of recycled water frees up potable water for new development. The facility will provide purified recycled water to the groundwater recharge, thus enhancing the supply of potable water for new development.

3.4.3 *Recycled Distribution System Equity Buy-In Distribution Fee*

The recycled water distribution fee is a one-time charge to be paid by new customers of both potable and recycled water systems. The fee is based on the total asset value of the recycled water distribution system converted into 2016 dollars and the expected consumption of the new customer. New recycled water customers will pay the fee to buy-in proportionate share capacity of the distribution system. New potable water customers will also pay the distribution fee since the usage of recycled water offsets consumption of potable water which can be used by new customers.

3.4.4 *Groundwater Recharge (GWR) / Storage Program Contribution*

The storage program contribution fee is a one-time charge to be paid by new potable water customers. The fee is based on the cost of the GWR project net of grants. New potable water customers will pay a share of capacity, proportionate to their expected usage of potable water as the project will contribute to the supply and storage of potable water.

The District is exploring options to expand the use of this local, reliable, drought-proof source of water supply. Due to the demand of the District's existing recycled water service, the District has limited additional supply of recycled water in the summer months when irrigation demand is high and excess recycled water available in the winter and shoulder months when irrigation demand is low. During the periods of low recycled water demand, the excess recycled water flows would be available to replenish the local groundwater basin. A Groundwater Recharge project would inject advanced purified recycled water into the Lompico aquifer of the Santa Margarita Groundwater Basin at or near the Hanson Quarry property in Scotts Valley to restore groundwater levels and retain the water within the SMGB watershed for beneficial use.

3.4.5 *Capacity Fee Components*

RFC proposes that the potable water new capacity fees will have all four components, whereas the RW capacity fees will have two (the Recycled Treatment System Reimbursement and the Recycled Distribution System Reimbursement). The proposed framework is summarized in Table 3-3 below.

Table 3-3: Proposed Capacity Fee Components

New Connections	Potable System Equity Buy-In/ Infrastructure Fee	Recycled Treatment System Reimbursement/ Treatment Fee	Recycled Distribution System Equity Buy-In Distribution Fee	GW Recharge / Storage Program Contribution
Potable Water	x	x	x	x
Recycled Water		x	x	

3.5 POTABLE WATER PROPOSED CAPACITY FEES

The components of the potable water capacity fee include:

Infrastructure fee: The District service area has sufficient capacity to meet projected new demand, with system capacity of 1,517AF[6] per year and projected potable water build-out demand in 2040 of 1,400 AF (from UWMP 2015). RFC recommends that the equity buy-in approach is used to determine the infrastructure fees for new water services to bring new customers to par with existing customers' contributions in developing the existing facilities, including the costs associated with financing those services.

[6] Bartle Wells Report, Nov 2009, page 5

The infrastructure fee will be based on the asset value ($53,708,850 as of June 30, 2015, FY 2015), determined using the replacement cost (RC) method, to reflect the cost of providing the expansion capacity as if the capacity was added at the time the new customers were connected to the water system.

Prior to calculating the proposed capacity fee, the number of Equivalent Meter Units (EMUs) must first be determined. In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter, which has a value of 1. According to the AWWA M1 Manual, a particular meter size's ratio of meter and capacity servicing costs relative to that of a 5/8" meter is its "Equivalent Meter Units" (EMU). For example, a 2-inch meter has 8 times the throughput capacity of a 5/8" meter and therefore has a multiplication factor of 8 to determine its EMU to 5/8" meter. The Meter & Capacity factor escalates as meter size increases because the District's cost to replace a meter increases with its size. Based on 2015 meter data, the customer count and EMUs are shown in Table 3-4.

Table 3-4: Safe Maximum Operating Capacity by Meter Type, per Current AWWA Standards

Meter Size	AWWA Max safe capacity (gpm)	Ratio to 5/8" meter size	Number of Meters	Equivalent Meter Units
	B	C = B / 20 GPM	D[7]	E = C × D
5/8"	20	1.00	3,026	3,026
3/4"	30	1.50	565	848
1"	50	2.50	95	238
1 1/2"	100	5.00	25	125
2"	160	8.00	18	144
3"	350	17.50	3	53
4"	630	31.50	0	0
Total	**3,732**			**4,433**

In order to correctly assess the net actual replacement cost incurred for infrastructure, the existing liabilities in the form of outstanding debt related to potable water services ($4,535,000) and equity in the form of accumulated reserves ($5,129,875) are considered in the net assets valuation (Table 3-5).

[7] For the purpose of connection fee calculation, the number of meters is based on FY 2015. Data provided by the District.

Table 3-5: FY 2016 Potable Water Infrastructure Fee Calculation

	As of June 30, 2015	Source	Value
1	Total Assets Value[8]	*Replacement cost*	$53,708,850
2	Reserve Ending Balance		$5,129,875
3	Less: Outstanding Debt	*District*	$4,535,000
4	**Net Assets Value**	*[1]+[2]-[3]*	**$54,303,725**
5	Current EMU	Table 3-4	4,433
6	Proposed Capacity Fee FY 2015	*[4]/[5]*	$12,251
7	Inflation Adjustment	*ENR CCI 20-City[9]*	102.9%
8	**Proposed Capacity Fee**	***[6]×[7]***	**$12,612**

The Potable Water Infrastructure Fee calculated in Table 3-5 using the sum of EMUs, represents the base fee for a 5/8" meter, and the fees for larger meter sizes are calculated using the AWWA meter size ratios to adjust the base fee to the respective connection size (Table 3-6).

Table 3-6: Proposed Potable Water Infrastructure Fee by Meter Size for 2016

Meter Size	Base Fee	AWWA Ratio *Table 3-4*	Proposed Infrastructure Fees FY 2016
	A	B	C=A×B
5/8"	$12,612	1.00	$12,612
3/4"	$12,612	1.50	$18,918
1"	$12,612	2.50	$31,531
1 1/2"	$12,612	5.00	$63,061
2"	$12,612	8.00	$100,898
3"	$12,612	17.50	$220,715
4"	$12,612	31.50	$397,286

Recycled water treatment and distribution fees: New potable water customers benefit from the existing recycled water treatment and distribution systems as the usage of recycled water frees up potable water resources for new development. In addition, the recycled water treatment facility ensures that treated water will be used in the groundwater recharge and storage program, thus making potable water available to new customers. The recycled water treatment and distribution fees account for the water demand offset secured by the availability of recycled water and reflect the actual costs incurred in the construction of the recycled water systems and the expected average consumption of new customers based on the meter size.

[8] Replacement cost is used to bring the assets value to current dollars.
[9] 30 year annual average index

– The reimbursement for the available recycled water treatment system is based on the cost of the system ($6,243,862[10]) divided by the actual water treatment capacity of 740 AF[11] per year (Table 3-7). The result represents the cost of the recycled water treatment system per acre foot per year. Next, the recycled water treatment system base fee is calculated using the typical annual consumption of a single family residence as a proxy for the 5/8" meter size typical consumption.

The SFR annual consumption is determined by the equation below**.** The average daily consumption (including indoor and outdoor water usage) is assumed to be 75 gallons per capita per day (GPCD) [12]. According to the data provided by the District, the average number of persons per household (PPH) is three. The annual consumption includes 365 days per year and the result is converted from gallons to acre feet using the conversion factor of 325,853 gallons per acre foot**.**

$$SFR\ annual\ consumption = 75\ GPCD\ \times 3\ PPH\ \times \frac{365\ days}{1\ years} \times \frac{1\ AF}{325{,}853\ gallons} = .252\ AF/year$$

– The fee for the recycled water distribution system is determined using the capacity buy-in method. The cost of the distribution system is divided by the build-out annual demand in acre feet. The asset valuation method is similar to the one used in the potable water infrastructure fee calculation using the RC as of June 2015. The build-out demand for recycled water is provided by the District's staff and the asset value per AF of demand is calculated. (see Table 3-7)

GWR storage program contribution fee: The District plans to build a groundwater recharge and storage facility which will use treated water from the recycled water plant to recharge the groundwater basin of Scotts Valley. The project will benefit both current and new customers in the long-run providing a reliable source of potable water and generating resources for new development. Therefore, the contribution of the new customers to the program is determined as an offset of the new potable water demand and is based on the total project cost divided by the build-out potable water demand. The cost of the project is reduced by the expected grants. As in the previous two water offset fees, the unit cost per AF is adjusted for the expected annual consumption of new customer.

[10] The total debt service for recycled water treatment system.
[11] Per District staff.
[12] Per District staff.

Table 3-7: Water Offset Fee Components Per Acre Foot

	Water Offset Fees Components	Asset value	Capacity/ Demand	FY 2015	Infl. Adj. ENR CCI 20-City	2016 fee per AF
		A	B	C=A/B	D	E= C × D
1	Recycled Treatment System[13]	$6,243,862	740 AF	$8,438	102.9%	$8,686
2	Recycled Distribution System	$3,295,566	240 AF	$13,732	102.9%	$14,136
3	Groundwater Recharge Project	$10,344,304	1,400 AF	$7,389	102.9%	$7,607

The fees determined above in Table 3-7 are on a per AF basis. However, as determined in the equation shown above, the average SFR user with a 5/8" meter consumes an estimated .252 AF/year. The fees for a 5/8" meter are shown in Table 3-8 below.

Table 3-8: Water Offset Fees for 5/8" Meter

		2016 fee per AF	SFR Annual Consumption (AF)	FY 2016 fee for 5/8" Meter
		A	B	C = A x B
1	Recycled Treatment System	$8,686	.252	$2,189
2	Recycled Distribution System	$14,136	.252	$3,563
3	Groundwater Recharge Project	$7,607	.252	$1,917
4	**Total Fee for Water Offset Components ([1]+[2]+[3])**			**$7,669**

Then the fees components (Table 3-8, column C) are adjusted to account for the meter size using AWWA Ratio (see Table 3-9) to determine the Water Offset Fees.

Table 3-9: Proposed Water Offset Fees[14] by Meter Size for 2016

No. line	Meter Size	AWWA Ratio	Recycled Treatment System Reimbursement	Recycled Distribution System Buy-In	Groundwater Recharge Project	Proposed Water Offset Fees FY 2016
		A	B = $2,189 x A	C = $3,563 x A	D = $1,917 x A	E = B + C + D
1	5/8"	1.00	$2,189	$3,563	$1,917	**$7,669**
2	3/4"	1.50	$3,284	$5,344	$2,876	**$11,504**
3	1"	2.50	$5,473	$8,907	$4,793	**$19,173**
4	1 1/2"	5.00	$10,946	$17,814	$9,585	**$38,345**
5	2"	8.00	$17,514	$28,502	$15,337	**$61,353**
6	3"	17.50	$38,311	$62,348	$33,549	**$134,208**
7	4"	31.50	$68,960	$112,226	$60,388	**$241,574**

Adding the Water Offset Fees (Table 3-9) to the Proposed Infrastructure Fee (Table 3-6) yields the total New Capacity Service Fee. Table 3-10 below summarizes the total for all meter sizes and compares the sum to the existing fees for new service. Please note that the Table 3-10 below do not include meter and installation fees as shown in Table 3-1.

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13 Total debt service COP 2004

14 Rounding used in calculations.

Table 3-10: Proposed and Current Potable Water Capacity Fees 2016

Meter size	Proposed Infrastructure Fee Table 3-6	Proposed Water Offset Fees Table 3-9	Proposed Capacity Fees	Current Fees (excluding Meter& Installation)	% Change
A	B	C	D= B + C	E	F=D/E-1
5/8"	$12,612	$7,669	**$20,281**	$20,747	-2.2%
3/4"	$18,918	$11,504	**$30,422**	$31,118	-2.2%
1"	$31,531	$19,173	**$50,704**	$51,858	-2.2%
1 ½"	$63,061	$38,345	**$101,406**	$103,734	-2.2%
2"	$100,898	$61,353	**$162,251**	$165,955	-2.2%
3"	$220,715	$134,208	**$354,923**	$311,139	14.1%
4"	$397,286	$241,574	**$638,860**	$518,562	23.2%

In addition, the District will adopt lower water offset fees for multifamily residences (MFR) with individual meters with indoor use only. According to the UWMP 2015, the average GPCD for MFR customers is 45 gallons. Employing the same calculation from the single family annual consumption the average AF of consumption for a MFR customer can be estimated as follows:

$$MFR\ annual\ consumption = 45\ GPCD\ \times 3\ PPH\ \times \frac{365\ days}{1\ years} \times \frac{1\ AF}{325{,}853\ gallons} = .151\ AF/year$$

$$\frac{Annual\ MFR\ Consumption}{Annual\ SFR\ Consumption} = \frac{.151}{.252} = 60\%$$

As shown above, MFR use represents 60 percent of the average annual SFR consumption assuming the same average household size. The proposed capacity fees for MFR individual meter is $12,169, 60% of the regular SFR capacity fees for 5/8” meter.

$$MFR\ Individual\ Meter\ Capacity\ Fees\ (5/8"\ meter\ only) = 60\%\ \times \$12{,}612 + 60\%\ \times \$7{,}669\ =\ \$12{,}169$$

The installation and meter fees components of the Capacity Fees will be based on actual costs of meters and installation incurred by the District. RFC recommends that the District adjust all components of capacity fees (Infrastructure Fee, Water Demand Offset Fees and Installation and Meter Fees) annually using ENR CCI 20-city to account for inflation in construction costs.

3.6 RECYCLED WATER PROPOSED CAPACITY FEES

Recycled water new capacity fee consists of two components: the *recycled water treatment fee* and the *recycled water distribution fee.* Both components are designed to be equal to the respective components of the potable water capacity fee. Referring to Table 3-8, the 5/8” charge for these two components is as follows:

$$Recycled\ Treatment\ System\ Reimb. + Recycled\ Distr.System\ Equity\ Buy\ in\ = RW\ New\ Capacity\ Fee$$
$$\$2{,}189 + \$3{,}563 = \$5{,}752$$

Applying the AWWA ratios to the 5/8" meter cost of the recycled water capacity fees components from Table 3-8 yields the proposed fees found in Table 3-11 below. Please note that the fees below do not include meter and installation fees as shown in Table 3-1.

Table 3-11: Current and Proposed Recycled Water Capacity Fees

No. line	Meter size	AWWA Meter Ratio	Recycled Treatment System Reimbursement	Recycled Distribution System Buy-In	Proposed Capacity Fees	Current Fees (excl. Meter& Inst'n fee)[15]	% Change
		A	B = $2,189 x A	C = $3,563 x A	D = B + C	E	F=D/E-1
1	5/8"	1.00	$2,189	$3,563	**$5,752**	$9,221	-38%
2	3/4"	1.50	$3,284	$5,344	**$8,628**	$13,532	-38%
3	1"	2.50	$5,473	$8,907	**$14,380**	$23,046	-38%
4	1 ½"	5.00	$10,946	$17,814	**$28,760**	$46,108	-38%
5	2"	8.00	$17,514	$28,502	**$46,016**	$73,756	-38%
6	3"	17.50	$38,311	$62,348	**$100,659**	$138,262	-27%
7	4"	31.50	$68,960	$112,226	**$181,186**	$230,436	-21%

The installation and meter fees components of the Capacity Fees will be based on actual costs of meters and installation incurred by the District. RFC recommends that the District adjust all components of capacity fees (Infrastructure Fee, Water Demand Offset Fees and Installation and Meter Fees) annually using ENR CCI 20-city to account for inflation in construction costs.

3.7 FIRE SERVICE CAPACITY FEES

RFC proposes that new fire service connections and fire hydrants connections will only pay for meter and installation fees based on actual costs incurred by the District. Note that the District installs 5/8" meters as detection meters for all private fire connection sizes.

[15] For comparison purposes the meter and installation component of the fee is excluded (See Table 3-1)

4. FINANCIAL PLAN

4.1 WATER FUND FINANCIAL PLAN

Establishing a utility's revenue requirement is a key first step in the rate setting process. The review involves an analysis of annual operating revenues under the current rates, O&M expenses, capital expenditures, transfers between funds, and reserve requirements. This section of the report provides a discussion of the projected revenues, O&M and capital expenditures, capital improvement financing plan, and revenue adjustments required to ensure the fiscal sustainability of the Water Enterprise.

4.1.1 *Revenues from Current Water Rates*

The current rates were last adjusted December 15, 2015. The District's water service charges have two components. First, customers pay a bimonthly basic meter charge based on meter size. The District also charges for fire service, separating customers into two classes: Residential and Commercial. Fire service customers are also charged a bimonthly basic charge. In addition, the District serves customers outside its boundaries. These outside customers pay 50 percent higher bimonthly charges. Table 4-1 lists the current bimonthly basic meter and fire service charges for both Inside and Outside District customers.

The effective charges for FY 2016 were calculated as weighted averages of the effective charges, to account for the midyear change in the rate.

1. The period from July 1, – December 15, 2015 contains 2.7 of 6 annual billing periods.
2. The period from December 16, 2015 – June 30, 2016 contains 3.3 annual billing periods.

This rate is illustrated by the equation below, with the letters A, B, and C corresponding to the rates identified in Table 4-1 above.

Applying this equation to the calculation of the FY 2016 charge for a 5/8" meter for an Inside District customer arrives at a bimonthly rate of $49.124:

$$A \times \frac{Billing\ Periods\ for\ July\ 1\ to\ Dec.15}{Total\ Billing\ Periods\ per\ Year} + B \times \frac{Billing\ Periods\ Dec.15, June\ 30}{Total\ Billing\ Periods\ per\ Year} = C$$

$$\$48.86 \times \left(\frac{2.7}{6}\right) + \$49.34 \times \left(\frac{3.3}{6}\right) = \$49.124$$

The most recently adopted rates in December 15, 2015 will be the effective current rates for full fiscal years of 2017 to 2021 as shown in column D for Table 4-1.

Table 4-1: Current Bimonthly Basic Meter and Fire Service Charges

Meter Size	Dec 15, 2014	Dec 15, 2015	FY 2016 Effective Current Charges	FY 2017 – FY 2021 Effective Current Charges
	A	B	C	D
INSIDE DISTRICT				
5/8"	$48.86	$49.34	$49.12	$49.34
3/4"	$48.86	$49.34	$49.12	$49.34
1"	$94.34	$95.28	$94.85	$95.28
1 1/2"	$180.34	$182.14	$181.32	$182.14
2"	$271.04	$273.74	$272.50	$273.74
3"	$410.86	$414.98	$413.09	$414.98
4"	$622.10	$628.32	$625.47	$628.32
Fire Service - Residential	$22.62	$22.86	$22.75	$22.86
Fire Service - Commercial	$45.26	$45.70	$45.50	$45.70
OUTSIDE DISTRICT				
5/8"	$73.29	$74.01	$73.68	$74.01
3/4"	$73.29	$74.01	$73.68	$74.01
1"	$141.51	$142.92	$142.27	$142.92
1 1/2"	$270.51	$273.21	$271.97	$273.21
2"	$406.56	$410.61	$408.76	$410.61
3"	$616.29	$622.47	$619.64	$622.47
4"	$933.15	$942.48	$938.21	$942.48
Fire Service - Residential	$33.93	$34.29	$34.13	$34.29
Fire Service - Commercial	$67.89	$68.55	$68.25	$68.55

Customers also pay a commodity usage rate per 1,000 gallons. The District utilizes six water usage tiers, assessing a higher fee on usage falling into each greater tier. All customer classes have water usage assessed based on these six tiers as defined below. Table 4-2 shows both the rates and the tier breaks for each tier for all customer classes. The FY 2016 commodity rates were developed using the same methodology above. The most recently adopted rates in December 15, 2015 will be the effective current rates for full fiscal years of 2017 to 2021 as shown in column D for Table 4-2.

Table 4-2: Current Commodity Rates per 1,000 Gallons

Tier	Tier Breakpoints (gallons)	Dec. 2014	Dec. 2015	FY 2016 Effective Current Rates	FY 2017 – FY 2021 Effective Current Rates
Tier 1	0 to 6,000	$3.57	$3.70	$3.64	$3.70
Tier 2	6,001 to 14,000	$5.98	$6.21	$6.10	$6.21
Tier 3	14,001 to 24,000	$7.72	$8.01	$7.88	$8.01
Tier 4	24,001 to 36,000	$9.30	$9.66	$9.50	$9.66
Tier 5	36,001 to 50,000	$11.91	$12.36	$12.15	$12.36
Tier 6	above 50,000	$13.45	$13.97	$13.73	$13.97

The projected accounts for the Study period shown in Table 4-3 include new meter connections projected by District staff[16].

Table 4-3: Projected Account Totals by Meter Size

Line No.	Meter Size	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**INSIDE DISTRICT**						
2	5/8"	2,949	2,949	2,949	2,949	2,949	2,949
3	3/4"	539	580	672	706	711	711
4	1"	92	92	92	92	92	92
5	1 1/2"	24	25	26	26	26	26
6	2"	17	18	19	19	19	19
7	3"	3	3	3	3	3	3
8	4"	0	0	0	0	0	0
9	Fire Service - Residential	263	305	397	429	434	434
10	Fire Service - Commercial	143	143	143	143	143	143
11							
12	**OUTSIDE DISTRICT**						
13	5/8"	75	75	75	75	75	75
14	3/4"	36	36	36	36	36	36
15	1"	4	4	4	4	4	4
16	1 1/2"	1	1	1	1	1	1
17	2"	1	1	1	1	1	1
18	3"	0	0	0	0	0	0
19	4"	0	0	0	0	0	0
20	Fire Service - Residential	4	4	4	4	4	4
21	Fire Service - Commercial	7	7	7	7	7	7
22	**Total Accounts**	**4,158**	**4,243**	**4,429**	**4,495**	**4,505**	**4,505**

Potable water usage projections by tier are based on water consumption by tiers in 2015 and the potable water sales projections provided by Staff. The projected potable water sales are expected rebound from the drought and shown in Table 2-2 were used to project potable water usage in 1,000 gallons or kgals by each tier. The projected water sales by tier for every year of the study period shown in Table 4-4 below are based on actual usage data from FY 2015.

[16] District staff projection was based on UWMP 2015 analysis

Table 4-4: Projected Water Usage in 1,000 Gallons by Tier

Tier	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Tier 1	112,237	122,272	127,689	133,106	138,524	138,729
Tier 2	77,687	84,627	88,391	92,154	95,917	96,117
Tier 3	39,160	42,613	44,491	46,369	48,246	48,379
Tier 4	21,695	23,570	24,586	25,602	26,617	26,698
Tier 5	13,972	15,148	15,780	16,412	17,044	17,094
Tier 6	63,131	68,022	70,670	73,317	75,965	76,232
Total	**327,882**	**356,252**	**371,606**	**386,959**	**402,313**	**403,250**

Table 4-5 shows the projected revenues for the study period under the existing rates. The basic meter charge revenue is the fixed portion of the water service charge that increases with meter size. Annual revenues from the water basic meter charge are calculated by multiplying the number of meters of a meter size by their respective charge. In order to obtain the annual revenue, the result is then multiplied by six bimonthly billing periods.

Referring to the bimonthly basic meter charge and account totals in Table 4-1 and Table 4-3 respectively, in FY 2017, the projected Inside District 5/8" meters totaling 2,949 are multiplied by the currently projected basic meter charge, \$49.34 (Table 4-1, Line 2). This total is then multiplied by six billing periods. This calculation is shown below.

$$fixed\ charge\ rate\ \times number\ of\ accounts\ with\ 5/8"\ meter\ \times 6\ billing\ periods$$
$$2{,}949 \times \$49.34 \times 6 = \$873{,}199$$

This calculation is repeated for all meter sizes and fire service accounts to arrive at the total basic meter charge revenues for each projected year, as shown in Table 4-5. Repeating this calculation for all meter sizes, the total basic meter charge revenue in FY 2017 is \$1,184,684. Fire Service revenue is calculated similarly to arrive at \$77,752.

The commodity revenues shown for FY 2016 through FY 2021 are calculated by multiplying the projected tiered usage in a year (Table 4-4) by the corresponding tier rate (Table 4-2). For example, the water sales revenue from Tier 1 usage for FY 2017 can be calculated as follows:

$$Projected\ Tier\ 1\ Usage\ in\ FY\ 2017\ \times Tier\ 1\ Rate$$
$$122{,}272\ \ \times \$3.70 = \$452{,}406$$

The same calculation is repeated for all tiers to determine the total commodity revenue for each year of the Study period. For FY 2017, the projected water sales are \$2,684,450.

Adding together the basic meter charge, fire service charge, and water sales revenues for both Inside and Outside District customers yields the total revenue from current rates, found in Table 4-5 below.

The revenue from basic meter charges for FY 2016 comprises 34 percent of total rate revenue and usage is 66 percent.

Table 4-5: Projected FY 2016-2021 Revenues from Current Water Rates

Line No.		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Basic Meter Charge Revenues**							
2	Inside District		$1,141,689	$1,146,801	$1,191,645	$1,201,711	$1,203,191	$1,203,191
3	Outside District		$56,570	$37,882	$56,824	$56,824	$56,824	$56,824
4	Fire Service		$78,623	$77,752	$97,365	$101,754	$102,440	$102,440
5	**Total Basic Meter Charge Revenue**	*[2+3+4]*	**$1,276,882**	**1262435.52**	**1345834.08**	**1360288.56**	**1362454.56**	**1362454.56**
6	**Total Water Sales Revenues**		**$2,434,070**	**$2,684,450**	**$2,797,517**	**$2,910,584**	**$3,023,651**	**$3,031,855**
7	**Total Revenue**	*[5+6]*	**$3,710,952**	**$3,987,694**	**$4,143,351**	**$4,270,873**	**$4,386,106**	**$4,394,309**

4.1.2 *O&M Expenses*

4.1.3 *Water Supply Costs*

The District solely sources its potable water from groundwater in the Santa Margarita Groundwater Basin. There are no direct water purchase costs. However, further water treatment is required as water pumped from the Basin does not meet drinking water standards. The two main variable costs associated with producing drinking water for District customers are electricity for pumping and chemical costs for water treatment.

These costs are variable based on the quantity of water pumped from the wells and charged by unit cost per acre foot (AF). These charges are then incurred on the total acre feet produced annually. Table 4-6 summarizes the District's water supply costs during the Study period as well as the total water production for the study period to which the charges apply. Costs are inflated according to the corresponding inflation factors listed in Table 2-1.

Table 4-6: Unit Cost of Electricity and Chemicals for Production of 1 AF of Potable Water

		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Electricity**	$268 /AF	$281 /AF	$295 /AF	$310 /AF	$326 /AF	$342 /AF
2	**Chemicals**	$91 /AF	$96 /AF	$100 /AF	$105 /AF	$111 /AF	$116 /AF
3	**Water Production (AF)**	1,106	1,201	1,253	1,304	1,355	1,358

To calculate the total cost of the water supply, the total annual water produced is multiplied by the costs per acre foot listed in Table 4-6. This calculation is shown below in Table 4-7 for FY 2016. Similar calculations applied to FY 2017 to FY 201, Table 4-8 shows the projected annual variable cost of electricity and chemicals for the water supply through the study period.

Table 4-7: FY 2016 Variable Water Production Cost Calculation

FY 2016	Potable Water Production	Unit Cost	Projected Annual Variable Cost
	A	B	C = A×B
Electricity	1,106 AF	$268 /AF	$296,500
Chemicals	1,106 AF	$91 /AF	$100,677

Table 4-8: Projected Total Variable Water Production Costs

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Electricity	$296,500	$338,072	$370,090	$404,465	$441,352	$464,497
Chemicals	$100,677	$114,793	$125,665	$137,337	$149,862	$157,721

4.1.4 *Water Operating Expenses*

Using the District's FY 2016 budget values, inflation factors in Table 2-1 were assigned to each line item to determine future O&M costs for the Water Fund. Table 4-9 summarizes budgeted and projected O&M expenses for the Water Fund during the Study period.

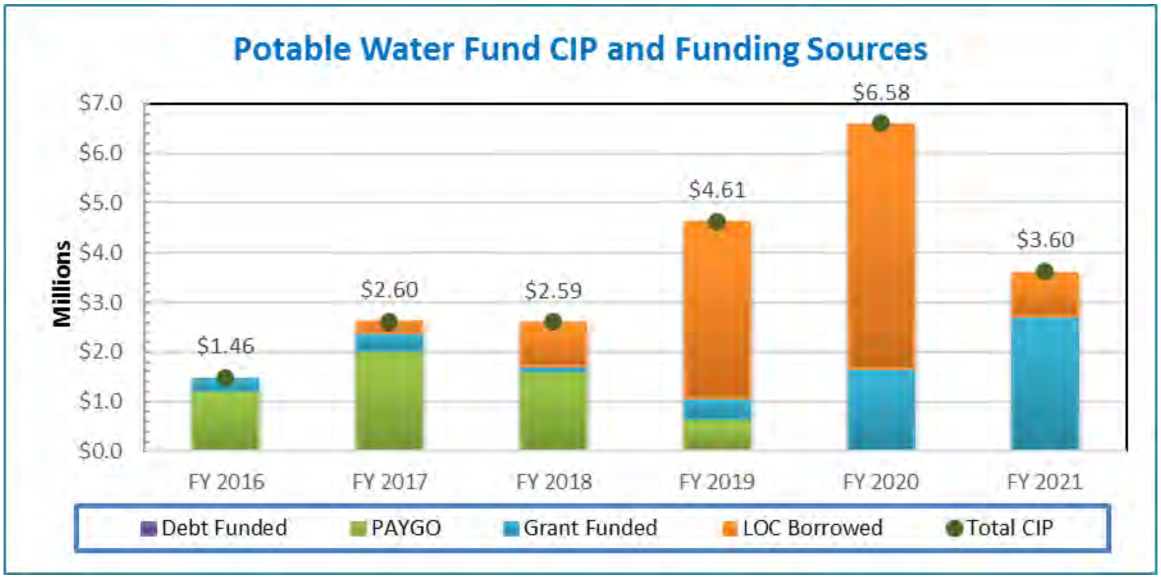
Table 4-9: Projected O&M Expenses for Potable Water Production

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Salaries and Benefits	**$2,057,680**	**$2,227,751**	**$2,373,253**	**$2,528,372**	**$2,677,587**	**$2,835,973**
of which: Conservation	$87,200	$94,100	$100,041	$106,361	$112,248	$118,472
G&A Services	**$742,310**	**$764,579**	**$787,517**	**$811,142**	**$835,476**	**$860,541**
of which: Conservation	$103,700	$106,811	$110,015	$113,316	$116,715	$120,217
Supplies	**$109,715**	**$113,006**	**$116,397**	**$119,889**	**$123,485**	**$127,190**
of which: Conservation	$78,075	$80,417	$82,830	$85,315	$87,874	$90,510
Source of Supply	**$50,000**	**$51,500**	**$53,045**	**$54,636**	**$56,275**	**$57,964**
of which: Conservation	$0	$0	$0	$0	$0	$0
Pumping	**$361,500**	**$405,025**	**$439,053**	**$475,499**	**$514,519**	**$539,859**
Electricity and Power	$296,500	$338,075	$370,095	$404,472	$441,361	$464,506
Pumps and Boosters	$65,000	$66,950	$68,959	$71,027	$73,158	$75,353
Water Treatment	**$270,677**	**$289,894**	**$306,020**	**$323,103**	**$341,202**	**$354,801**
WT Chemicals and Supplies	$100,677	$114,794	$125,667	$137,339	$149,865	$157,724
Other Water Treatment	$170,000	$175,100	$180,353	$185,764	$191,336	$197,077
Transmission & Distribution	**$303,600**	**$312,708**	**$322,089**	**$331,752**	**$341,704**	**$351,956**
Customer Accounts	**$66,400**	**$68,392**	**$70,444**	**$72,557**	**$74,734**	**$76,976**
Other	**$14,600**	**$15,038**	**$15,489**	**$15,954**	**$16,432**	**$16,925**
TOTAL POTABLE WATER O&M	**$3,976,482**	**$4,247,894**	**$4,483,306**	**$4,732,903**	**$4,981,416**	**$5,222,184**

4.1.5 *Capital Improvement Plan (CIP)*

The District has projected capital improvement costs through the end of the Study period to FY 2021 to address repair and replacement (R&R) needs (Figure 4-1). The proposed capital improvement plan will be funded through grants, rate revenue, and debt.

Figure 4-1: 5-Year Water Capital Expenditures



The District has forecasted projects that are both solely funded for and by the Water Fund and others that are also funded partially by the Recycled Water Fund and capacity and impact fees. Table 4-10 shows the share of each project to be financed by the respective fund. Table 4-11 shows the uninflated and inflated Capital Improvement Plan for the Study period. The inflated CIP escalates the value of each year's planned improvements based on the assumption that construction costs increase annually. RFC utilizes the Engineering News Record's CCI 20-City index to apply standard factors. The factors used are listed in the final line of Table 4-11 below.

Table 4-10: Distribution of CIP Across Funds

Project Name	Fund 01 Water Funding %	Fund 02 Recycled Water Funding %	Capacity Fees Funding %	Impact Fees Funding %
Emergency Intertie w/ SLVWD	100%			
Main Replacement Program	50%	50%		
Orchard Run WTP Water Quality Improvements	100%			
El Pueblo WTP Water Quality Improvements	100%			
Well 10 WTP Water Quality Improvements	100%			
MacDorsa Tank Rehabilitation	100%			
Bethany Tank Second Tank Addition	100%			
Bethany Tank Rehabilitation	100%			
Sand Hill BS Expansion/ PV Replacement	80%		20%	
El Pueblo Pumps Reconfiguration	100%			
Lompico Formation Production Well (11A Site)	50%		50%	
Well 9 Replacement (Santa Margarita/ Lompico)	50%		50%	
Hanson Quarry Groundwater Recharge	83%			17%
Recycled Water Fill Station	100%			
Transit Center Stormwater Retention System	50%		50%	
Automated Metering Infrastructure (AMI)	90%	10%		
Meter Replacement Program	100%			
Office Facility Upgrades	90%	10%		
Electronic Security Access	90%	10%		
SCADA Phase 3 Upgrade	90%	10%		
Accounting & Utility Billing Software Replacement	90%	10%		
Vehicle Replacement Program	90%	10%		
Specialized Operations Vehicles	90%	10%		

Table 4-11: Capital Improvement Plan

Project Name	Total	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Emergency Intertie w/ SLVWD	$250,000	$250,000	-	-	-	-	-
Main Replacement Program	$250,000	-	$100,000	-	-	$150,000	-
Orchard Run WTP Water Quality Improvements	$1,500,000	$50,000	$750,000	$700,000	-	-	-
El Pueblo WTP Water Quality Improvements	$100,000	-	-	$100,000	-	-	-
Well 10 WTP Water Quality Improvements	$900,000	-	-	$150,000	$450,000	$300,000	-
MacDorsa Tank Rehabilitation	$504,732	$50,000	$454,732	-	-	-	-
Bethany Tank Second Tank Addition	$400,000	-	$50,000	$100,000	$250,000	-	-
Bethany Tank Rehabilitation	$570,000	-	-	-	$70,000	$150,000	$350,000
Sand Hill BS Expansion/ PV Replacement	$100,000	$100,000	-	-	-	-	-
El Pueblo Pumps Reconfiguration	$86,145	$20,000	$66,145	-	-	-	-
Lompico Formation Production Well (11A Site)	$75,000	$75,000	-	-	-	-	-
Well 9 Replacement (Santa Margarita/ Lompico)	$761,250	-	$150,000	$611,250	-	-	-
Hanson Quarry Groundwater Recharge	$15,130,000	$130,000	$250,000	$1,000,000	$4,000,000	$6,500,000	$3,250,000
Recycled Water Fill Station	$70,000	$20,000	$10,000	$10,000	$10,000	$10,000	$10,000
Transit Center Stormwater Retention System	$1,202,049	$100,000	$1,102,049	-	-	-	-
Automated Metering Infrastructure (AMI)	$450,000	-	$150,000	$150,000	$150,000	-	-
Meter Replacement Program	$500,000	-	$100,000	$100,000	$100,000	$100,000	$100,000
Office Facility Upgrades	$650,000	$650,000	-	-	-	-	-
Electronic Security Access	$50,000	-	$25,000	$25,000	-	-	-
SCADA Phase 3 Upgrade	$75,000	$75,000	-	-	-	-	-
Accounting & Utility Billing Software Replacement	$95,000	$75,000	$20,000	-	-	-	-
Vehicle Replacement Program	$140,000	-	$70,000	$35,000	-	$35,000	-
Specialized Operations Vehicles	$185,000	$ 85,000	-	-	-	-	$100,000
Annual Total (Uninflated)		**$1,680,000**	**$3,297,926**	**$2,981,250**	**$5,030,000**	**$7,245,000**	**$3,810,000**
Annual Total (Inflated)		**$1,680,000**	**$3,363,884**	**$3,101,693**	**$5,337,876**	**$7,842,221**	**$4,206,548**
ENR CCI 20-City Inflation Factors		**100%**	**102%**	**104%**	**106%**	**108%**	**110%**

The District, in cooperation with the City of Scotts Valley, operates a recycled water program. The District distributes water produced by the City to District customers. Demand is high during summer months, when irrigation needs are greater. However, winter month irrigation needs are lower, resulting in less demand for recycled water. The District would like to utilize this water by recharging the overdrawn basin.

The groundwater recharge project is the largest planned improvement, totaling $15.1M. The groundwater recharge system and storage program will construct a facility to use additionally treated water from the recycled water plant to recharge the Santa Margarita Groundwater Basin. The District expects to fund 40 percent of the cost through grants. Remaining funding will come from rate revenues and debt. The District intends to split the funding of the groundwater recharge project between the Water Fund, covering 83 percent of the cost, and Fund Impact Fees will pay the remaining 17 percent. These percentages are based on the split between the current population (10,500) and the projected population (12,600).

In addition, the District is utilizing grants to partially fund other projects. Table 4-12 provides the grants by project and the distribution of grant monies by Fund while Table 4-13Table 4-15 provides the scheduled distribution of monies through the study period.

Table 4-12: Grants by Project and Distribution of Funds

Project Funded	Grant	Fund 01 Water	Fund 02 Recycled Water	Capacity Fees	Impact Fees
Emergency Intertie w/SLVWD	State Grant – Prop. 50	100%	0%	0%	0%
Transit Center Stormwater Retention System	State Grant – Prop 84	50%	0%	50%	0%
Hanson Quarry Groundwater Recharge	Grants for GWR Projects	83%	0%	0%	17%

Table 4-13: Distribution of Grants by Project

	Total	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Emergency Intertie w/SLVWD	**$140,000**	$140,000					
Transit Center Stormwater Retention System	**$850,000**	$100,000	$750,000				
Hanson Quarry Groundwater Recharge	**$5,950,000**	$75,000		$125,000	$500,000	$2,000,000	$3,250,000
Total	**$6,940,000**	**$315,000**	**$750,000**	**$125,000**	**$500,000**	**$2,000,000**	**$3,250,000**

The District will also apply for a line of credit (LOC) for the 2017-2020 period in order to ensure required funding on a timely basis for the groundwater recharge project. The LOC proceeds will be used by the Water Fund (Fund 01) and Fund Impact Fees to finance the gap between the project costs and the available financing.

Table 4-14: Inflated Capital Improvement Program Summary with Grants by Fund

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
CIP Potable Water	$1,462,333	$2,604,809	$2,588,472	$4,614,486	$6,584,615	$3,597,463
CIP Recycled Water	$88,500	$78,030	$21,848	$15,918	$84,971	$11,041
CIP New Development – Capacity Fees	$107,500	$638,545	$317,972	$0	$0	$0
CIP New Development – Impact Fees	$21,667	$42,500	$173,400	$707,472	$1,172,635	$598,044
Total	**$1,680,000**	**$3,363,884**	**$3,101,693**	**$5,337,876**	**$7,842,221**	**$4,206,548**
of which:						
Ground water recharge project (inflated)	$130,000	$255,000	$1,040,400	$4,244,832	$7,035,809	$3,588,263
Expected Grants & Contributions	$315,000	$750,000	$125,000	$500,000	$2,000,000	$3,250,000
Potable water Fund	$252,500	$375,000	$104,167	$416,667	$1,666,667	$2,708,333
Recycled Water Fund	$0	$0	$0	$0	$0	$0
Capacity Fees Fund	$50,000	$375,000	$0	$0	$0	$0
Impact Fees Fund	$12,500	$0	$20,833	$83,333	$333,333	$541,667

4.1.6 *Current and Proposed Debt*

The District has current debt. The first debt issue is the COP 2004, which was used to fund the recycled water treatment plant. Per District staff, this debt service will be funded by impact fees. The second loan, a Wells Fargo Bank Loan, issued in 2011, will be repaid with revenues from the Water Fund (Fund 01).

Table 4-15: Total LOC and Debt Payments

No. line	Current Debt Service	*Source*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Current Debt Service**							
2	COP 2004	*District*	$273,413	$272,358	$275,810	$273,753	$271,269	$273,286
3	2011 WFB Loan	*District*	$355,681	$353,856	$356,788	$354,394	$356,838	$443,956
4	**Total**	***[2+3]***	**$629,094**	**$626,214**	**$632,598**	**$628,146**	**$628,106**	**$717,243**
5	***Current debt Service by fund***							
6	*Fund 01*	*[3]*	$355,681	$353,856	$356,788	$354,394	$356,838	$443,956
7	*Fund 02*		$0	$0	$0	$0	$0	$0
8	*Capacity Fees*		$0	$0	$0	$0	$0	$0
9	*Impact Fees*	*[2]*	$273,413	$272,358	$275,810	$273,753	$271,269	$273,286
10	**LOC interest & principal pay't**	*Table 4-16*	**$0**	**$10,625**	**$53,975**	**$230,843**	**$524,002**	**$16,164,304**
11	**New debt service payments**	*Table 4-17*	**$0**	**$0**	**$0**	**$0**	**$0**	**$726,221**
12	**Total debt and LOC payments**	***[4+10+11]***	**$629,094**	**$636,839**	**$686,573**	**$858,989**	**$1,152,108**	**$17,607,767**

The District has assessed that it will need a line of credit to finance the groundwater recharge and storage project, which falls under the responsibility of the Water Fund and Fund Impact Fees. The District intends to borrow the funds in FY 2017. RFC's analysis assumes a 5 percent interest rate for the disbursed LOC. The principal is expected to be repaid in full by the end of FY 2021 through the issue of long-term debt. The LOC interest payments and new debt service payments will be divided between the Water Fund (Fund 01) and the Impact Fees Fund using the same shares as the projected funding of CIP, 83 and 17 percent respectively. Table 4-16 provides the details of the LOC while Table 4-17 describes the conditions of the proposed long-term debt. The proposed long-term debt is assumed to have a term of 30 years and a 5 percent interest rate.

Table 4-16: Line of Credit Principal and Interest Payments

No. line			FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**LOC Borrows (GWR project)**	*Table 4-14*	$0[17]	$255,000	$1,040,400	$4,244,832	$7,035,809	$3,588,263
2	**LOC Interest Expenses - 5%**	***Line 1*5%***	$0	$12,750	$64,770	$277,012	$628,802	$0
3								
4	**LOC Principal Payment (FY 2021)**		**$0**	**$0**	**$0**	**$0**	**$0**	**$16,164,304**
5								
6	LOC Grants& Contributions	Table 4-14	$0	$0	$0	$0	$0	$5,950,000
7	**LOC Principal Payments by Debt Refinance**							
8	Fund 01	*Line 12*83%*	$0	$0	$0	$0	$0	$8,511,920
9	Fund 02	*Line 12*0%*	$0	$0	$0	$0	$0	$0
10	Capacity Fees	*Line 12*0%*	$0	$0	$0	$0	$0	$0
11	Impact Fees	*Line 12*17%*	$0	$0	$0	$0	$0	$1,702,384
12	**Total LOC payments**	**[2]+[4]**	**$0**	**$12,750**	**$64,770**	**$277,012**	**$628,802**	**$16,164,304**

Table 4-17: Proposed New Debt in FY 2021

Line No.	FY 2021	Calculation	Whole District	Fund 01 Water Fund	Impact Fee Fund
1	New debt amount		$11,163,801	$9,303,167	$1,860,633
2	Bond Issuance Costs - 2%	*Line 1×2%*	$223,276	$186,063	$37,213
3	Debt Service Reserves - 6.5%	*Line 1×6.5%*	$726,221	$605,184	$121,037
4	**Debt proceeds to LOC repayment**	***[1-2-3]***	**$10,214,304**	**$8,511,920**	**$1,702,384**
5	**Debt service payments (5%, 30 Years)**		**$726,221**	**$605,184**	**$121,037**

4.1.7 *Status Quo Potable Water Financial Plan*

Table 4-18 displays the District's pro forma under current rates over the study period. All projections shown in the table are based upon the District's current rate structure and do not include any revenue adjustments.

[17] The District did not use LOC funding in FY 2016

Table 4-18: Status Quo Water Fund Financial Plan Pro-Forma

Line No.		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**	*Table 4-5*	**$3,710,952**	**$3,987,694**	**$4,143,351**	**$4,270,873**	**$4,386,106**	**$4,394,309**
2	Service/Standby-Basic Service		$1,198,259	$1,218,498	$1,248,469	$1,258,534	$1,260,014	$1,260,014
3	Service/FP-Fire Meter Service		$78,623	$84,746	$97,365	$101,754	$102,440	$102,440
4	Water Sales		$2,434,070	$2,684,450	$2,797,517	$2,910,584	$3,023,651	$3,031,855
5	**Revenue Adjustments**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
6	**Other Operating Revenue**		**$76,749**	**$69,790**	**$69,790**	**$69,790**	**$69,790**	**$69,790**
7	**Non-Operating Revenue**		**$972,580**	**$1,110,400**	**$845,719**	**$1,167,547**	**$2,434,151**	**$3,487,053**
8	Property Taxes		$703,680	$717,754	$732,109	$746,751	$761,686	$776,920
9	Interest		$14,600	$15,847	$7,644	$2,329	$3,998	$0
10	Misc. Non-Operating Revenue		$1,800	$1,800	$1,800	$1,800	$1,800	$1,800
11	Reimbursement / Grants		$252,500	$375,000	$104,167	$416,667	$1,666,667	$2,708,333
12	**TOTAL FUND 01 REVENUE**	*[1+5+6+7]*	**$4,760,281**	**$5,167,885**	**$5,058,860**	**$5,508,209**	**$6,890,046**	**$7,951,152**
13	**TOTAL FUND 01 O&M EXPENSES**	*Table 4-7*	**$3,976,482**	**$4,247,894**	**$4,483,306**	**$4,732,903**	**$4,981,416**	**$5,222,184**
14	**NET REVENUE**	*[12-13]*	**$783,799**	**$919,991**	**$575,554**	**$775,306**	**$1,908,630**	**$2,728,968**
15	**Debt Issue**	*Table 4-17*	**$0**	**$0**	**$0**	**$0**	**$0**	**$9,303,167**
16	Issuance Costs	*Table 4-17*	$0	$0	$0	$0	$0	$186,063
17	Debt Service Reserves	*Table 4-17*	$0	$0	$0	$0	$0	$605,184
18	Debt Proceeds for CIP		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
19	Debt Proceeds for LOC Refinance	*Table 4-17*	$0	$0	$0	$0	$0	$8,511,920
20	LOC proceeds to Fund 01		$0	$212,500	$867,000	$3,537,360	$5,863,174	$2,990,219
21	**Debt Service**		**$355,681**	**$364,481**	**$410,763**	**$585,237**	**$880,839**	**$14,519,394**
22	Current Debt	*Table 4-15*	$355,681	$353,856	$356,788	$354,394	$356,838	$443,956
23	New Debt		$0	$0	$0	$0	$0	$605,184
24	LOC Interest Payments	*Table 4-16*	$0	$10,625	$53,975	$230,843	$524,002	$0
25	LOC Balloon Principal Payments		$0	$0	$0	$0	$0	$13,470,253
26	**Water CIP**	*Table 4-14*	**$1,462,333**	**$2,604,809**	**$2,588,472**	**$4,614,486**	**$6,584,615**	**$3,597,463**
27	Debt Funded		$0	$0	$0	$0	$0	$0
28	Grant Funded	*Table 4-14*	$252,500	$375,000	$104,167	$416,667	$1,666,667	$2,708,333
29	LOC Borrowed		$0	$212,500	$867,000	$3,537,360	$4,917,949	$889,130
30	PAYGO		$1,209,833	$2,017,309	$1,617,305	$660,459	$0	$0
31	**FUND 01 NET CASH CHANGES**	*[14+15-21-26]*	**-$1,034,216**	**-$1,836,800**	**-$1,556,680**	**-$887,057**	**$306,350**	**-$3,885,751**
32	**FUND 01 BEGINNING BALANCES**		**$5,129,875**	**$4,095,660**	**$2,258,860**	**$702,180**	**-$184,877**	**$121,473**
33	**FUND 01 ENDING BALANCES**	*[31+32]*	**$4,095,660**	**$2,258,860**	**$702,180**	**-$184,877**	**$121,473**	**-$3,764,277**
34	**FUND 01 TARGET BALANCES**		**$2,854,665**	**$3,001,754**	**$3,150,270**	**$3,430,941**	**$3,832,892**	**$4,085,066**

Under the “status-quo” scenario, which does not include revenue adjustments, revenues generated from rates and other miscellaneous revenues are inadequate to sufficiently recover the expenses of the Water Fund. The net cash changes are negative every year in the Study period with the exception of FY 2020, which results in a small positive net balance, but is followed by nearly a nearly $3.7M negative balance. In addition, Fund 01 (Water Fund) is unable to meet its target balances after FY 2016.

4.1.8 *Recommendations and Proposed Revenue Adjustments*

To ensure that the Water Fund will have adequate revenues to pay for operating expenses and the rate revenue portion of capital expenditures, RFC recommends the following water revenue adjustments listed in Table 4-19. The revenue adjustments are scheduled to be implemented in December of each year, beginning in December 2017.

Table 4-19: Proposed Revenue Adjustments

Effective Date	Proposed Water Revenue Adjustments
December 2017	25%
December 2018	15%
December 2019	10%
December 2020	10%
December 2021	10%

4.1.9 *Proposed Financial Plan*

A pro forma of the proposed financial plan is shown in Table 4-20 below. The proposed financial plan successfully meets the District’s financial needs, while minimizing rate impacts to its customers. While net cash changes (line 31 of Table 4-20) remain negative through FY 2018, they begin a positive trajectory, resulting in a positive net cash balance of $1.36M in FY 2019. FY 2021 has a small negative cash balance of -$147K in FY 2021 due to the new debt issue and LOC principal payments. However, this negative balance is addressed by applying reserves, which are healthy at $7.4M beginning balance, more than $3M above the target balance for that year.

Table 4-20: Proposed Water Financial Plan

Line No.		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**	*Table 4-5*	**$3,710,952**	**$3,987,694**	**$4,143,351**	**$4,270,873**	**$4,386,106**	**$4,394,309**
2	Service/Standby-Basic Service		$1,198,259	$1,218,498	$1,248,469	$1,258,534	$1,260,014	$1,260,014
3	Service/FP-Fire Meter Service		$78,623	$84,746	$97,365	$101,754	$102,440	$102,440
4	Water Sales		$2,434,070	$2,684,450	$2,797,517	$2,910,584	$3,023,651	$3,031,855
5	**Revenue Adjustments**		**$0**	**$581,539**	**$1,489,017**	**$2,226,637**	**$2,953,996**	**$3,694,905**
6	**Other Operating Revenue**		**$76,749**	**$69,790**	**$69,790**	**$69,790**	**$69,790**	**$69,790**
7	**Non-Oper Revenue**		**$972,580**	**$1,111,737**	**$851,839**	**$1,182,330**	**$2,461,169**	**$3,527,614**
8	Property Taxes		$703,680	$717,754	$732,109	$746,751	$761,686	$776,920
9	Interest		$14,600	$17,301	$14,281	$18,289	$32,989	$43,422
10	Misc. Non-Operating Revenue		$1,800	$1,800	$1,800	$1,800	$1,800	$1,800
11	Reimbursement / Grants		$252,500	$375,000	$104,167	$416,667	$1,666,667	$2,708,333
12	**TOTAL FUND 01 REVENUE**	*[1+5+6+7]*	**$4,760,281**	**$5,750,877**	**$6,554,515**	**$7,750,806**	**$9,873,034**	**$11,689,479**
13	**TOTAL FUND 01 O&M EXPENSES**	*Table 4-7*	**$3,976,482**	**$4,247,894**	**$4,483,306**	**$4,732,903**	**$4,981,416**	**$5,222,184**
14	**NET REVENUE**	*[12-13]*	**$783,799**	**$1,502,983**	**$2,071,209**	**$3,017,903**	**$4,891,618**	**$6,467,295**
15	**Debt Issue**	*Table 4-17*	**$0**	**$0**	**$0**	**$0**	**$0**	**$9,303,167**
16	Issuance Costs	*Table 4-17*	$0	$0	$0	$0	$0	$186,063
17	Debt Service Reserves	*Table 4-17*	$0	$0	$0	$0	$0	$605,184
18	Debt Proceeds for CIP		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
19	Debt Proceeds for LOC Refinance	*Table 4-17*	$0	$0	$0	$0	$0	$8,511,920
20	LOC proceeds to Fund 01		$0	$212,500	$867,000	$3,537,360	$5,863,174	$2,990,219
21	**Debt Service**		**$355,681**	**$364,481**	**$410,763**	**$585,237**	**$880,839**	**$14,519,394**
22	Current Debt	*Table 4-15*	$355,681	$353,856	$356,788	$354,394	$356,838	$443,956
23	New Debt		$0	$0	$0	$0	$0	$605,184
24	LOC Interest Payments	*Table 4-16*	$0	$10,625	$53,975	$230,843	$524,002	$0
25	LOC Balloon Principal Payments		$0	$0	$0	$0	$0	$13,470,253
26	**Water CIP**	*Table 4-14*	**$1,462,333**	**$2,604,809**	**$2,588,472**	**$4,614,486**	**$6,584,615**	**$3,597,463**
27	Debt Funded		$0	$0	$0	$0	$0	$0
28	Grant Funded	*Table 4-14*	$252,500	$375,000	$104,167	$416,667	$1,666,667	$2,708,333
29	LOC Borrowed		$0	$212,500	$867,000	$3,537,360	$4,917,949	$889,130
30	PAYGO		$1,209,833	$2,017,309	$1,617,305	$660,459	$0	$0
31	**FUND 01 NET CASH CHANGES**	*[14+15-21-26]*	**-$1,034,216**	**-$1,253,807**	**-$61,026**	**$1,355,540**	**$3,289,338**	**-$147,424**
32	**FUND 01 BEGINNING BALANCES**		**$5,129,875**	**$4,095,660**	**$2,841,853**	**$2,780,827**	**$4,136,367**	**$7,425,705**
33	**FUND 01 ENDING BALANCES**	*[31+32]*	**$4,095,660**	**$2,841,853**	**$2,780,827**	**$4,136,367**	**$7,425,705**	**$7,278,281**
34	**FUND 01 TARGET BALANCES**		**$2,854,665**	**$3,001,754**	**$3,150,270**	**$3,430,941**	**$3,832,892**	**$4,085,066**

Figure 4-2 illustrates the proposed revenue adjustments by the blue bars, with the debt coverage ratios represented by lines. The red line represents the required debt coverage, while the green line shows the Whole District's actual debt coverage[18]. With the water and recycled water adjustments, the actual ratios far exceed the minimum targets for debt coverage.

Figure 4-2: Potable Water Fund Debt Coverage Ratio[19] with Proposed Revenue Adjustments

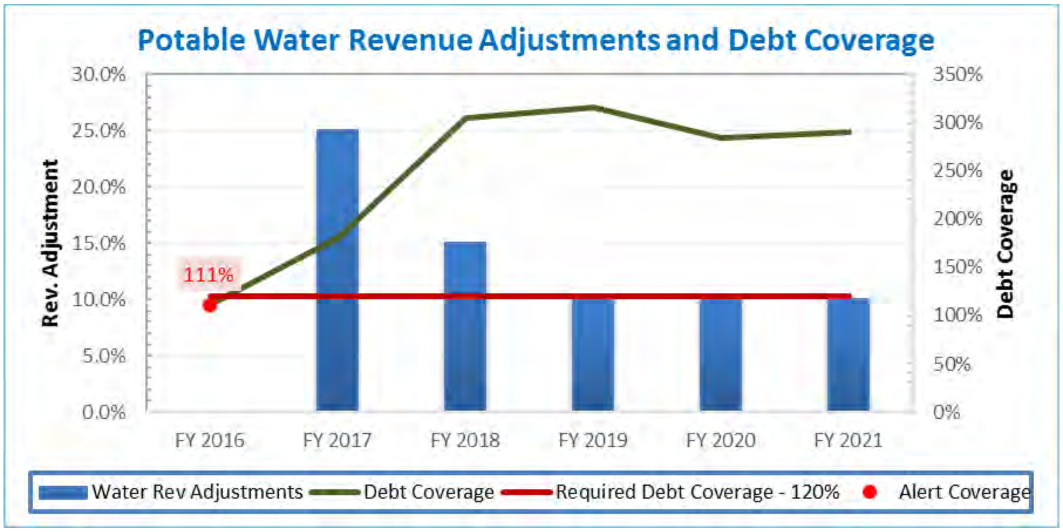


Figure 4-3 illustrates the Water Fund operating position, where the expenses, reserve funding, and debt payments are shown by stacked bars and total revenues at current rates and proposed rates are shown by red and black lines, respectively. The Figure shows positive increases in reserve funding until FY 2021 due to the LOC principle and the issuance of the long-term debt.

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[18] See Section 4.3 for District's debt coverage calculations

[19] Debt Coverage ratio is for the Whole District.

Figure 4-3: Proposed Potable Water Fund Operating Financial Plan

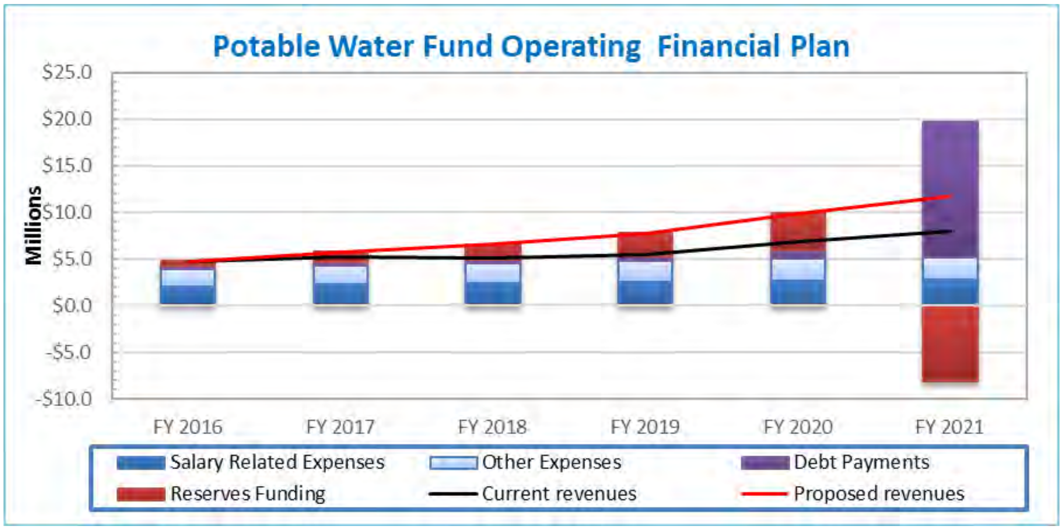
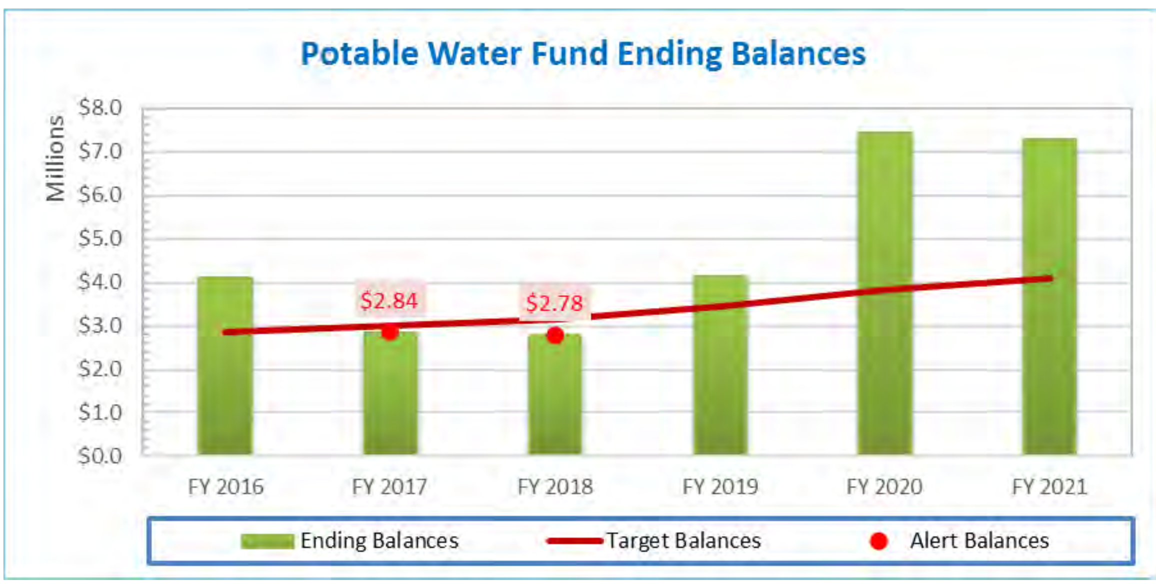


Figure 4-4 shows the annual Water Fund ending fund balance, where the red line indicates the target reserve balance as recommended by the reserve targets discussed in Section 2.3. With the proposed revenue adjustments, the ending fund balance meets the target reserves for all years after FY 2018. The reserves' total ending balance slightly declines in FY 2021 due to coverage of the LOC principle and long-term debt issuance. Additionally, the Water Fund is able to exceed the annual debt coverage of 100 percent of total annual debt service.

Figure 4-4: Potable Water Fund Ending Balances with Proposed Revenue Adjustments



4.2 RECYCLED WATER FINANCIAL PLAN

Much like the Water Fund, a review of the Recycled Water Fund's revenue requirements is the first step in the rate study process. This section of the report provides a discussion of the projected revenues, O&M expenses, other reserve funding and revenue adjustments estimated as required to ensure the fiscal sustainability and solvency of the Recycled Water Fund.

4.2.1 *Revenue from Current Recycled Water Rates*

Recycled Water customers consist solely of Landscape customers. They do not currently pay a basic meter charge. The projected RW accounts shown in Table 4-21 are provided by the District staff for the Study period.

Table 4-21: Projected Recycled Water Accounts

Meter Size	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
5/8"	17	17	17	17	17
3/4"	8	8	8	8	8
1"	13	14	15	17	17
1 1/2"	1	1	1	1	1
2"	12	12	13	13	15
3"	3	3	3	3	3
4"	0	0	0	0	0
Total	**54**	**55**	**57**	**59**	**61**

Recycled Water customers pay only a commodity rate per kGals, charged monthly. As with the potable water rates, Recycled Water commodity rates are structured with six tiers. The FY 2016 rate was developed based on the weighted average of the prior two years' rates as done with the potable water rates. See Section 4.1.1 for details of the methodology. The most recently adopted rates in December 15, 2015 will be the effective current rates for full fiscal years of 2017 to 2021 as shown in column D for Table 4-22.

Table 4-22: Current Recycled Water Rates per kGals

Current Tiers	Current Tier Widths	Dec. 2014	Dec. 2015	FY 2016 Effective Current Rates	FY 2017 – FY 2021 Effective Current Rates
Tier 1	0 to 3,000	$2.86	$2.96	$2.91	$2.96
Tier 2	3,001 to 7,000	$4.78	$4.97	$4.88	$4.97
Tier 3	7,001 to 12,000	$6.18	$6.41	$6.30	$6.41
Tier 4	12,001 to 18,000	$7.44	$7.73	$7.60	$7.73
Tier 5	18,001 to 25,000	$9.53	$9.89	$9.73	$9.89
Tier 6	above 25,000	$10.76	$11.18	$10.99	$11.18

Table 4-23 shows the usage projected across the study period, along with the percent annual increase.

Table 4-23: Projected Recycled Water Sales by Tiers (KGals)

Current Tiers	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Increase	11%	10%	9%	8%	7%	7%
Tier 1	1,052	1,160	1,279	1,398	1,517	1,636
Tier 2	1,166	1,286	1,420	1,553	1,687	1,820
Tier 3	1,316	1,451	1,601	1,751	1,901	2,051
Tier 4	1,404	1,549	1,709	1,870	2,030	2,190
Tier 5	1,406	1,551	1,714	1,876	2,038	2,200
Tier 6	30,166	33,444	37,372	41,301	45,229	49,157
Total	**36,510**	**40,442**	**45,095**	**49,749**	**54,402**	**59,055**

Table 4-24 shows the projected revenues for the study period under the current recycled water rates. Similar to potable water commodity revenue calculations, to calculate the current annual revenue, the usage by tier is multiplied by the tier rate and summed for a total annual usage.

Table 4-24: Projected FY 2016-2021 Recycled Water Commodity Revenue

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Recycled Water Revenue	$372,853	$420,351	$469,090	$517,828	$566,567	$615,305

4.2.2 *O&M Expenses*

The Recycled Water Fund's supply costs consist solely of pumping. This cost is based on the budgeted expenses for FY 2016, increased annually by the electricity cost escalation factor in Table 2-1 and the projected increase in recycled water production in Table 4-23. The projections for other O&M expenses are calculated by increases the FY 2016 expenses provided in the budget by the escalation factors in Table 2-1.

Table 4-25: Projected FY 2016-2021 Recycled Water Fund O&M Expenses

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Salaries and Benefits	$220,320	$237,072	$252,579	$269,112	$285,038	$301,945
G&A Services	$57,330	$59,050	$60,821	$62,646	$64,525	$66,461
Supplies	$4,610	$4,748	$4,891	$5,037	$5,189	$5,344
Source of Supply	$0	$0	$0	$0	$0	$0
Pumping	$5,000	$5,701	$6,241	$6,821	$7,443	$7,833
Water Treatment	$0	$0	$0	$0	$0	$0
Transmission & Distribution	$147,000	$151,410	$155,952	$160,631	$165,450	$170,413
Customer Accounts	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0
Total Recycled Water O&M	**$434,260**	**$457,982**	**$480,485**	**$504,247**	**$527,644**	**$551,997**

4.2.3 *Capital Improvement Plan*

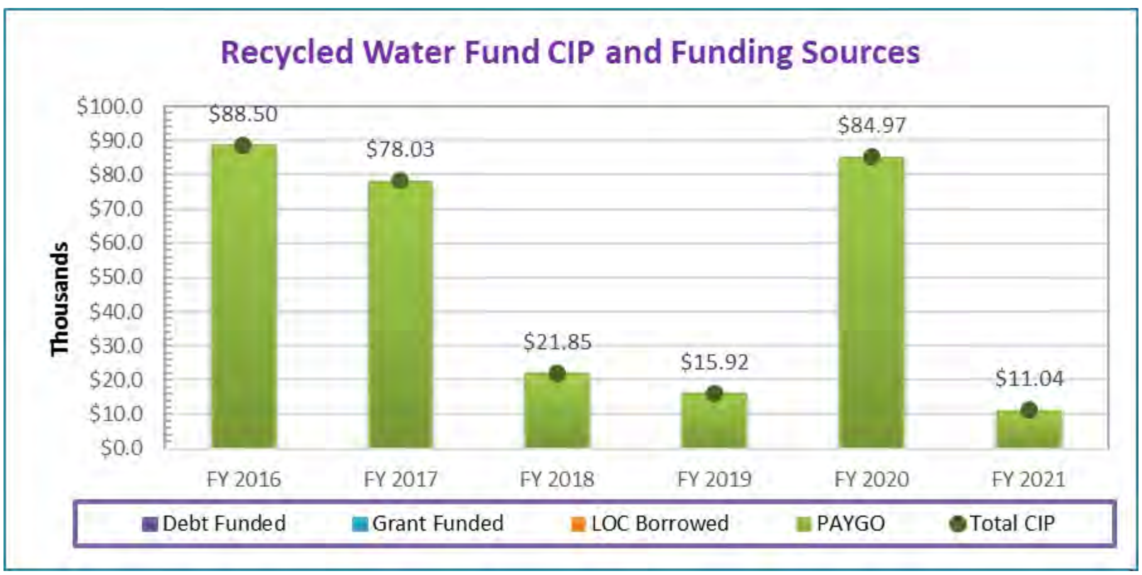
As discussed earlier in Section 4.1.3, the Recycled Water Fund shares the responsibility of a number of improvement projects with the Water Fund. Below extracts the CIP items related to the Recycled Water Fund in Table 4-11 and the Fund's percent share of funding from Table 4-10.

Table 4-26: Recycled Water Fund CIP

Project Name	Fund 01 Water Funding %	Fund 02 Recycled Water Funding %
Main Replacement Program	50%	50%
Automated Metering Infrastructure (AMI)	90%	10%
Office Facility Upgrades	90%	10%
Electronic Security Access	90%	10%
SCADA Phase 3 Upgrade	90%	10%
Accounting & Utility Billing Software Replacement	90%	10%
Vehicle Replacement Program	90%	10%
Specialized Operations Vehicles	90%	10%

As shown in Figure 4-5, the Recycled Water Fund's CIP share is entirely funded through rates or PAYGO.

Figure 4-5: Recycled Water Fund CIP and Funding Sources



4.2.4 *Current and Proposed Debt*

The COP 2004 debt funds were used to develop the recycled water treatment plant. Per District staff, the debt service will be funded by impact fees. The District does not propose any additional debt for the RW fund.

4.2.5 *Status Quo Recycled Water Financial Plan*

Table 4-27 displays the pro forma under current rates over the Study period. All projections shown in the table are based upon the District's current rate structure and do not include rate adjustments. The pro forma incorporates revenues from current rates (Table 4-24), O&M expenses (Table 4-25), and capital expenditures (Table 4-11 and Table 4-26). Under the "status quo" scenario, the Recycled Water Fund maintains a negative ending fund balance that becomes increasingly negative through FY 2020 at -$225,677, only beginning to increase in FY 2021 with an ending fund balance of -$173,409.

Table 4-27: Recycled Water Status Quo Financial Plan Pro-Forma

		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**	*Table 4-23*	**$372,853**	**$420,351**	**$469,090**	**$517,828**	**$566,567**	**$615,305**
2	**Revenue Adjustments**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
3	**Other Operating Revenue**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
4	**Other Non-Operating Revenue**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
5	Interest		$0	$0	$0	$0	$0	$0
6	Reimbursement / Grants		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
7	**TOTAL FUND 02 REVENUE**	*[1+2+3+4]*	**$372,853**	**$420,351**	**$469,090**	**$517,828**	**$566,567**	**$615,305**
8	**TOTAL FUND 02 O&M EXPENSES**	*Table 4-25*	**$434,260**	**$457,982**	**$480,485**	**$504,247**	**$527,644**	**$551,997**
9	**NET REVENUE**	*[7-8]*	**-$61,407**	**-$37,631**	**-$11,395**	**$13,581**	**$38,922**	**$63,309**
10	**Debt Issue**		$0	$0	$0	$0	$0	$0
11	**Debt Service**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
12	**FUND 02 CIP**	*Table 4-26*	**$88,500**	**$78,030**	**$21,848**	**$15,918**	**$84,971**	**$11,041**
13	PAYGO		$88,500	$78,030	$21,848	$15,918	$84,971	$11,041
14	**FUND 02 NET CASH CHANGES**	*[9+11-10-12]*	**-$149,907**	**-$115,661**	**-$33,243**	**-$2,337**	**-$46,049**	**$52,268**
15	**FUND 02 BEGINNING BALANCES**	*Table 2-3*	**$121,520**	**-$28,387**	**-$144,047**	**-$177,291**	**-$179,628**	**-$225,677**
16	**FUND 02 ENDING BALANCES**	*[15+14]*	**-$28,387**	**-$144,047**	**-$177,291**	**-$179,628**	**-$225,677**	**-$173,409**
17	**FUND 02 TARGET BALANCES**	*Table 2-4*	**$508,525**	**$530,463**	**$552,474**	**$574,934**	**$597,437**	**$620,317**

4.2.6 *Recommendations and Proposed Financial Plan*

As the Recycled Water Fund experiences a shortfall in funding during the study period under current rates, RFC recommends the following annual rate increases for the duration of the study period after FY 2016 in order to improve the health of the Fund.

Table 4-28: Proposed RW Revenue Adjustments

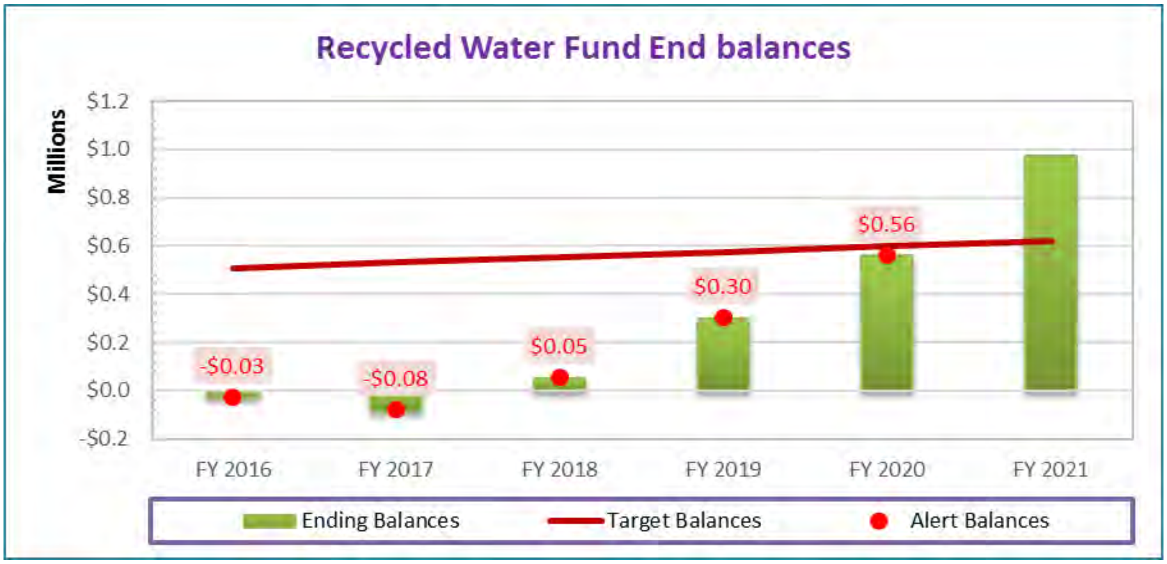
Effective Date	Proposed RW Revenue Adjustments
December 2017	25%
December 2018	15%
December 2019	5%
December 2020	3%
December 2021	3%

The revenue adjustments in Table 4-28 result in the District achieving a positive net cash balance as well as a positive ending balance beginning with FY 2018. The Fund begins to meet its target balance in FY 2021, also shown in Figure 4-6.

Table 4-29: Proposed Recycled Water Financial Plan

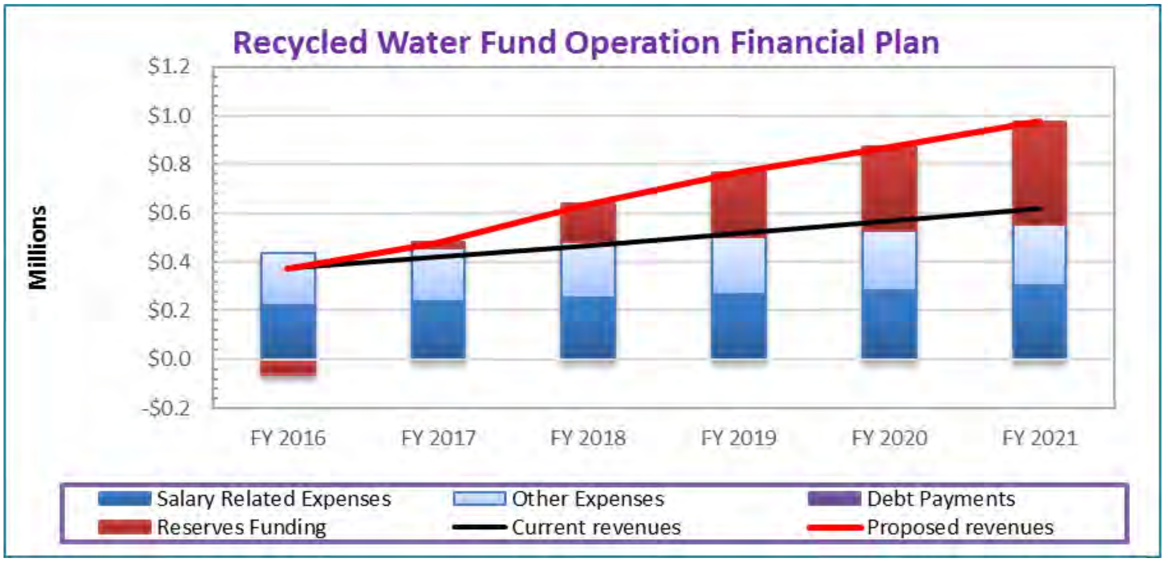
Line No.		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**		$372,853	$420,351	$469,090	$517,828	$566,567	$615,305
2	**Revenue Adjustments**		$0	$61,301	$168,579	$248,261	$303,560	$358,023
3	**Other Operating Revenue**		$0	$0	$0	$0	$0	$0
4	**Other Non-Operating Revenue**		$0	$0	$0	$878	$2,141	$3,821
5	Interest		$0	$0	$0	$878	$2,141	$3,821
6	Reimbursement / Grants		$0	$0	$0	$0	$0	$0
7	**TOTAL FUND 02 REVENUE**		**$372,853**	**$481,652**	**$637,669**	**$766,967**	**$872,268**	**$977,149**
8	**TOTAL FUND 02 O&M EXPENSES**		**$434,260**	**$457,982**	**$480,485**	**$504,247**	**$527,644**	**$551,997**
9	**NET REVENUE**		**$61,407**	**$23,671**	**$157,184**	**$262,719**	**$344,623**	**$425,153**
10	**Debt Issue**		$0	$0	$0	$0	$0	$0
11	**Debt Service**		$0	$0	$0	$0	$0	$0
12	**FUND 02 CIP**		$88,500	$78,030	$21,848	$15,918	$84,971	$11,041
13	PAYGO		$88,500	$78,030	$21,848	$15,918	$84,971	$11,041
14	**FUND 02 NET CASH CHANGES**		**-$149,907**	**-$54,359**	**$135,336**	**$246,801**	**$259,652**	**$414,112**
15	**FUND 02 BEGINNING BALANCES**		**$121,520**	**-$28,387**	**-$82,746**	**$52,589**	**$299,391**	**$559,043**
16	**FUND 02 ENDING BALANCES**		**-$28,387**	**-$82,746**	**$52,589**	**$299,391**	**$559,043**	**$973,155**
17	**FUND 02 TARGET BALANCES**		**$508,525**	**$530,463**	**$552,474**	**$574,934**	**$597,437**	**$620,317**

Figure 4-6: Recycled Water Fund End Balances



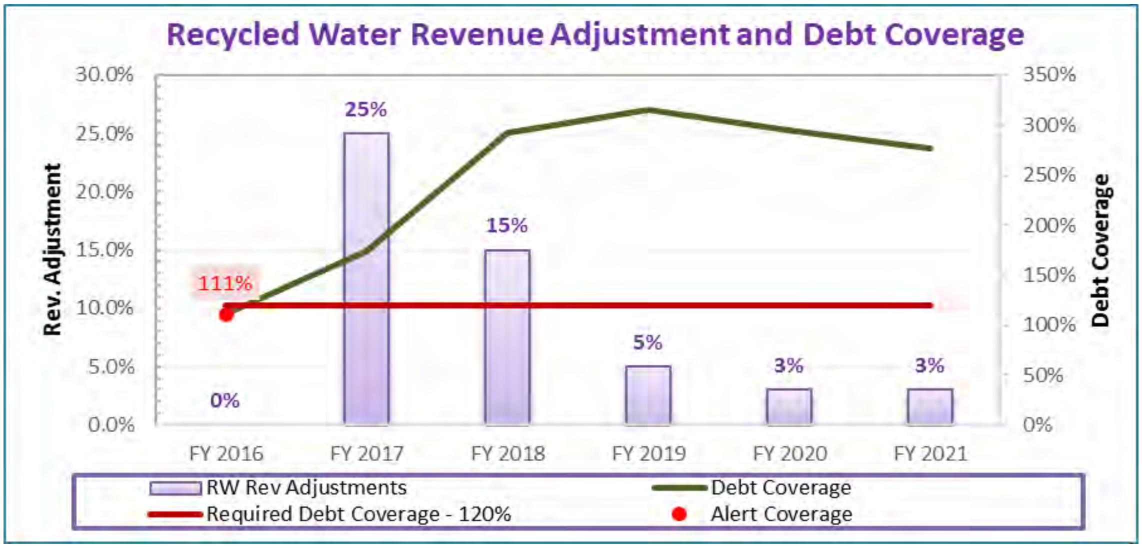
The proposed revenue adjustments allow the Recycled Water Fund to fund its share of the necessary capital expenditures planned for the study period. As shown in Figure 4-7, the proposed revenue, shown by the red line meets all operating obligations, shown by stacked bars. It also contributes to reserves each year of the study period for future capital replacement projects and to meet reserve requirements.

Figure 4-7: Recycled Water Fund Operation Financial Plan



The water and recycled revenue adjustments ensure the debt coverage ratio for the whole district is well above the required 120 percent.

Figure 4-8: Recycled Water Fund Debt Coverage Ratio[20] with Proposed Revenue Adjustments



[20] Debt coverage ratio is for the Whole District

4.3 DISTRICT FINANCIAL PLAN

4.3.1 *Status Quo District Financial Plan (No Revenue Adjustments)*

Table 4-30 shows the financial plan of the entire District without the revenue changes suggested in Section 4.1.6 for the Water Fund and Section 4.2.6 for Recycled Water. The whole district financial plan includes water (Fund 01) and recycled water (Fund 02) funds as well as Capacity Fee and Impact Fee Funds. As with the two main funds, the District sees sharp declines in the ending balance throughout the Study period. By FY 2021, the balance reduces down to -$6.0M, leaving the District in a challenging financial situation. Debt coverage ratio is calculated using Net Revenues divided by Total Debt Service excluding LOC principal payments.

Table 4-30: Whole District Status Quo Financial Plan

		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**	**[1]+[2]+[3]**	**$4,083,805**	**$4,408,046**	**$4,612,441**	**$4,788,701**	**$4,952,672**	**$5,009,615**
2	Service/Standby-Basic Service		$1,198,259	$1,218,498	$1,248,469	$1,258,534	$1,260,014	$1,260,014
3	Service/FP-Fire Meter Service		$78,623	$84,746	$97,365	$101,754	$102,440	$102,440
4	Water Sales		$2,806,923	$3,104,801	$3,266,607	$3,428,412	$3,590,218	$3,647,160
5	**Revenue Adjustments**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
6	**Other Operating Revenue**		**$76,749**	**$69,790**	**$69,790**	**$69,790**	**$69,790**	**$69,790**
7	**New Development Rev**		**$108,834**	**$0**	**$0**	**$0**	**$0**	**$0**
8	Service/Other-Meter Capacity		$95,526	$0	$0	$0	$0	$0
9	Sale of Fire Hydrants		$13,308	$0	$0	$0	$0	$0
10	**Impact Fee Revenue**		**$118,495**	**$0**	**$0**	**$0**	**$0**	**$0**
11	**Non-Oper Revenue**		**$1,036,014**	**$1,485,937**	**$866,553**	**$1,250,880**	**$2,767,484**	**$4,028,720**
12	Property Taxes		$703,680	$717,754	$732,109	$746,751	$761,686	$776,920
13	Interest		$15,534	$16,383	$7,644	$2,329	$3,998	$0
14	Misc. Non-Operating Revenue		$1,800	$1,800	$1,800	$1,800	$1,800	$1,800
15	Reimbursement / Grants		$315,000	$750,000	$125,000	$500,000	$2,000,000	$3,250,000
16	**TOTAL REVENUE**	*[1+5+6+7+10+11]*	**$5,423,897**	**$5,963,772**	**$5,548,783**	**$6,109,371**	**$7,789,946**	**$9,108,124**
17	**TOTAL O&M EXPENSES**	***Table 4-9 + Table 4-25***	**$4,410,742**	**$4,705,876**	**$4,963,791**	**$5,237,151**	**$5,509,060**	**$5,774,181**
18	**NET REVENUE**	*[16-17]*	**$1,013,155**	**$1,257,897**	**$584,993**	**$872,220**	**$2,280,886**	**$3,333,943**
19	**Debt Issue**		**$0**	**$0**	**$0**	**$0**	**$0**	**$11,163,801**
20	Issuance Costs	Table 4-17	$0	$0	$0	$0	$0	$223,276
21	Debt Service Reserves		$0	$0	$0	$0	$0	$726,221
22	Debt Proceeds for CIP		$0	$0	$0	$0	$0	$0
23	Debt Proceeds for LOC Refinance		$0	$0	$0	$0	$0	$10,214,304
24	LOC proceeds to Whole District		$0	$255,000	$1,040,400	$4,244,832	$7,035,809	$3,588,263
25	**Debt Service**	*Table 4-15*	**$629,094**	**$638,964**	**$697,368**	**$905,158**	**$1,256,908**	**$17,607,767**
26	**CIP Outflow**	*Table 4-14*	**$1,680,000**	**$3,363,884**	**$3,101,693**	**$5,337,876**	**$7,842,221**	**$4,206,548**
27	Debt Funded		$0	$0	$0	$0	$0	$0
28	Grant Funded	*Table 4-14*	$315,000	$750,000	$125,000	$500,000	$2,000,000	$3,250,000
29	LOC Borrowed		$0	$255,000	$1,019,567	$4,161,499	$5,757,250	$945,507
30	PAYGO	*[26-27-28-29]*	$1,365,000	$2,358,884	$1,957,126	$676,378	$84,971	$11,041
31	**NET CASH CHANGES**	*[18+19-25-26]*	**-$1,295,939**	**-$2,489,951**	**-$2,173,667**	**-$1,125,982**	**$217,566**	**-$4,677,806**
32	**BEGINNING BALANCE**		**$5,469,565**	**$4,173,626**	**$1,683,675**	**-$489,993**	**-$1,615,975**	**-$1,398,409**
33	**WHOLE DISTRICT (UNRESTRICTED) ENDING BALANCE**	*[32+31]*	**$4,173,626**	**$1,683,675**	**-$489,993**	**-$1,615,975**	**-$1,398,409**	**-$6,076,215**
34	**TARGET RESERVES**		**$3,636,602**	**$3,806,700**	**$3,989,350**	**$4,325,796**	**$4,806,398**	**$5,099,705**
35	**Debt Coverage Ratio**[21]		111.0%	79.5%	66.0%	41.1%	22.3%	5.8%

This is further illustrated in Figure 4-9, which shows the District needing to utilize reserve funds in order to cover expenses beginning in FY 2018, and a significant reliance on reserves in FY 2021 to attempt to address the significant shortfall in revenues' coverage of the year's expenses.

[21] Debt Coverage ratio is the ratio between Net Revenue (excluding Grants) and Debt Service (excl. LOC principal payment)

Figure 4-9: Operating Plan under Status Quo Scenario

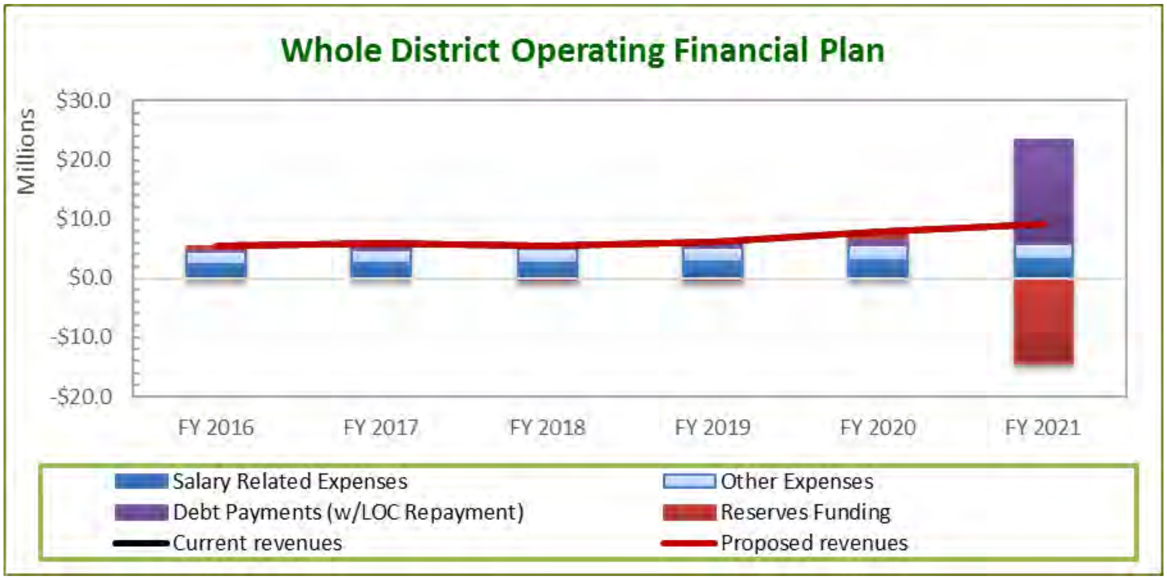
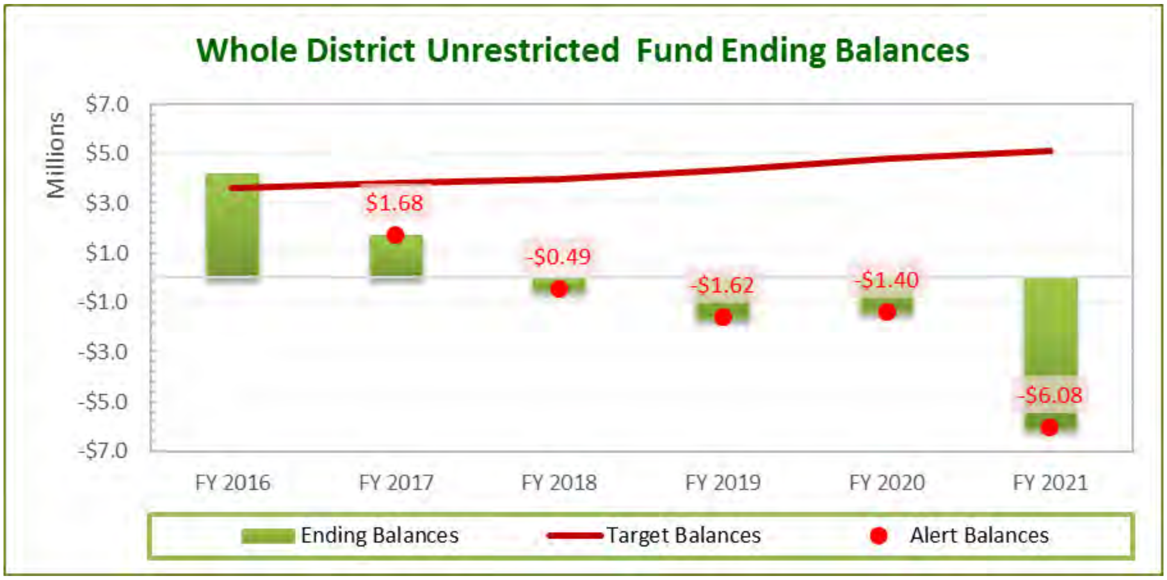


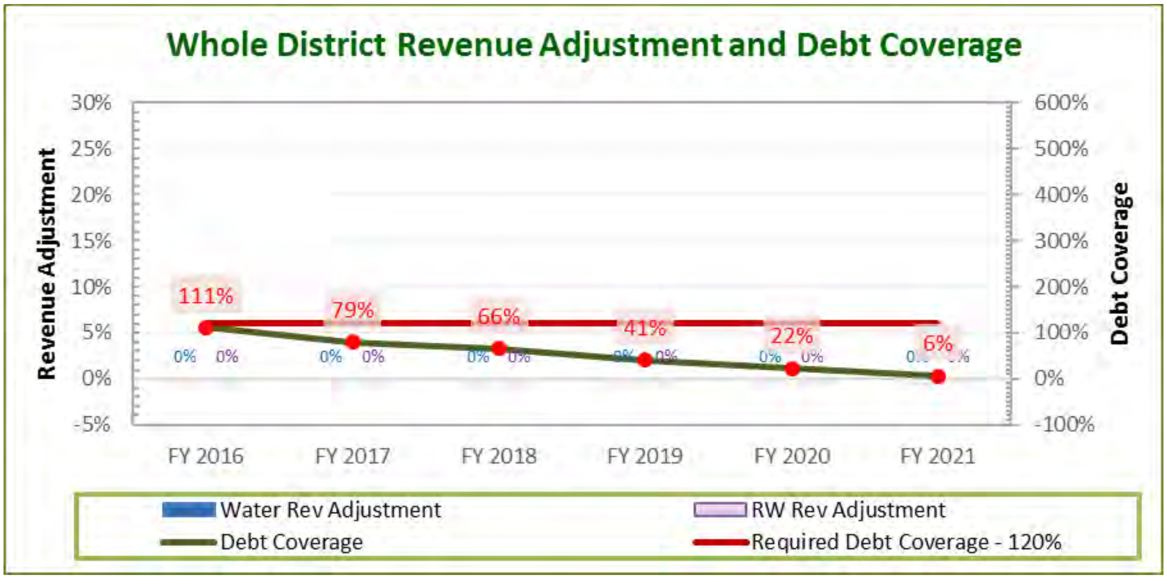
Figure 4-10 below further illustrates the inability of the District to adequately meet expenses without revenue adjustments. Reserves are exhausted after FY 2017 and begin to show negative balances in FY 2018, with a significant deficit in FY 2021. As such, continuing without revenue adjustments is unsustainable for the District.

Figure 4-10: Unrestricted Fund Ending Balances under Status Quo Scenario



Furthermore, the District will not be able to meet its debt coverage ratio without sufficient revenue adjustments and the necessary rate adjustments. Figure 4-11 shows the required debt coverage ratio of 120% illustrated by the red line. Actual debt coverage, shown in green, sinks significantly during the Study period, and the District does not meet the required coverage. As it is significantly under the required ratio, this leaves the District vulnerable in terms of its ability to pay its current and proposed debt in addition to its ability to issue further debt.

Figure 4-11: Debt Coverage under Status Quo Scenario



4.3.2 *Proposed District Financial Plan*

Table 4-31 presents the revenue adjustment for potable and recycled water as proposed in Section 4.1.6 for the Water Fund and Section 4.2.6 for Recycled Water.

Table 4-31: Proposed Revenue Adjustments by Fund

Effective Date	Proposed Water Revenue Adjustments	Proposed Recycled Water Revenue Adjustments
December 2017	25%	25%
December 2018	15%	15%
December 2019	10%	5%
December 2020	10%	3%
December 2021	10%	3%

The financial plan for the whole district, which includes the proposed revenue adjustments, is summarized in Table 4-32. Increased revenues ensure that the District will be able to recover the operating expenses and debt service payments. However, the net cash changes remain negative till FY 2018 due to the significant rate funded capital investments and require some reserve funding. In FY 2019 and FY 2020, as the rate funded CIP declines, the net cash changes turn positive. In FY 2021, net cash changes turn negative again due to the accumulated principal payment on the line of credit. The debt coverage ratio shows healthy levels during the entire projection period.

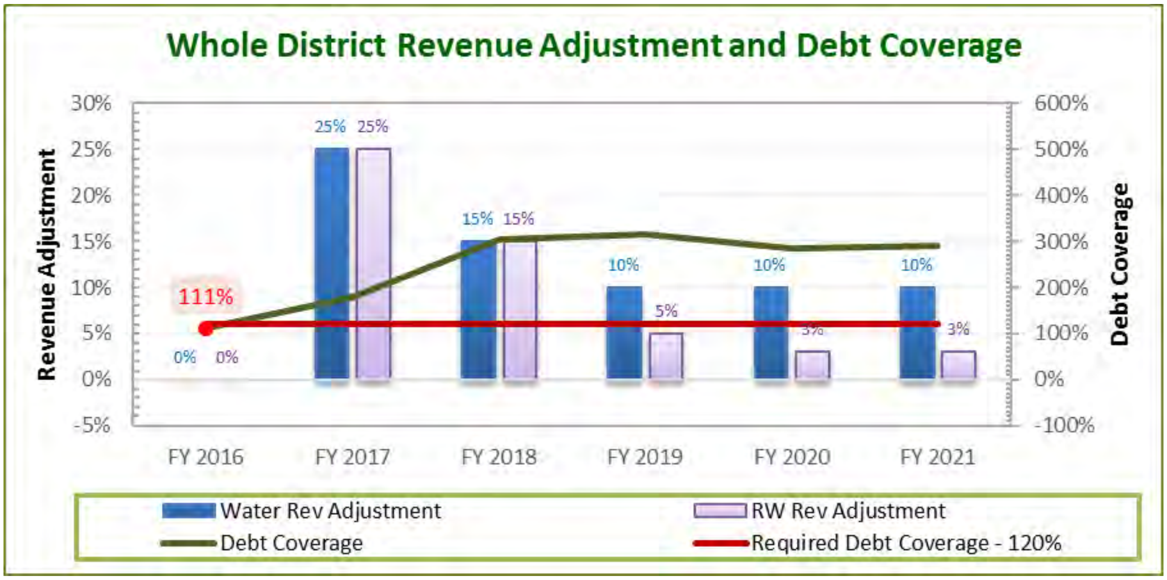
Table 4-32: Whole District Financial Plan with Proposed Revenue Adjustments

		Source	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	**Revenues from Current Rates**		**$4,083,805**	**$4,408,046**	**$4,612,441**	**$4,788,701**	**$4,952,672**	**$5,009,615**
2	Service/Standby-Basic Service		$1,198,259	$1,218,498	$1,248,469	$1,258,534	$1,260,014	$1,260,014
3	Service/FP-Fire Meter Service		$78,623	$84,746	$97,365	$101,754	$102,440	$102,440
4	Water Sales		$2,806,923	$3,104,801	$3,266,607	$3,428,412	$3,590,218	$3,647,160
5	**Revenue Adjustments**		**$0**	**$642,840**	**$1,657,596**	**$2,474,898**	**$3,257,557**	**$4,052,928**
6	**Other Operating Revenue**		**$76,749**	**$69,790**	**$69,790**	**$69,790**	**$69,790**	**$69,790**
7	**New Development Rev**		**$108,834**	**$0**	**$0**	**$0**	**$0**	**$0**
8	Service/Other-Meter Capacity		$95,526	$0	$0	$0	$0	$0
9	Sale of Fire Hydrants		$13,308	$0	$0	$0	$0	$0
10	**Impact Fee Revenue**		**$118,495**	**$0**	**$0**	**$0**	**$0**	**$0**
11	**Non-Oper Revenue**		**$1,036,014**	**$1,487,391**	**$873,190**	**$1,267,718**	**$2,798,616**	**$4,075,963**
12	Property Taxes		$703,680	$717,754	$732,109	$746,751	$761,686	$776,920
13	Interest		$15,534	$17,837	$14,281	$19,167	$35,130	$47,243
14	Misc. Non-Operating Revenue		$1,800	$1,800	$1,800	$1,800	$1,800	$1,800
15	Reimbursement / Grants		$315,000	$750,000	$125,000	$500,000	$2,000,000	$3,250,000
16	**TOTAL REVENUE**	*[1+5+6+7+10+11]*	**$5,423,897**	**$6,608,066**	**$7,213,017**	**$8,601,106**	**$11,078,635**	**$13,208,295**
17	**TOTAL O&M EXPENSES**	***Table 4-9 + Table 4-25***	**$4,410,742**	**$4,705,876**	**$4,963,791**	**$5,237,151**	**$5,509,060**	**$5,774,181**
18	**NET REVENUE**	*[16-17]*	**$1,013,155**	**$1,902,191**	**$2,249,226**	**$3,363,956**	**$5,569,575**	**$7,434,114**
19	**Debt Issue**	Table 4-17	**$0**	**$0**	**$0**	**$0**	**$0**	**$11,163,801**
20	Issuance Costs		$0	$0	$0	$0	$0	$223,276
21	Debt Service Reserves		$0	$0	$0	$0	$0	$726,221
22	Debt Proceeds for CIP		$0	$0	$0	$0	$0	$0
23	Debt Proceeds for LOC Refinance		$0	$0	$0	$0	$0	$10,214,304
24	LOC proceeds to Whole District		$0	$255,000	$1,040,400	$4,244,832	$7,035,809	$3,588,263
25	**Debt Service**	Table 4-15	**$629,094**	**$638,964**	**$697,368**	**$905,158**	**$1,256,908**	**$17,607,767**
26	**CIP Outflow**	Table 4-14	**$1,680,000**	**$3,363,884**	**$3,101,693**	**$5,337,876**	**$7,842,221**	**$4,206,548**
27	Debt Funded		$0	$0	$0	$0	$0	$0
28	Grant Funded		$315,000	$750,000	$125,000	$500,000	$2,000,000	$3,250,000
29	LOC Borrowed		$0	$255,000	$1,019,567	$4,161,499	$5,757,250	$945,507
30	PAYGO	*[26-27-28-29]*	$1,365,000	$2,358,884	$1,957,126	$676,378	$84,971	$11,041
31	**NET CASH CHANGES**	*[18+19-25-26]*	**-$1,295,939**	**-$1,845,657**	**-$509,434**	**$1,365,753**	**$3,506,255**	**-$577,635**
32	**BEGINNING BALANCE**		**$5,469,565**	**$4,173,626**	**$2,327,968**	**$1,818,535**	**$3,184,288**	**$6,690,543**
33	**WHOLE DISTRICT (UNRESTRICTED) ENDING BALANCE**	*[32+31]*	**$4,173,626**	**$2,327,968**	**$1,818,535**	**$3,184,288**	**$6,690,543**	**$6,112,908**
34	**TARGET RESERVES**		**$3,636,602**	**$3,806,700**	**$3,989,350**	**$4,325,796**	**$4,806,398**	**$5,099,705**
35	**Debt Coverage Ratio**[22]		**111.0%**	**180.3%**	**304.6%**	**316.4%**	**284.0%**	**289.9%**

[22] Debt Coverage ratio is the ratio between Net Revenue (excluding Grants) and Debt Service (excl. LOC principal payment)

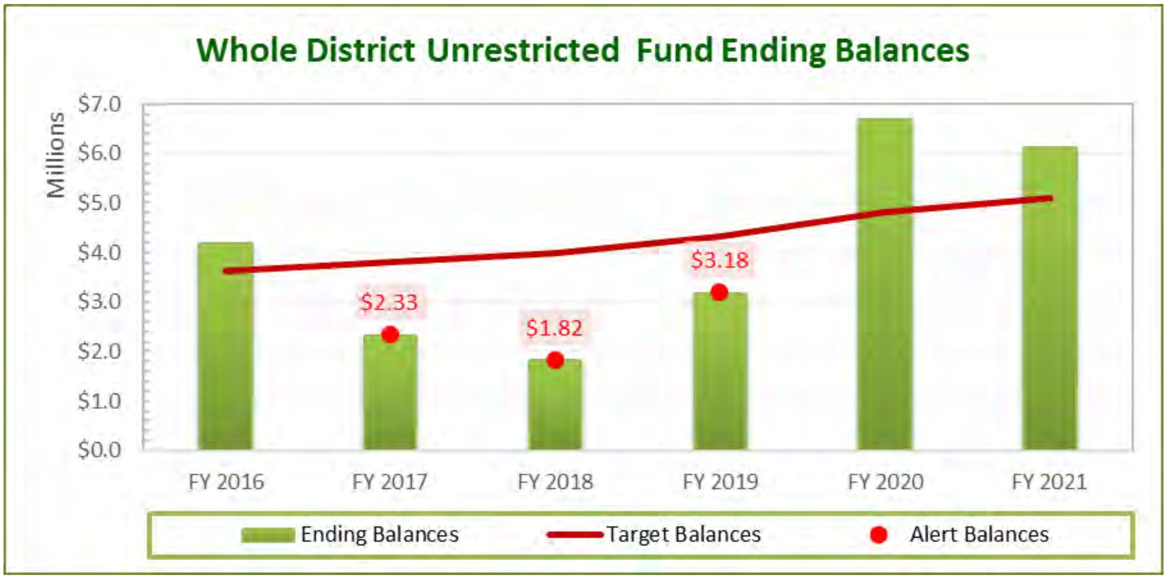
Figure 4-12 illustrates that the debt coverage ratio with proposed revenue adjustments shown in Table 4-31 is well above the required level of 120 percent during the projection period.

Figure 4-12: Debt Coverage under Revenue Adjustment Scenario



The significant share of rate funded capital investment in the beginning of the projection period draws from the District's reserves despite the revenue increase and keeps them below the target level. However, as the rate funded project are completed, the reserves balances increase and stay above the target level even in FY 2021 when the District has to refinance the line of credit principal.

Figure 4-13: Unrestricted Fund Ending Balances with Proposed Revenue Adjustments



5. PROPOSED TIER DEFINITIONS

Tiered Rates, when properly designed, allow a water utility to send consistent price incentives for conservation to customers. Due to heightened interest in water conservation, tiered rates have seen widespread use, especially in relatively water-scarce regions, such as the State of California.

5.1 CURRENT TIER DEFINITIONS

The District currently utilizes a six-tier system applied to all customer classes equally with tier widths in gallons. However, this structure does not consider the usage characteristics of different classes, such as single-family residences and commercial customers.

Table 5-1: Current Tier Structure

Tier	Tier Range (Gals)
Tier 1	0-6,000
Tier 2	6,001-14,000
Tier 3	14,001-24,000
Tier 4	24,001-36,000
Tier 5	36,001-50,000
Tier 6	50,001+

5.2 PROPOSED TIER DEFINITIONS

RFC proposes revising the District's tier definitions and applications. First, RFC proposes that the District reduce the number of tiers from six to four tiers. Tier widths would also be reduced based on the annual groundwater safety yield. Second, RFC proposes applying the tiers only to residential customers and introducing a uniform rate for all non-residential customers.

5.2.1 *Groundwater Availability*

RFC analyzed the District's annual share of groundwater in order to redefine the new water use tiers. The safe yield of 1,506 AF[23] is divided between residential and non-residential customers based on their share of total water usage in FY 2015. According to the information from the District, residential customers used 71 percent of the District's total potable water consumption. Therefore, the annual safe groundwater yield available to residential customers will be 1,071 AF.

[23] Provided by District staff based on historical average safeyield for groundwater basin.

Table 5-2: Groundwater Availability

Safe Yield per Year	Data Source	%	AF	KGal[24]
Residential Customer Consumption	*FY 2015 Consumption Data*	71%	1,071	349,092
Non-Residential Customer Consumption	*FY 2015 Consumption Data*	29%	435	141,790
Total District Annual Yield	***District***	**100%**	**1,506**	**490,882**

RFC then determined the groundwater availability per residential unit based on the same FY 2015 residential usage and the total residential units, per District staff. Per Table 5-3, the calculated safe yield per residential unit in a bimonthly billing period is 15.722 kGals.

Table 5-3: Groundwater Safe Yield per Residential Unit

	Calculation	Yield
Residential Units		3,689
Safe Yield per Residential Unit per Year (KGals)	349,092 KGals Res. Consumption = 3,689 Residential Units	94.631
Safe Yield per Residential Unit per Bimonthly Period (KGals)	94.631 KGals per Res. Unit = 6 Bimonthly Periods per Year	15.722

5.2.2 *Proposed Tier Definitions*

RFC proposes four tiers to replace the District's current six tiers. These tiers are based on the following rationale:

Tier 1 – Efficient Water Indoor Water Use Break Point Rationale

Tier 1 represents the lowest cost water available to SFR customers and is designed to provide an adequate allotment for household/indoor use. The Tier 1 width is based on the average number of people in a household, defined as 3 people for the District, and water consumption of 32 gallons per capita day[25] (GPCD). This calculation is shown below and then rounded up to 6,000. Both Single Family and Multi-Family Residential customers receive this width for Tier 1 per dwelling unit.

$$3\ People\ per\ Household \times 32\ Gallons\ per\ Person \times \frac{(365\ Days\ per\ Year)}{(6\ Billing\ Periods\ per\ Year)} = 6{,}000\ Gals$$

Tier 2 – Efficient Outdoor Water Use Break Point Rationale

Tier 2 is designed to provide an adequate allotment for efficient outdoor use for the average residential home. The width of Tier 2 for Single Family Residential customers is calculated as outdoor water consumption for 1,800 sq. feet landscape area. It is based on average bimonthly ET_0 of 7.24 inch (CIMIS station 104, 10 year bimonthly average) and ETAF of 70 percent (CA Code of Regulation, Title 23, Chapter 27). This value is then rounded up to the nearest kGals.

---

[24] 1 AF = 325.380 kgal

[25] Based on the efficient household water budget per person per day; "*Urban Water Conservation and Efficiency Potential in California*", Pacific Institute, http://pacinst.org/app/uploads/2014/06/ca-water-urban.pdf

$$1{,}800\ sq.ft.Landscape\ Area \times 7.24\ in.Average\ Bimonthly\ ET_0 \times \left(\frac{70\%\ ETAF}{1200\ Cubic\ Feet}\right) \times 748\ Gals = 6{,}000\ Gals$$

Since MFR customers generally have essentially indoor use only, this customer class will receive a smaller Tier 2 width based on 100 sq. ft per dwelling unit for balcony planting or small outdoor use, per District directions. The same calculation as above is utilized, replacing the 1,800 sq.ft. landscape area with 100 sq.ft. Rounding upward, this results in a 400 gallon tier width.

$$100\ sq.ft.Landscape\ Area \times 7.24\ in.Average\ Bimonthly\ ET_0 \times \left(\frac{70\%\ ETAF}{1200\ Cubic\ Feet}\right) \times 748\ Gals = 400\ Gals$$

Tier 3 – Groundwater Availability Break Point Rationale

The width of tier 3 is determined by the maximum safe yield of potable water per residential unit and share of residential consumption in total water consumption in FY 2015. Using the values in Table 5-2 and Table 5-3, the Tier 3 upper breakpoint is determined as the rounded total bimonthly max groundwater allotment per residential unit. This value is rounded to the nearest kGal. This is the safety yield of groundwater available to each residential unit if each unit shared the District's safe yield groundwater equally. This upper tier break applies to both Single and Multi-Family users.

$$1{,}071\ AF \times 435.6\ hundred\ cubic\ feet \times \frac{\frac{748\ Gals}{6\ Bimonthly\ Periods}}{3{,}689\ Residential\ Units} = 16{,}000\ Gals$$

Tier 4 – Excessive Usage

Consumption falling into this tier is considered excessive usage for a typical customer as it exceeds the average safe yield of groundwater to each residential unit.

Revised Tier Structure

Table 5-4 shows the new tier structures for residential and non-residential customers. These tiers apply to both Inside and Outside District customers.

Table 5-4: Revised Tier Structures

Tiers	Tier Breaks	Tier Width (gal)
Single Family Residential		
Tier 1	0 to 6,000 gal	6,000
Tier 2	6,001 to 12,000	6,000
Tier 3	12,001 to 16,000	4,000
Tier 4	over 16,000 gal	
Multi-Family Residential (with Indoor Use Only)		
Tier 1	0 to 6,000 gal	6,000
Tier 2	6,001 to 6,400	400
Tier 3	6,401 to 16,000	9,600
Tier 4	over 16,000 gal	
Non-Residential	Uniform	Uniform

5.3 USAGE ANALYSIS

The proposed tier structure reduces the widths of Tiers 2 and 3 for both Single and Multi-Family residential customers, with a greater reduction in Tier 2 for the latter. This is due to the minimal outdoor usage for Multi-Family residential units. In addition, Tiers 5 and 6 have been eliminated. Residential customers will continue to be charged for their use as they fall into the next highest tier. For example, a Single Family residence utilizing 11,000 gallons in a bimonthly period will see 6,000 gallons fall into Tier 1 and the remaining 5,000 gallons will be categorized as Tier 2 usage.

5.3.1 *Residential Water Usage*

Figure 5-1 shows the distribution of residential water use in FY 2015 (July 2014 to June 2015) across both the current and proposed tiers. The increased Tier 1 usage share, despite the same tier width, is due to the accounted per dwelling unit consumption of multifamily residences under the revised tiers. Under the current tiers, shown in blue, the highest 25 percent usage is scattered across Tiers 3-6, with the highest tiers only capturing 3 percent of residential usage each. The proposed reduction to four tiers allocates the highest 28 percent of usage to Tiers 3 and 4, simplifying the tiers while still sending a price signal to excessive water users.

Figure 5-1: Residential Water Usage Distribution

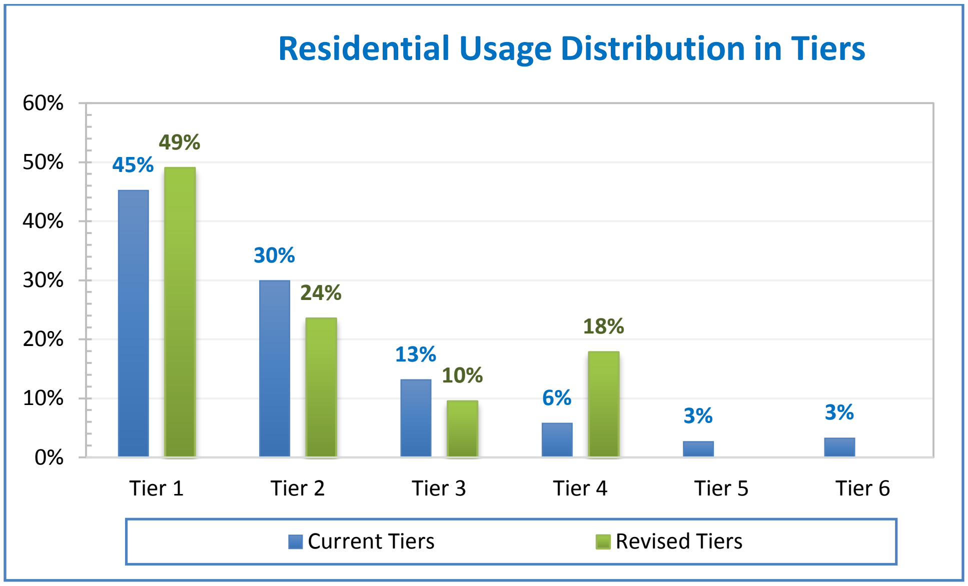


Figure 5-2 illustrates the distribution of bills in a year based on all total water usage billed by customer by billing period. Eighteen (18) percent of the bills in FY 2015 use 16,000 gallons or greater per bimonthly billing period. These bills indicate usage above the safety yield allotment. However, 34 percent of the bills fall below the efficient indoor usage (6,000 gal per dwelling unit). These customers therefore will only have Tier 1 usage.

Figure 5-2: Residential Potable Water Bill Distribution

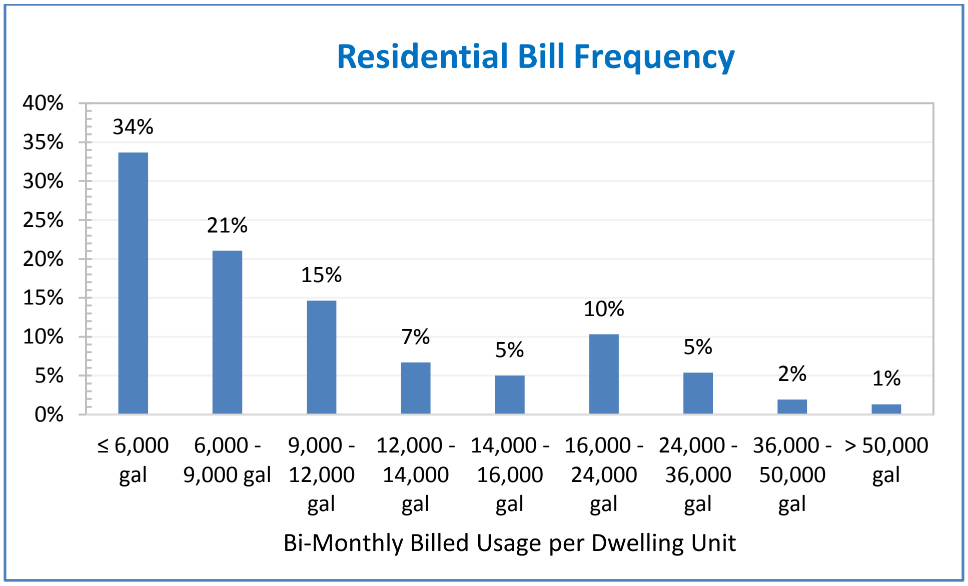


Figure 5-3 shows the usage by period and how it distributes across each tier. July – August 2014 shows the highest usage, making it the maximum bimonthly period. Note as well that Tier 2 usage contracts in winter months as single family outdoor usage shrinks at a greater rate than multi-family, as single family users have a larger allocation for Tier 2. This results in a Tier 2 that is particularly sensitive to seasonal changes in water use.

Figure 5-3: Residential Bimonthly Usage in Revised Tiers

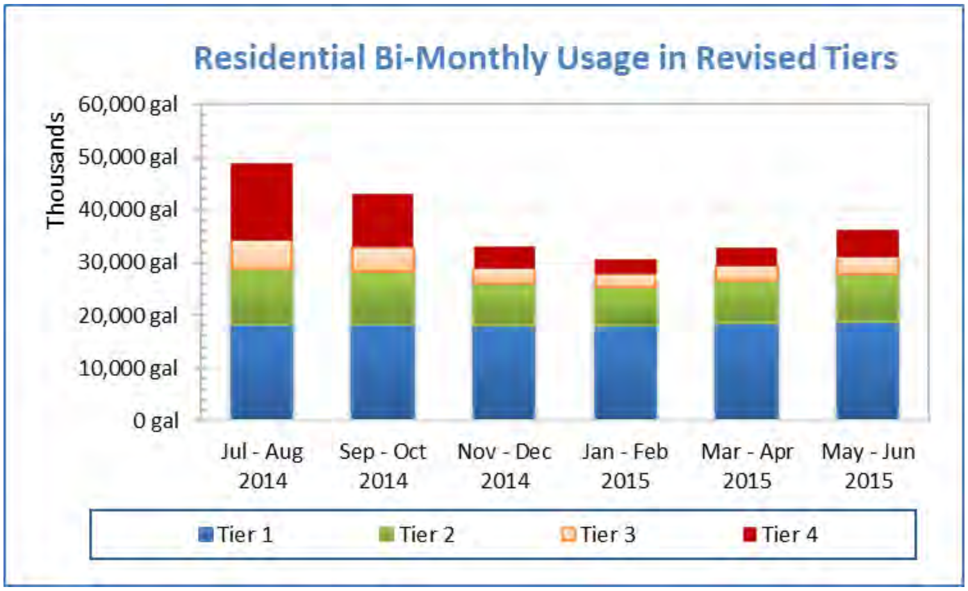


Table 5-5 shows both the maximum and average bimonthly consumption by tier. The final column is the ratio of the maximum over the average for each tier. The peaking factor describes the percent higher than the maximum use is over the average use in order to show the peak usage that the water system must be able to accommodate. The ratio in the Total row of 1.306 represents this ratio for total usage and is the Residential peaking factor.

Table 5-5: Potable Water Residential Peaking Factors

Tiers	Maximum Bimonthly Consumption (gal)	Average Bimonthly Consumption (gal)	Max/Average (Peaking Factor)
	A	B	C = A/B
Tier 1	18,249,914	18,346,634	0.995
Tier 2	10,596,695	8,810,936	1.203
Tier 3	5,393,250	3,566,264	1.513
Tier 4	14,588,376	6,676,116	2.186
Total	**48,828,235**	**37,399,950**	**1.306**

5.3.2 *Non-Residential Potable Water Usage*

Figure 5-4 shows the distribution of bimonthly bills by total usage. Usage is distributed fairly evenly for most usages, with greater numbers of bills charged for either 6,000 or less gallons or greater than 50,000 gallons. Since this distribution is spread more across the different ranges, a uniform rate best serves this class as customers vary greatly in how their use is defined.

Figure 5-4: Non-Residential Bill Frequency

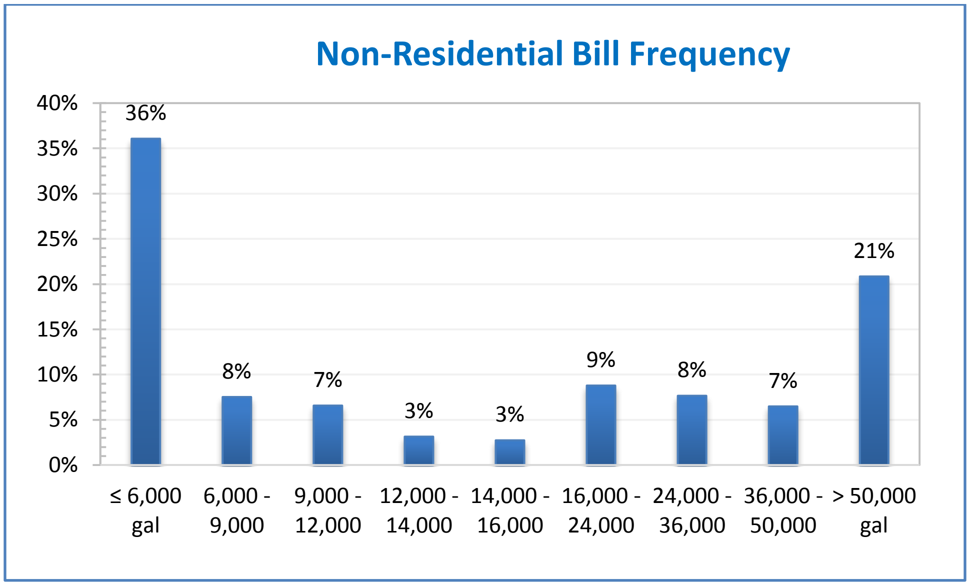


Figure 5-5 shows the distribution of usage across residential and non-residential classes by billing period. As illustrated in the figure, July – August 2014 is the highest billing period for all customer classes, and January – February 2015 is the lowest. Residential customers represent the largest customer class, with Business as the second largest class.

Figure 5-5: Class Peaking Usage Characteristics

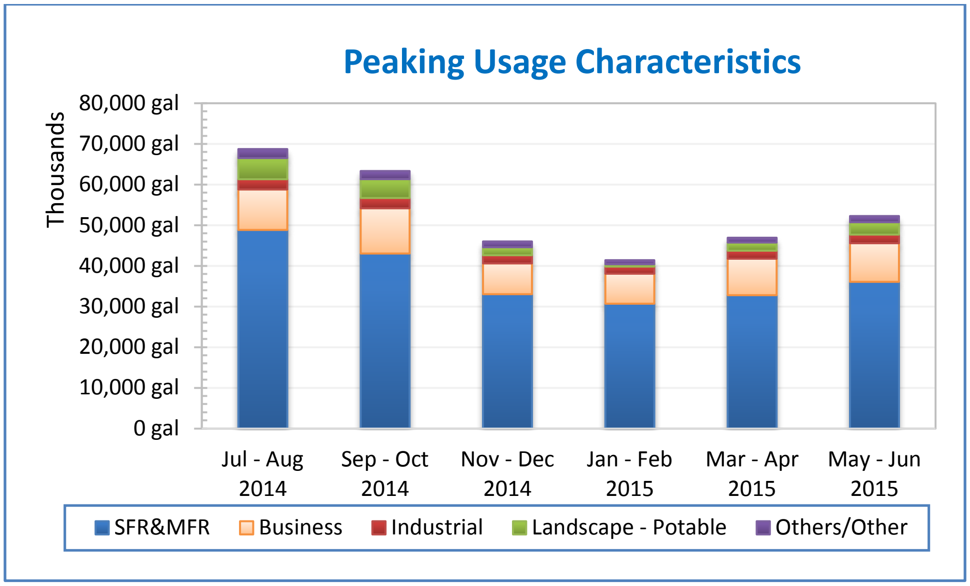


Table 5-6 shows the calculation of the peaking factors for the different non-residential customers. Landscape accounts have the highest peaking factor, likely due to fluctuations in irrigation needs due to weather conditions.

Table 5-6: Peaking Factors for Non-Residential Customers

Non-Residential Classes	Maximum Bimonthly Consumption	Average Bimonthly Consumption	Max/Average (Peaking Factor)
	A	B	C = A/B
CII (Business and Industrial)	12,475,100	11,235,885	1.111
LANDSCAPE - POTABLE	5,209,190	2,906,818	1.793
OTHERS	2,210,550	1,555,262	1.422

6. WATER COST OF SERVICE ANALYSIS

6.1 COST OF SERVICE PROCESS

This subsection provides an overview of a cost-of-service analysis. Each step described below will be described in greater detail throughout this section.

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class[26]. After determining a utility's revenue requirement, the next step in a cost of service analysis is to functionalize its O&M costs to the following **functions**:

1. Source of Supply
2. Variable Supply
3. Average Demand
4. Storage
5. Pumping
6. Water Treatment
7. Transmission & Distribution
8. Fire Protection
9. Conservation
10. Customer Accounts
11. Revenue Offset
12. General
13. Meters & Services
14. Billing & Customer Service
15. Supplies

The functionalization of costs allows us to better allocate the functionalized costs to the **cost causation components**:

1. Variable Water Supply
2. Base Fixed Costs (costs incurred under average levels of usage)
3. Peaking Costs (costs incurred during high levels of usage)
4. Billing and Customer Service
5. Meters & Services
6. Conservation
7. Revenue Offsets
8. General
9. Fire Protection

[26] Further detail of the Cost-Based Rate-Setting Methodology is provided in Section 1.3.3.

Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities, and the O&M costs associated with those facilities, are designed to meet the peaking demands of customers. Therefore, extra capacity[27] costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual, and is widely used in the water industry to perform cost of service analyses.

6.2 COST OF SERVICE ANALYSIS

6.2.1 *Determination of Revenue Requirement*

In this Study, water rates are calculated for FY 2016, known as the test year. Test Year revenue requirements are used in the cost allocation process. Subsequent years' revenue adjustments are incremental and the rates for future years are based on the revenue adjustments shown in Table 4-19 and calculated across-the-board. The District should review the cost of service analysis at least every five years to ensure that the rates are consistent with the costs of providing service.

The annual revenue requirements, or costs of service, to be recovered from water rates and charges are O&M expenses and capital costs. Total FY 2016 cost of service to be recovered from the District's water customers is shown in Table 6-1.

The revenue requirement determination is based upon the premise that the utility must generate annual revenues to meet O&M expenses, debt service needs, reserve levels, and capital investment needs. Revenues from sources other than water rates and charges (e.g. non-operating revenues, grants, reimbursement, miscellaneous revenues, etc.) are deducted from the rate revenue requirement.

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[27] *The terms extra capacity, peaking and capacity costs are used interchangeably.*

Table 6-1: 2016 Revenue Requirements

	Source	Total	Functional Cost Component
Revenue Requirements			
O&M cost	*Table 4-9*	$3,976,482	*O&M Costs*
Debt Service	*Table 4-18, line 21*	$355,681	*Capital Costs*
PAYGO CIP	*Table 4-18, line 30*	$1,209,833	*Capital Costs*
Reserve Funding	*Table 4-18, line 31*	-$1,034,216	*Capital Costs*
Subtotal revenue requirements		$4,507,781	
Non-Rate Revenue			
Other operating revenue	*Table 4-18, Line 6*	$76,749	*Revenue Offset*
Property Taxes	*Table 4-18, Line 8*	$703,680	*General*
Interest	*Table 4-18, Line 9*	$14,600	*General*
Misc. Non-Operating Revenue	*Table 4-18, Line 10*	$1,800	
Subtotal Non-Rate Revenues		**$796,829**	
Net Revenue Requirements FY 2016		**$3,710,952**	

6.2.2 *Allocation of Functionalized Costs to Cost Causation Components*

To derive the cost to serve each customer class, costs first need to be functionalized. Once functionalized, the costs are allocated to cost causation components. RFC used the Base-Extra Capacity method, as described in the AWWA M1 Manual, which consists of following functional cost components: Base, Max Day, Max Hour, Fire Protection, Meters, Customer/Customer Service, Conservation, and General. The cost causation components are defined below.

Base Costs are those operating and capital costs of the water system associated with serving customers at a constant, or average, rate of use. Supply costs are associated with meeting average day demand and are therefore typically considered base costs average usage.

Extra Capacity Costs or peaking costs represent those costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour (**Max Hour**) demand is the maximum usage in an hour on the maximum usage day (**Max Day**). Various facilities are designed to meet customer peaking needs. For example, transmission lines or reservoirs are designed to meet Max Day requirements. Both have to be designed larger than they would be if the same amount of water were being used at a constant rate throughout the year. The cost associated with constructing a larger line or reservoir is based on system wide peaking factors. For example, if the Max Day factor is 2.0, then certain system facilities have to be designed at least twice as large as required to meet average daily demand. In this case, half of the cost would be allocated to Base (or average day demand) and the other half allocated to Max Day. The calculation of the Max Hour and Max Day demands is explained below.

Customer Service Related Costs include such costs as meter reading, billing, collecting, and customer accounting.

Meter Costs or meter service costs include maintenance and capital costs associated with servicing meters. These costs are assigned based on meter size or equivalent meter capacity.

Allocating costs into these cost components allows us to distribute these cost components to the various customer classes on the basis of their respective base, extra capacity and customer requirements for service.

6.2.3 *Peaking Allocation*

To determine how costs should be allocated to base demand and peak (Max Day and Max Hour) demands, the allocation percentages are derived from actual historical data and assigned to each cost component. Customer service related costs are allocated 100 percent to the customer service component. Costs related to meter maintenance are allocated to the meter service component. These two components, plus a portion of peaking costs are included in the basic meter charges.

To allocate costs to base and peaking cost components, system peaking factors are used. The base demand is assigned a value of 1.0 signifying no peaking demands. The Max Day and Max Hour values shown in Table 6-2 were calculated by dividing the max day or max hour demand in gallons per day by the average demand in gallons per day. The max day peaking factor of 2.26 means that the system delivers 2.26 times the amount of water it does during an average day.

Table 6-2: System Peaking Factors

	Factor
Base	1.0
Max Day	2.26
Max Hour	3.38

Next, the relative proportion of costs assigned to Base, Max Day, and Max Hour are used to allocate costs to the cost causation components. Cost components related solely to providing average day demand, such as supply sources, are allocated 100 percent to Base. Cost components that are designed to meet Max Day peaks, such as reservoirs and transmission facilities, are allocated to both Base and Max Day factors.

The Max Day factor of the District's system is 2.26, which means that Max Day demand is expected to be 226 percent of the average day capacity. Calculating the Max Day allocation of functional costs to the cost causation components results in the following:

$$Base = \frac{Base}{Max\ Day} \approx 44.3\%$$

$$Max\ Day = 1 - Base/Max\ Day \approx 55.7\%$$

Facilities designed for Max Hour peaks, such as distribution system facilities, are allocated similarly. The Max Hour factor is 3.38, so Max Hour facilities are designed to provide 338 percent of the average day capacity. The allocation of Max Hour facilities is shown below:

$$Base = \frac{Base}{Max\ Hour} \approx 29.6\%$$

$$Max\ Day = \frac{Max\ Day - Base}{Max\ Hour} \approx 37.1\%$$

$$Max\ Hour = 1 - 29.6\% - 37.1\% \approx 33.3\%$$

The results of the allocation are presented in Table 6-3 below. These percentages are then applied to the operating and capital improvement expenses to allocate costs amongst Base, Max Day, and Max Hour cost components, which is explained in detail in the following sub-sections. The factors shown below are taken from Table 6-2 above.

Table 6-3: Max Day/Max Hour Facility Allocation Factors

Line No.		Factor	Base	Max Day	Max Hour	Fire Protection
1	**No Fire Protection**					
2	Base	1.0	100.0%	0%	0%	0%
3	Max Day	2.26	44.3%	55.7%	0%	0%
4	Max Hour	3.38	29.6%	37.1%	33.3%	0%
5						
6	**Including Fire Protection**					
7	Base		75%	0%	0%	25%[28]
8	Max Day		33%	42%	0%	25%
9	Max Hour		22%	28%	25%	25%

[28] Cost allocation on a basis proportional to the system design and usage "*Principles of Water Rates, Fees and Charges*", AWWA, page 143 – 144. Inputs for the calculation are: 10,774 (population as of 2015) and Average Day and Max Day demand.

6.2.4 *Peaking Factors by Customer Class*

As noted above, the peaking characteristics of each customer class can place additional stress on the water system which translates into additional costs. The peaking factors are calculated below.

Table 6-4: Customer Class Peaking Factors

Peaking Factors	Max Billing Period (Gallons)[29]	Average Billing Period (Gallons)[30]	Peaking Factor
	A	B	A/B=C
Residential	48,828,235	37,399,950	1.31
CII	12,475,000	11,235,885	1.11
Landscape	5,209,190	2,906,818	1.79
Others	2,210,550	1,555,262	1.42

6.2.5 *Allocation of Operating Expenses*

In this step, the Water Fund's O&M costs are first functionalized and then allocated to the various cost components. Table 6-5 provides a matrix of the District's functions, in the left most column, which are then allocated to the cost components.

Water supply costs are all allocated entirely to Base, since these costs are shared by all users. Treatment is allocated based on the Max Day facility allocation (see line 3 in Table 6-3). Storage is allocated based on the Max Hour (see line 8 in Table 6-3). General costs are distributed entirely to the General allocation. A summary of the functional cost allocation to cost causation components is shown in Table 6-5 below.

[29] Derived from FY 2015 usage data. Max Billing Period for FY 2015 was July-August.

[30] Derived from FY 2015 usage data. Average Billing Period usage is total annual usage divided by 6 (number of billing periods).

Table 6-5: Functional Cost Allocations

Line No.	Functions	Variable Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	Meters & Services	Conser-vation	Rev Offsets	General	Fire Protection	Variable Water Supply
1	Source of Supply		100%									
2	Variable Supply	100%										100%
3	Regular Demand		58%	31%	11%							
4	Storage		33%	42%							25%	
5	Pumping		30%	37%	33%							
6	Water Treatment		44%	56%								
7	Transmission & Distribution		15%	19%	17%		25%[31]				25%	
8	Fire protection										100%	
9	Conservation							100%				
10	Customer Accounts					100%						
11	Revenue Offset								100%			
12	General									100%		
13	Meters & Services						100%					
14	Billing & CS					100%						
15	Supplies									100%		
16	Capital		**45%**	**21%**	**6%**		**7%**			**7%**	**13%**	
17	O&M	**10%**	**5%**	**5%**	**2%**	**2%**	**2%**	**7%**		**66%**	**2%**	**10%**

Table 6-6 shows how the O&M expenses are allocated. These costs are then combined according to their cost component categorization as shown in Table 6-7. The percent allocations are then calculated. These percent allocations across the cost components will be applied to the revenue requirements.

[31] Meter and Services cost allocation based on the share of meter maintenance cost in total Transmission & Distributions cost.

Table 6-6: O&M Expenses Allocated by Function

Line No.	O&M	Functional Cost Allocation Factors	FY 2016 O&M Expenses
1	**Salaries and Benefits**		
2	*All other*	General	$1,970,480
3	*Conservation*	Conservation	$87,200
4	**G&A Services**		
5	*All other*	General	$638,610
6	*Conservation*	Conservation	$103,700
7	**Supplies**		
8	*All other*	Average demand	$31,640
9	*Conservation*	Conservation	$78,075
10	**Source of Supply**		
11	*All other*	Source of Supply	$50,000
12	*Conservation*	Conservation	$0
13	**Pumping**		
14	*Pumps - Electricity and Power*	Variable Supply	$296,500
15	*Pumps and Boosters*	Pumping	$65,000
16	**Water Treatment**		
17	*WT Chemicals and Supplies*	Variable Supply	$100,677
18	*Other Water Treatment Expenses*	Water Treatment	$170,000
19	**Transmission & Distribution**	Transmission & Distribution	$303,600
20	**Customer Accounts**	Billing & CS	$66,400
21	**Other**	General	$14,600
22	**Total O&M allocation**		**$3,976,482**

Table 6-7: Total O&M Expenses per Function

Line No.	Cost components	O&M Expenses by Cost Components[32]	O&M Expenses Allocation Factors (% of Total)
1	Variable Water Supply	$397,177	10.0%
2	Base Fixed	$208,070	5.2%
3	Max Day	$185,188	4.7%
4	Max Hour	$76,082	1.9%
5	Billing & CS	$66,400	1.7%
6	Meters & Services	$75,000	1.9%
7	Conservation	$268,975	6.8%
8	Rev Offsets	$0	0.0%
9	General	$2,623,690	66.0%
10	Fire Protection	$75,900	1.9%
11	**TOTAL**	**$3,976,482**	100.0%

6.2.6 *Allocation of Capital Costs*

Capital costs include capital improvements financed from annual revenues, debt service and other sources. To allocate capital costs, RFC first functionalizes the District's assets similarly to how the O&M costs were functionalized. After the capital costs are functionalized, RFC uses the resulting allocation percentages (found on Line 16 of Table 6-5) to allocate capital costs to each of the cost causation components. Using this method to allocate capital costs reflects a more accurate distribution of the District's long-term capital expenditures.

Costs are allocated based on the design criteria of each facility and using the same percent allocations shown in Table 6-5. Table 6-8 allocates the assets according to cost allocations as done above for O&M expenses.

[32] See Table 10-2 for details on allocation of O&M Expenses by Cost Components

Table 6-8: Capital Cost Allocations by Function

Line No.	Fixed Assets: Potable Water Grouped by Functions	Functional Cost Allocation Factors	Replacement Cost 2015
1	Land/Rights of Way	General	$1,209,258
2	SCADA	Average demand	$766,842
3	Source of Supply	Source of Supply	$11,022,649
4	Pumps and Related	Pumping	$1,638,934
5	Pump Buildings	Pumping	$352,565
6	Well Pumps	Source of Supply	$58,688
7	Water Treatment	Source of Supply	$3,632,574
8	Treatment Plant	Water Treatment	$6,053,764
9	Distribution, main	Transmission & Distribution	$14,510,479
10	Reservoir/tanks	Storage	$10,002,649
11	Fire Hydrants	Fire protection	$332,066
12	Services	Transmission & Distribution	$1,650,342
13	Office/Shop Bldg.	General	$1,185,052
14	Tools and Equip	General	$219,691
15	Office Equipment	General	$16,029
16	Transportation	General	$623,207
17	Shop Buildings	General	$257,846
18	Computer Equipment	General	$176,214
19			
20	**TOTAL**		**$53,708,850**

As with the O&M expenses, the Capital Costs are then distributed to the cost allocation components as shown in Table 6-9.

Table 6-9: Capital Cost Allocations by Function

Line No.	Cost components	Capital Cost by Cost Components[33]	Capital Cost Allocation Factors (% of Total)
1	Variable Water Supply	$0	0.0%
2	Base Fixed	$24,160,394	45.0%
3	Max Day	$11,537,450	21.5%
4	Max Hour	$3,458,477	6.4%
5	Billing & CS	$0	0.0%
6	Meters & Services	$3,992,298	7.4%
7	Conservation	$0	0.0%
8	Rev Offsets	$0	0.0%
9	General	$3,687,296	6.9%
10	Fire Protection	$6,872,934	12.8%
11	**TOTAL**	**$53,708,850**	100.0%

6.2.7 *Allocation of General and Public Fire Protection Costs*

All costs that apply generally to the District must be allocated to the cost causation categories based on the O&M allocation factors established in Table 6-7 and the Capital allocation factors established in Table 6-9. Table 6-10 shows this allocation of costs. It also shows the reallocation of General costs and Public Fire Protection costs. General costs are reallocated according to the distribution of costs across all other cost allocations except for variable water supply, conservation, revenue offset and fire protection according to the formula below with reference to the Table 6-10 ’s column letter assignments in the equation. These percent allocations are then multiplied by the General cost allocation total, $2,567,016.

$$General\ Reallocation\ \% = \frac{Column\ B\ Cost\ Component}{Total\ Base\ Fixed, Peaking, Billing\ \&\ CS, Meters\ \&\ Services}$$

For example, the Base Fixed cost component can be calculated as follows:

$$General\ Reallocation\ \% = \frac{Base\ Fixed\ Cost\ Component}{Total} = \frac{\$447{,}069}{\$3{,}710{,}952} = 12\%$$

Public Fire Protection was allocated to Meters & Services because all customers bear the responsibility for public fire protection equally. The remaining Fire Protection allocation represents private fire protection services. Fire protection cost include both public and private protection services. The cost allocation between the two uses the relative demands of the various size fire connections. The relative flow potential per connection is calculated in order to obtain the total number of equivalent fire protection connections. Next, based on the share of public fire connections, the cost for the public fire

[33] Details for Capital Cost Allocation by cost components are in Table 10-1

protection connections is calculated (Table 6-10) and reallocated to Meter and Services cost component Table 6-11). The remaining of the fire protection cost (8.7%) represent private fire protection services.

Table 6-10: Public & Private Fire Allocation

Line No.	Connection Size A	Fire Demand Factor[34] B	Fire Demand Ratio C = B / B1	# of Public Hydrants D	# of Private Fire Services E	Public Fire Annual Demand F = B*C*6	Private Fire Annual Demand G = B*D*6
1	5/8"	0.29	1.0		415	0	723
2	3/4"	0.47	1.6			0	0
3	1"	1.00	3.4		1	0	6
4	1 1/2"	2.90	10.0			0	0
5	2"	6.19	21.3			0	0
6	3"	17.98	61.9	13		1,403	0
7	4"	38.32	131.9		1	0	230
8	6"	111.31	383.2	13		8,682	0
9	**Total Fire Demand**			**26**	**417**	**10,085 (91.3%)**	**959 (8.7%)**

Table 6-11: Net Adjusted Revenue Requirements by Cost Component

Line No.	Cost Components A	Net revenue requirements B	Reallocation of "General" C	Reallocation of Public Fire Protection D	Net Adjusted Rev. Requirements E=B+C+D
1	**Variable Water Supply**	**$397,177**	**$0**	**$0**	**$397,177**
2	**Base Fixed**	**$447,069**	**$1,106,073**	**$0**	**$1,553,143**
3	*Max Day*	*$299,319*	*$740,531*	*$0*	*$1,039,850*
4	*Max Hour*	*$110,294*	*$272,874*	*$0*	*$383,168*
5	**Peaking** [Line 3+line 4]	**$409,613**	**$1,013,405**	**$0**	**$1,423,018**
6	**Billing & CS**	**$66,400**	**$164,277**	**$0**	**$230,677**
7	**Meters & Services**	**$114,493**	**$283,261**	**$131,390**	**$529,144**
8	**Conservation**	**$268,975**	**$0**	**$0**	**$268,975**
9	**Rev Offsets**	**-$703,680**	**$0**	**$0**	**-$703,680**
10	**General**	**$2,567,016**	**-$2,567,016**	**$0**	**$0**
11	**Fire Protection**	**$143,888**	**$0**	**-$131,390**[35]	**$12,498**
12	**TOTAL**	**$3,710,952**			**$3,710,952**

[34] AWWA M1 manual, page 147, table IV.8-2 : Fire Demand Factor = (Connection Size^2.63)
[35] 143,888 * 91.3% = $131,390, rounded to the nearest dollar

7. WATER RATE DESIGN AND CUSTOMER IMPACTS

Proposition 218 requires a nexus between the rates charged and the costs of providing service. Based on the proposed financial plan, the cost of service analysis translates this financial requirement into actual rates. The first step in the cost of service analysis is to determine how much revenue is required to be collected from rates. The methodology used is based upon the premise that the utility must generate annual revenues adequate to meet its estimated annual expenses. As part of the cost of service analysis, several adjustments are made to determine the annual revenues needed from rates. Revenues from sources other than potable water rates and charges (e.g. revenues from miscellaneous services) are deducted.

According to the M1 Manual, the cost-of-service approach to setting water rates results in the proportionate distribution of costs to each customer or customer class based on the costs that each incurs. A dual set of fees—fixed and variable—is an extension of this cost causation theory. For example, a utility incurs some costs associated with serving customers irrespective of the amount or rate of water they use, such as billing and customer service costs. These types of costs are referred to as customer-related costs and typically are costs that would be recovered through a fixed charge. These costs are usually recovered on a per-customer basis or some other non-consumptive basis. Regardless of the level of a customer's consumption, a customer will be charged this minimum amount in each bill.

Utilities invest in and continue to maintain facilities to provide capacity to meet all levels of desired consumption including the peak demand plus fire protection, and these costs must be recovered regardless of the amount of water used during a given period. Thus, peaking costs along with base costs and fixed water system costs to meet average demand are generally considered as fixed water system costs. It is ideal that agencies recover 100 percent of their fixed costs through monthly base fees, however, it forgoes the affordability for essential use and heavily impacts efficient users. To balance between affordability and revenue stability, it is a common practice that a portion of the base costs and peaking costs are recovered in the basic meter fee along with customer-related costs and meter-related costs.

The most common method for levying base (or capacity) fees is by meter size. Meter size is a proxy for the potential demand that each customer places on the water system. The District's base meter is most commonly a 5/8" meter. The ratio at which the meter charge increases is a function of the meter's safe operating capacity. For example, based on the AWWA meter capacity ratios, a customer that has a 2-inch meter has the capacity equivalency of eight 5/8" meters. (A 2-inch meter has a safe operating capacity of 160 gallons per minute (gpm) compared to a 5/8" meter which has a safe operating capacity of 20 gpm as listed in Table B-1 in the M1 Manual).

Meter and Service charges are similarly calculated by multiplying a base rate for 5/8” meters by ratios. In this case, they are based on a meter replacement ratio. This ratio is developed by dividing the cost for the installation of a particular meter size by the cost of installation of a 5/8” meter.

Billing and customer service costs related to meter reading, billing and collections are distributed among customers based on the total number of bills rendered in a test year, which is FY 2016 for this Study. Meter service costs, costs related to maintenance and costs related to customer meters and services, are distributed to customers in proportion to estimated costs for meters and services installed. Capacity costs, costs related to capital and costs related to customer meters and services, are distributed in proportion to meter demand capacity as provided by the M1 Manual. According to the M1 Manual, distribution of meter service costs and capacity costs by equivalent meter and service ratios recognizes that meter and service costs vary, depending on considerations such as the size of service pipe, materials used, locations of meters and other local characteristics for various size meters as compared to 1-inch meters and services.

The components of water system costs are recovered through either basic meter charge revenues or water usage charge revenues, or a combination of the two. Through the cost of service analysis, RFC identified four fixed charge components to design the basic meter charge and five commodity rate components to design the commodity rates. Table 7-1 shows the distribution of the total revenue requirement by the District’s set fixed and variable rate split of 34% fixed, 66% variable, based on FY 2016 projected water sales. The entirety of the water supply is recovered from commodity rates (Column C). On the other hand, meter & services costs and billing & customer service costs are entirely recovered from fixed charges (column B). Base costs are recovered from both fixed charges and commodity rates (Columns B & C). Costs will be recovered from both inside and outside customers. However, RFC recommends that outside customers do not have their rates increased by an outside city factor beginning in FY 2017.

Table 7-1: Fixed and Variable Rate Revenue Requirements

Cost Components	Net Adjusted Revenue Requirements	Fixed Charges	Variable Water Rates
	A=B+C	B	C
Variable Water Supply	$397,177		$397,177
Base Fixed	$1,553,143	$504,563	$1,048,580
Peaking	$1,423,018		$1,423,018
Billing & CS	$230,677	$230,677	
Meters & Services	$529,144	$529,144	
Conservation	$268,975		$268,975
Rev Offsets	-$703,680		-$703,680
Private Fire	$12,498	$12,498	
Total Revenue Requirements	**$3,710,952**	**$1, 276,882**	**2,434,070**

7.1 DEVELOPMENT OF BASIC METER CHARGES

In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter, which has a value of 1. According to the AWWA M1 Manual, a particular meter size's ratio of meter and capacity servicing costs relative to that of a 5/8" meter is its "Equivalent Meter Units" (EMU). For example, a 2-inch meter has 5.33 times the throughput capacity of a 5/8" meter and therefore has a multiplication factor of 8 to determine its EMU to 5/8" meter. The Meter Replacement & Capacity factors escalates as meter size increases because the District's cost to service a meter increases with its size. Based on the District account data, the number of accounts and EMUs are shown in Table 7-2.

Table 7-2: Equivalent Meter Unit Calculation

Meter Sizes	Uniform Ratio	Meter Replacement Ratio[36]	AWWA Capacity Ratios	Number of accounts[37]	Bills per Year	Meter Replacement cost EMU	AWWA Ratios Costs EMU	Fire Demand Ratio[38]	Fire Equiv. Units
A	B	C	D	E	F=E×6	G=F×C	H=E×D	I	J=E×I
5/8"	1.0	1.0	1.0	3,024	18,144	18,144	18,144		
3/4"	1.0	1.9	1.5	575	3,450	6,594	5,175		
1"	1.0	1.2	2.5	96	576	716	1,440		
1 1/2"	1.0	4.4	5.0	25	150	659	750		
2"	1.0	5.0	8.0	18	108	537	864		
3"	1.0	6.1	17.5	3	18	111	315		
4"	1.0	10.2	31.5	0	0	0	0		
6"	1.0	10.2	80.0	0	0	0	0		
Fire protection									
5/8"	1.0			415	2,490			1	2,490
1"	1.0			1	6			3.4	21
2"	1.0			0	0			21.3	0
4"	1.0			1	6			131.9	791
Total Equiv Units	24,948	26,761	26,688	4,158	24,948				3,302

The total number of meters is equivalent to the total number of customers. Billing and Customer Service rates are based on the number of bills per year (Column F) based on the uniform ratios as the billing and customers cost component does not depend on the meter size. Meter & Services cost recovery EMUs are derived from the number of bills for meter and installation costs expressed in EMUs (Column G) based on the meter service and installation ratios as the provided services will depend on

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[36] Based on meter installation cost in FY 2016, provided by the District

[37] As of FY 2016

[38] From Table 6-10

the meter size installation cost. For capacity cost recovery, the number of bills per EMU (Column H), based on AWWA's safe flow ratios as the capacity cost recovery, depends on the capacity of the meter. Fire protection equivalent units (Column J), based on the fire demand ratios as the cost of the service will be related to the potential demand, depending on the size of the fire connection to recover private fire costs.

The unit basic meter charge components are calculated by dividing the total revenue requirement for each cost allocation by the appropriate units as described in the previous section. The calculations and resulting rate components are shown below in Table 7-3.

Table 7-3: Unit Basic Meter Charge Components

Line No.		Source	Billing & CS	Meters & Services	Capacity	Private Fire Protection
1	Revenue requirements	*Table 7-1*	$230,677	$529,144	$504,563	$12,498
2	Units of Service	*Table 7-2*	24,948	26,761	26,688	3,302
3	**Unit cost**	***Line 1/ Line 2***	**$9.25**	**$19.78**	**$18.91**	**$3.79**

The proposed basic meter charges for FY 2016 in Table 7-4 are derived by adding up the four service charge components – billing & customer service, meters & services, capacity, and private fire protection – for all relevant meters. Potable water meters are charged the first three, while private fire lines are only charged for billing & customer service and private fire protection. The billing & customer service charge of $9.25 is charged equally to all meter sizes and shown in Column B. Meter &Services is charged according to the meter replacement ratios as described in Table 7-2, Column C. The appropriate ratio for a given meter is multiplied by the unit rate of $19.78. Likewise, the Capacity fee by meter size derived from the capacity unit rate of $18.91 is multiplied by the relevant AWWA capacity ratio, shown in Column D of Table 7-2.. Table 7-4 shows the total basic meter charge by meter size resulting from the summation of these components as appropriate for potable water and fire protection meters. Note as stated above that outside city customers are not charged on rates inflated by an outside city factor, as recommended by RFC.

Table 7-4: Basic Meter Charge Components Calculation

Meter Sizes	Billing & CS	Meters & Services	Capacity	Private Fire Protection	Proposed Basic Meter Charges 2016 New Structure
A	B	C	D	E	F =B+C+D+E
5/8"	$9.25	$19.78	$18.91	$0.00	$47.94
3/4"	$9.25	$37.81	$28.37	$0.00	$75.43
1"	$9.25	$24.61	$47.28	$0.00	$81.14
1 1/2"	$9.25	$86.91	$94.55	$0.00	$190.71
2"	$9.25	$98.41	$151.28	$0.00	$258.94
3"	$9.25	$121.48	$330.93	$0.00	$461.66
4"	$9.25	$202.30	$595.67	$0.00	$807.22
6"	$9.25	$202.30	$1,512.80	$0.00	$1,724.35
Fire protection					
5/8"	$9.25	$0.00	$0.00	$3.79	$13.04

7.2 PROPOSED BI-MONTHLY FIXED CHARGES (BASIC METER CHARGES)

Applying the proposed revenue adjustments from Table 4-19 to the proposed bi-monthly basic meter charges in Table 7-4 above yields the proposed bi-monthly basic meter charges for the Study period in Table 7-5. Private Fire Services are based on 5/8" detection meter sizes.

Table 7-5: Proposed Bi-Monthly Basic Meter Charges

	Current	Proposed New Structure	Proposed Dec 2016 (FY 2017)	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)
Rev Adj.		0%	25%	15%	10%	10%	10%
5/8"	$49.34	**$47.94**	$59.93	$68.92	$75.82	$83.41	$91.76
3/4"	$49.34	**$75.43**	$94.29	$108.44	$119.29	$131.22	$144.35
1"	$95.28	**$81.14**	$101.43	$116.65	$128.32	$141.16	$155.28
1 1/2"	$182.14	**$190.71**	$238.39	$274.15	$301.57	$331.73	$364.91
2"	$273.74	**$258.94**	$323.68	$372.24	$409.47	$450.42	$495.47
3"	$414.98	**$461.66**	$577.08	$663.65	$730.02	$803.03	$883.34
4"	$628.32	**$807.22**	$1,009.03	$1,160.39	$1,276.43	$1,404.08	$1,544.49
6"	$628.32	**$1,724.35**	$2,155.44	$2,478.76	$2,726.64	$2,999.31	$3,299.25
Fire Service 5/8"	$22.86	**$13.04**	$16.30	$18.75	$20.63	$22.70	$24.97

7.3 DEVELOPMENT OF COMMODITY RATES

The District's sole water source is local groundwater from the Santa Margarita Groundwater Basin. District costs associated with meeting customer demand are assigned as components of the commodity rates. Variable commodity rates are built through the combination of the six components listed in Table 7-6.

Table 7-6: Commodity Rate Components Description

	Commodity Rate Components	Description
1	Variable Water Supply Cost	Local water variable cost
2	Delivery Costs	Remaining cost of delivering water to customers
3	Peaking Cost	Peaking cost of capital, incl. groundwater recharge program
4	Water use Efficiency	Water use efficiency program related costs
5	Revenue Offsets	Property tax (unrestricted revenues) to provide affordability for essential use
6	Supplementary Water Supply Rate	Contributions to offset recycled water cost

The development of each of these six rate components is described individually below.

7.3.1 *Variable Water Supply Component*

The water supply commodity rate component is designed to recover the local water variable costs. The District's sole water supply is local groundwater from the Santa Margarita Groundwater Basin. Therefore, as shown in Table 4-8, the water supply costs are due to electricity for pumping the groundwater and water treatment chemicals. The water supply component is collected as a unit rate per KGal of potable water consumption.

Table 7-7: Water Supply Commodity Rate Component

	Source	FY 2016
Revenue Requirements		$397,177
Units of Service (KGals)		327,882
Unit Cost ($ per KGal)		**$1.22**

7.3.2 *Variable Non-Water Supply Components*

The first step in determining the the variable non-water supply cost components' base rates is to determine the equivalent units of service for each component. This is because each component is not applied to all customer classes equally. Table 7-8 shows the derivation of each of the equivalent units of service required to derive the remaining five commodity rate components: delivery, peaking, water use efficiency (or conservation), revenue offsets, and supplementary water supply components.

Table 7-8: Potable Water Equivalent Units of Service by Customer Classes

Allocation by Customer Classes	FY 2016 Projected Sales (KGal)	Peaking[39]	Equivalent Peaking Usage	Water Use Efficiency	Rev. Offsets
	A	B	C=A×B	D	E
Source:		Table 6-4			
Residential	234,066	1.306	305,476	1.00	1.00
CII	67,963	1.111	75,507	1.00	0.00
Landscape-Potable	17,130	1.793	30,714	1.00	0.00
Others	8,723	1.422	12,404	1.00	0.00
Total Equivalent Sales (KGals)	**327,882**		**424,101**	**327,882**	**234,066**

As with the peaking factors described in Section 6.2, the water use efficiency and revenue offset factors are used to inflate or deflate usage based on the characteristics of a customer class in relation to the cost component. For example, the water use efficiency component is applied equally across the four customer classes as all customer classes bear the responsibility of efficient water use equally. Within the residential customer class, however, only customers with use in Tiers 3 and 4 will share in this cost. Tiers 1 and 2 are based on efficient, basic indoor and outdoor water needs. Non-residential customers will be equally apportioned their class' share of the efficiency cost as their usage is not tiered.

[39] The numbers shown are rounded.

The revenue offset is property tax for the District. Per District policy, only residential customers receive this offset to provide affordability for health and safety essential use. Within the residential class, Tier 1 usage receives double the offset as the other tiers to aid in affordability of essential health, hygiene, and safety water consumption.

Table 7-9: Residential Tier Revenue Offsets

Tier	FY 2016 Projected Sales (kgal)	Revenue Offset Factor	Equivalent Usage
	A	B	C=A×B
Residential			
Tier 1	113,129	1.00	113,129
Tier 2	57,323	0.50	28,662
Tier 3	22,447	0.50	11,224
Tier 4	41,166	0.50	20,583
Total	**234,066**		**173,598**

Similarly to the basic meter charge components, the variable component base charges are developed by dividing the total revenue requirement for each component defined in Table 7-1 by the equivalent units shown in Table 7-8. This results in the base per unit costs in Table 7-10 below.

Table 7-10: Unit Cost Calculations

		Source:	Delivery	Peaking	Water Use Efficiency	Rev. Offsets
1	Revenue Requirements	*Table 7-1*	$1,048,580	$1,423,018	$268,975	-$703,680
2	Units of Service (KGals)	*Table 7-8*	327,882	424,101	327,882	234,066
3	**Unit Cost**[40] (KGals)	*Line 1/ Line 2*	**$3.20**	**$3.36**	**$0.83**	**-$3.01**

Taking the allocations of equivalent units derived in Table 7-8 and multiplying them by the unit costs calculated in Table 7-11 provides the revenue requirement responsibility of each class to the different variable cost components. These totals are shown in Table 7-11.

Table 7-11: Commodity Rate Revenue Requirement Allocation by Customer Class

Customer Classes	Delivery	Peaking	Water Use Efficiency	Rev. Offsets[41]
Residential	$749,011	$1,026,398	$194,275	-$703,680
CII	$217,482	$253,703	$56,409	$0
Landscape-Potable	$54,816	$103,199	$14,218	$0
Others	$27,914	$41,678	$7,240	$0

[40] All unit costs are rounded up to the nearest cent.
[41] The Revenue Offset allocation value is calculated using the rounded unit cost in Table 7-9.

The revenue requirement for residential customers is further broken down by tier, as described above and in Table 7-9. Therefore, the residential commodity rate must also be differentiated by tier. Table 7-12 shows the equivalent units, calculated as they were in Table 7-8. The total residential customer revenue requirement for each cost allocation is listed below in Line 7. Line 9 shows the the unit rates for each allocation by dividing Line 7 by Line 6. Each base unit is multiplied by the corresponding factor derived in Table 7-8 and Table 7-9 for the Water Use Efficiency and Revenue Offset components and shown below for the Peaking component.

Table 7-12: Residential Rate Calculations

Line No.	Tier	FY 2016 Projected Sales (KGals)	Delivery	Peaking Factors	Peaking	Water Use Efficiency[42]	Rev. Offsets[43]
		A	B	C	D=A×C	E	F
1	**Residential**						
2	Tier 1	113,129	113,129	0.995	112,564	0	113,129
3	Tier 2	57,323	57,323	1.203	68,960	0	28,920
4	Tier 3	22,447	22,447	1.513	33,963	22,447	11,325
5	Tier 4	41,166	41,166	2.186	89,990	41,166	20,768
6	**Total Equivalent Units of Service**	**234,066**	**234,066**		**305,476**	**63,614**	**174,142**
7	**Revenue Requirement**		**$749,011**		**$1,026,398**	**$194,275**	**-$703,680**
8							
9	**Unit Rate**	***Line 7/Line 6***	**$3.20**		**$3.37**	**$3.06**	**-$4.04**
10	Tier 1		$3.20	0.995	$3.36	$0.00	-$4.04
11	Tier 2		$3.20	1.203	$4.06	$0.00	-$2.02
12	Tier 3		$3.20	1.513	$5.10	$3.06	-$2.02
13	Tier 4		$3.20	2.186	$7.37	$3.06	-$2.02

The peaking rates for the non-residential classes are based on the peaking factors for each class. The peaking factor is multiplied by the base unit cost to arrive at this cost. For example, the peaking cost rate for Landscape – Potable customers is equal to the unit rate $3.36 multiplied by the peaking factor 1.793, then rounded up to the nearest cent to arrive at $6.03.

Table 7-13: Non-Residential Peaking Rate Calculation

	Base Rate	Peaking Factor	Peaking Rate[44]

[42] Only Tier 3 and Tier 4 consumers will share the cost for water efficiency units.

[43] Only residential customers will receive revenue offsets with tier one getting the twice bigger offset and Tier 2 to Tier 4.

[44] Peaking rates are calculated by multiplying the unit cost by the respective peaking factor by customer class and is rounded up to the nearest cent.

	A	B	C=A×B
CII (Commercial & Industrial, Institutional)	$3.36	1.111	$3.74
Landscape-Potable	$3.36	1.793	$6.03
Others	$3.36	1.422	$4.78

Finally, the components of the variable rate are added together to produce the proposed rates for each customer class and tier. Table 7-14 shows the rate components and their summation to the proposed rates for FY 2016.

Table 7-14: Derivation of FY 2016 Commodity Rate per KGal

		Variable Supply	Delivery	Peaking	Water Use Efficiency[45]	Rev. Offsets	ProposedRates – New Structure
	Source:	Table 7-7	Table 7-10				
		A	B	*C*	*D*	*E*	F = A+B+C+D+E
1	**Residential**			*Table 7-12*	*Table 7-12*	*Table 7-12*	
2	Tier 1	$1.22	$3.20	$3.36	$0.00	-$4.04	$3.74
3	Tier 2	$1.22	$3.20	$4.06	$0.00	-$2.02	$6.46
4	Tier 3	$1.22	$3.20	$5.10	$3.06	-$2.02	$10.56
5	Tier 4	$1.22	$3.20	$7.37	$3.06	-$2.02	$12.83
6	**Non-Residential**			*Table 7-13*	*Table 7-10*	*Table 7-8*	
7	**Business**	$1.22	$3.20	$3.74	$0.83	$0.00	$8.99
8	**Industrial**	$1.22	$3.20	$3.74	$0.83	$0.00	$8.99
9	**Landscape – Potable**	$1.22	$3.20	$6.03	$0.83	$0.00	$11.28
10	**Others**	$1.22	$3.20	$4.78	$0.83	$0.00	$10.03

7.3.3 *Supplemental Water Charge Component*

In addition to the proposed commodity rate above, RFC suggests the District establish a Supplemental Water Supply Rate added to the variable rate. RFC proposes that the surcharge be implemented in FY 2017. If implemented, revenues generated from the Supplemental Water Supply Rates would be transferred from the Water Fund (Fund 01) to a restricted reserve fund. These funds would then tranfer to the Recycled Water Fund (Fund 02) and and be allocated as a revenue offset for the Recycled Water system.

This added charge is intended to provide an offset for recycled water costs. Potable water services benefit from the presence of recycled water services, as they reduce the demand on potable water. In addition to improving water supply availability, recycled water also makes the potable water supply more reliable. Due to these benefits, potable water users should share a portion of the recycled water system costs. The benefits received are the equivalent to recycled water sales divided across the total potable and recycled water sales. This results in the percent that recycled water constitutes of all water available through the District, potable or recycled. The total recycled water service cost to be recovered by the potable water customers is calculated as a share of the revenue requirements for recycled water.

[45] The water efficiency component of the commodity rate is based on the water efficiency factors by customer class and tiers and the unit cost for water efficiency cost recovery for the respective customer class

In 2016, the recycled water sales totalled 160 AF and total potable and recycled water sales combined were 1,266 AF. Thus the share to be recovered by the supplemental water charge is 12.6%. The recycled water revenue requirement is assessed to be $522,760, 12.6 percent of which is $65,952. This is the revenue requirement for the charge. The requirement is then divided by the total potable water units, 327,882, resulting in the unit cost per kGal of $0.21.

Table 7-15: Supplemental Water Supply Charge Calculation

Potable Water Contribution to RW Revenue Requirement	$65,952
Total Units of Water Service	327,882
Unit Cost[46] per KGal	**$0.21**

All potable water customer classes would pay for the recycled water supplemental water charge in proportion to their consumption. This charge would be added to the commodity rate and charged per KGal. However, Residential Tier 1 water usage would not pay the supplemental water charge. Tier 1 represents standard indoor water consumption necessary for basic needs. It is the District's policy to ensure that this basic necessity for health and safety be allocated the cheapest water resources, which cannot be replaced by recycled water.

Taking the unit cost and multiplying it by the water sales to each customer class, the total cost allocation is calculated for each class, shown in Table 7-16. The supplemental water supply cost for the residential class is then distributed across Tiers 2-4 according to their water use in FY 2016.

Table 7-16: Recycled Water Cost Allocation to Potable Water Customer Classes

Recycled Water Cost Allocations to Potable Water Customer Classes	Projected Sales FY 2016 A	Unit Rate (Table 7-14) B	RW Costs C = A x B
Residential	234,066	$0.21	$49,154
CII	67,963	$0.21	$14,272
Landscape – Potable	17,130	$0.21	$3,597
Others	8,723	$0.21	$1,832
Total	**327,882 kgal**	**$0.21**	**$68,855**[47]

The total Recycled Water revenue requirement for potable water residential classes is $49,154. Total units of Residential use in Tiers 2-4 is 120,936, resulting in a Residential Supplemental Water Supply Charge of $0.41. Table 7-18 shows the resulting Supplemental Water Supply Charges for all classes and tiers across the study period. Note that the charge does not increase with the annual revenue adjustments.

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[46] The number is rounded up.
[47] Due to rounding

Table 7-17: Recycled Water Cost Allocation to Potable Water Customer Classes

	$
Total RW Revenue Requirement for Potable Water Residential Customers (Table 7-15)	$49,154
Total Units of Potable Water Residential Service Subject to RW Costs[48] (KGal)	120,936
Residential Supplemental Water Supply Charge	**$0.41**

Table 7-18: Proposed Supplemental Water Supply Charges FY 2017-2021

	FY 2016 Dec 2015 Current	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)	Proposed Dec 2017 (FY 2018)
Residential						
Tier 1	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tier 2	$0.00	$0.41	$0.41	$0.41	$0.41	$0.41
Tier 3	$0.00	$0.41	$0.41	$0.41	$0.41	$0.41
Tier 4	$0.00	$0.41	$0.41	$0.41	$0.41	$0.41
Non-Residential						
CII	$0.00	$0.21	$0.21	$0.21	$0.21	$0.21
Landscape – Potable	$0.00	$0.21	$0.21	$0.21	$0.21	$0.21
Others	$0.00	$0.21	$0.21	$0.21	$0.21	$0.21
Effective Usage @ Proposed Rates[49]		51%	51%	51%	51%	51%
Projected Sales (kgal)						
Residential (Tiers 2 – 4)	**132,041**	**138,155**	**144,268**	**150,382**	**150,865**	**132,041**
Tier 1	113,129	123,517	129,236	134,955	140,673	141,126
Tier 2	57,323	62,587	65,484	68,382	71,280	71,509
Tier 3	22,447	24,508	25,643	26,778	27,913	28,002
Tier 4	41,166	44,946	47,027	49,108	51,189	51,354
Non-Residential	**100,693**	**104,215**	**107,737**	**111,258**	**111,259**	**100,693**
CII	67,963	70,589	72,176	73,763	75,351	75,351
Landscape – Potable	17,130	19,571	20,636	21,700	22,765	22,765
Others	8,723	10,533	11,403	12,273	13,143	13,143
Projected Revenues[50]	**$0**	**$38,646**	**$78,529**	**$81,775**	**$85,021**	**$85,219**

7.4 PROPOSED COMMODITY RATES

The proposed commodity rates developed for each tier in Table 7-14 and shown in Column F of Table 7-14 are replicated below in Column E in Table 7-19 below. Much like the basic meter charges, the

[48] Only Tier 2, Tier 3 and Tier 4

[49] Based FY 2015 Consumption database

[50] Rev for FY 2017 = Σ 51% *(138,155*$0.41 + 104,215*$0.21)+49%*(138,155*$0.00 + 104,215*$0.00)=$38,646

commodity rates are increased each year of the study period per the proposed revenue adjustments found in Table 4-19.

Table 7-19: FY 2016 - 2021 Proposed Commodity Rates without Supplemental Water Supply Charges

Customer Class	Current Tier Breaks	Proposed Tier Breaks	Current	Proposed New Structure	Proposed Dec 2016 (FY 2017)	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)
A	B	C	D	E	F	G	H	I	J
Rev Adj. [51]				0%	25%	15%	10%	10%	10%
Residential									
Tier 1	6,000 gal	6,000 gal	$3.70	$3.74	$4.89	$5.63	$6.20	$6.83	$7.52
Tier 2	14,000 gal	12,000 gal	$6.21	$6.46	$8.18	$9.41	$10.36	$11.41	$12.56
Tier 3	24,000 gal	16,000 gal	$8.01	$10.56	$13.31	$15.31	$16.85	$18.54	$20.40
Tier 4	36,000 gal	> 16,000 gal	$9.66	$12.83	$16.15	$18.58	$20.45	$22.50	$24.76
Tier 5	50,000 gal		$12.36						
Tier 6	>50,000 gal		$13.97						
Non-Residential[52]									
Business			$11.26	$8.99	$11.24	$12.93	$14.23	$15.66	$17.23
Industrial			$9.58	$8.99	$11.24	$12.93	$14.23	$15.66	$17.23
Landscape - Potable			$10.70	$11.28	$14.10	$16.22	$17.85	$19.64	$21.61
Others			$10.61	$10.03	$12.54	$14.43	$15.88	$17.47	$19.22

[51] Note that the actual rate increase year on year may not be equal to the revenue adjustment due to the revenue offset component. Revenue offset component is based on revenues from tax on property and it cannot increase at the same rate as the revenue adjustment. The rate of increase of the revenue offset component is constrained to 20%. See Appendix for details

[52] The current rates for 2016 are calculated as average for the respective customer class.

Table 7-20: FY 2016 - 2021 Proposed Commodity Rates with Supplemental Water Supply Charges

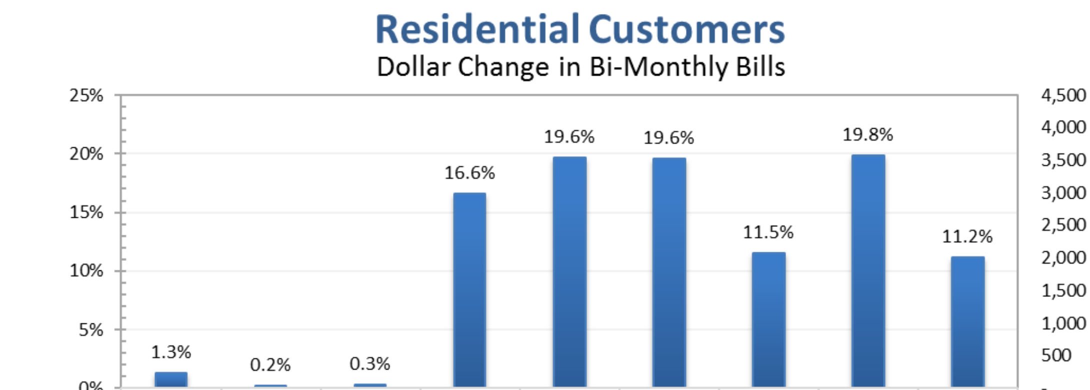
Customer Class	Current Tier Breaks	Proposed Tier Breaks	Current	Proposed New Structure	Proposed Dec 2016 (FY 2017)	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)
A	B	C	D	E	F	G	H	I	J
Rev Adj. [53]				0%	25%	15%	10%	10%	10%
Residential									
Tier 1	6,000 gal	6,000 gal	$3.70	$3.74	$4.89	$5.63	$6.20	$6.83	$7.52
Tier 2	14,000 gal	12,000 gal	$6.21	$6.87	$8.59	$9.82	$10.77	$11.82	$12.97
Tier 3	24,000 gal	16,000 gal	$8.01	$10.97	$13.72	$15.72	$17.26	$18.95	$20.81
Tier 4	36,000 gal	> 16,000 gal	$9.66	$13.24	$16.56	$18.99	$20.86	$22.91	$25.17
Tier 5	50,000 gal		$12.36						
Tier 6	>50,000 gal		$13.97						
Non-Residential									
Business			$11.26	$9.20	$11.45	$13.14	$14.44	$15.87	$17.44
Industrial			$9.58	$9.20	$11.45	$13.14	$14.44	$15.87	$17.44
Landscape - Potable			$10.70	$11.49	$14.31	$16.43	$18.06	$19.85	$21.82
Others			$10.61	$10.24	$12.75	$14.64	$16.09	$17.68	$19.43

7.5 CUSTOMER BILL IMPACTS

Figure 7-1 compares the bill totals for a residential customer under both the current and proposed rates. Most customers will see an increase of at least $10, with 40% of customers seeing an increase of $30 or higher. This is due to the reduction in the number of tiers as well as the tier widths in addition to the increases in the basic meter charge.

[53] Note that the actual rate increase year on year may not be equal to the revenue adjustment due to the revenue offset component. Revenue offset component is based on revenues from tax on property and it cannot increase at the same rate as the revenue adjustment. The rate of increase of the revenue offset component is constrained to 20%. For details see Table 10-5.

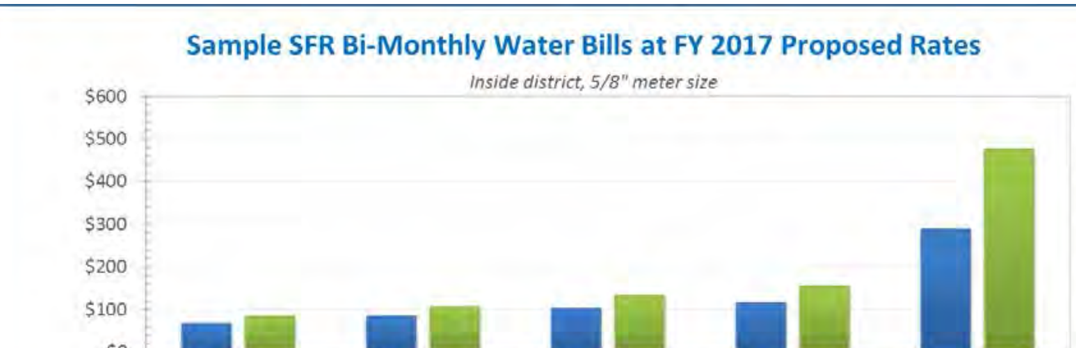
Figure 7-1: Proposed FY 2017 Residential Potable Water Customer Bill Impacts



	≤ $0	$0 - $5	$5 - $10	$10 - $15	$15 - $20	$20 - $30	$30 - $50	$50 - $100	> $100
% Bills	1.3%	0.2%	0.3%	16.6%	19.6%	19.6%	11.5%	19.8%	11.2%
Bills Count	255	42	56	3,336	3,955	3,939	2,312	3,989	2,252

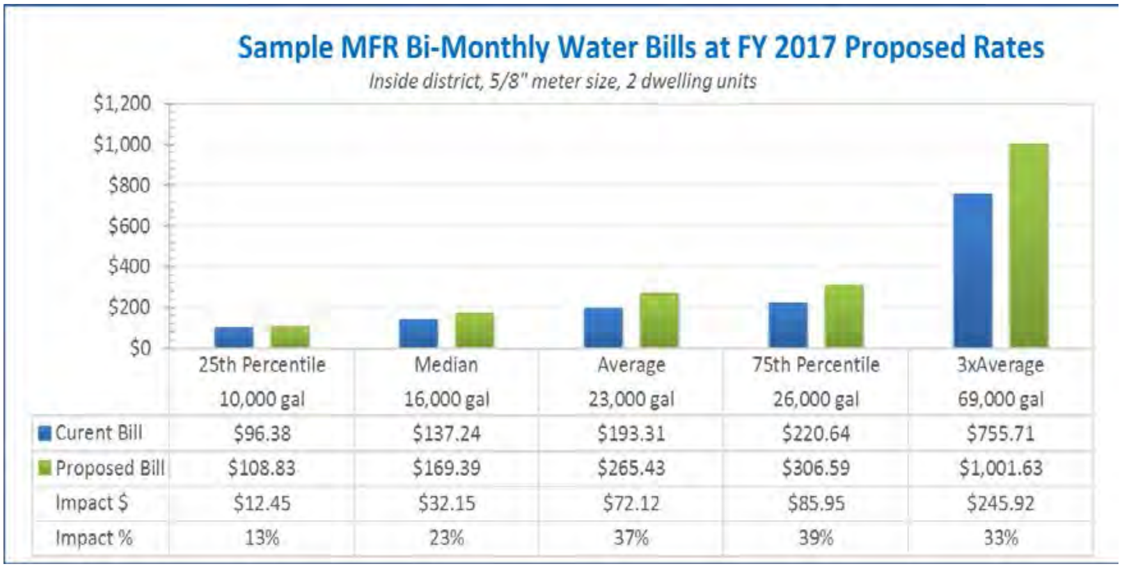
Looking at a sample bimonthly bill for average use with FY 2017 rates, a Single Family residence will see a $29.63 increase in their water bill. The median user will see a $22.49 increase. Both increases average approximately a 30% increase. However, high water users will see a significant increase. At three times the average use, a customer will see a 66% increase, equaling about $189. This is due to the tier changes. A multi-family residence will see a similar pattern in increase shown in Figure 7-3

Figure 7-2: FY 2017 Sample Single Family Residential Water Bills



	25th Percentile 5,000 gal	Median 8,000 gal	Average 11,000 gal	75th Percentile 13,000 gal	3x Average 33,000 gal
Curent Bill	$67.84	$83.96	$102.59	$115.01	$288.26
Proposed Bill	$84.38	$106.45	$132.22	$154.53	$477.21
Impact $	$16.54	$22.49	$29.63	$39.52	$188.95
Impact %	24%	27%	29%	34%	66%

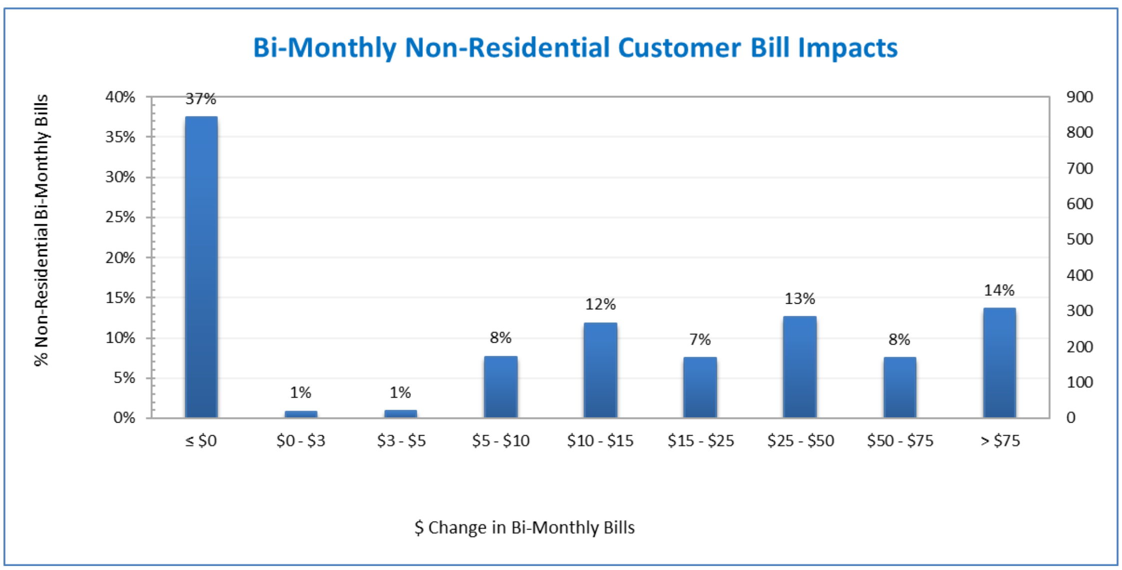
Figure 7-3: FY 2017 Sample Multi-Family Residential Water Bill



	25th Percentile 10,000 gal	Median 16,000 gal	Average 23,000 gal	75th Percentile 26,000 gal	3xAverage 69,000 gal
Curent Bill	$96.38	$137.24	$193.31	$220.64	$755.71
Proposed Bill	$108.83	$169.39	$265.43	$306.59	$1,001.63
Impact $	$12.45	$32.15	$72.12	$85.95	$245.92
Impact %	13%	23%	37%	39%	33%

Non-Residential customers will see a different pattern in bill impacts due to the uniform usage rates. 37 percent of non-residential customers will see a reduction in their bills. Approximately one-third of customers will see increases of $15 or higher.

Figure 7-4: Proposed FY 2017 Potable Water Residential Customer Bill



8. DROUGHT RATES

This section documents the key assumptions involved in the development of drought surcharges, an overview of the drought stages and water consumption reduction methodology, corresponding revenue impact, drought surcharge calculations and proposed surcharges.

Drought rates are specific surcharges that are applied during drought spells in addition to the base (non-drought) potable water rates. The need for these surcharges arises from the two contradicting objectives of a water utility under drought conditions: (i) facilitate the reduction in water consumption to reflect the decreased supply of water resources; (ii) maintain adequate revenues to meet the revenue requirements for the smooth operation of the system. Thus, drought surcharges are designed as a revenue neutral cost recovery mechanism to achieve the mandatory overall consumption reduction during drought, while protecting the utility by maintaining revenue sufficiency.

8.1 CONSUMPTION REDUCTION

In order to assess the reduction in water sales under drought conditions, the District defined 3 Stages of Drought in its Update Water Shortage Contigency Plan: Stage 1 represents normal water consumption (approximated by FY 2016 potable water sales), while Stage 2 and Stage 3 assume different levels of drought severity and imply targeted reduction in water usage by customer class.

Table 8-1 provides details for targeted water consumption reduction by drought stage, type of customer and season . Reduction by customer class is based on the assumption that excessive and inefficient use of water would decrease first since it tends to be more discretionary and responsive to price changes. In the District's case, this type of consumption is mostly related to the outdoor consumption of Residential and landscape Irrigation customers, as demonstrated by the high seasonality in their usage, and to a lesser extend to other non-residential customers. The latter represent a more heterogeneous group, so efficient consumption is much more difficult to estimate; therefore, the targeted reductions due to water shortages in that group are lower.

Table 8-1: Potable Water Usage Reduction from FY 2016 Sales

	Stage 1	Stage 2		Stage 3	
	Normal / No Reduction	Winter	Summer	Winter	Summer
Residential (SFR & MFR)	0%	10%	19%	15%	24%
Non-Residential					
Business	0%	5%	5%	10%	10%
Industrial	0%	5%	5%	10%	10%
Landscape - Potable	0%	20%	30%	25%	50%
Others	0%	5%	5%	10%	10%

The reduction in water consumption by residential customers is assumed to begin with Tier 4 and Tier 3 as consumption within Tiers 1 and 2 represents efficient indoor and outdoor water usage. Specifically, to achieve the targeted water usage reduction, excessive water consumption (Tier 4) is decreased first and if not enough, inefficient water consumption (Tier 3) is reduced as well, so that the residential customer class water usage target is met.

Table 8-2 shows the reduction in sales by drought stage, customer class and season. As an illustration, the winter residential consumption under Stage 2 needs to decrease by 10 percent compared to its current level (Table 8-1) or by 10,064 kGal (Table 8-2, Line 1, Column D). Consistent with the method described above, excessive consumption (Tier 4) is reduced first (Tier 4 consumption of 10,800 kGal is reduced by 10,064 kGal). Similarly, residential winter consumption under Stage 3 needs to be decreased by 15 percent or 15,096 kGal. In this case, the reduction in Tier 4 of 10,800 kGal would not be sufficient to achieve the target, so consumption in Tier 3 has to be reduced by 4,296 kGal.

Table 8-2: Sales Reduction Based on Drought Stages (kGals)

		FY 2016 Projected Sales		Stage 2 Sale Reduction Goals		Stage 3 Sale Reduction Goals		Residual Sales after Reduction		Sale Reduction	
		Winter (A)	Summer (B)	Winter (C)	Summer (D)	Winter (E)	Summer (F)	Stage 2 (G = A+B - C - D)	Stage 3 (H = A + B - E - F)	Stage 2 (I = C + D)	Stage 3 (J = E + F)
1	**Residential (SFR & MFR)**	100,642	133,424	10,064	25,432	15,096	32,103	198,569	186,866	35,496	40,528
2	**Non-Residential**										
3	Business	24,123	30,842	1,206	1,542	2,412	3,084	52,216	49,468	2,748	3,954
4	Industrial	5,771	7,227	289	361	577	723	12,349	11,699	650	939
5	Landscape - Potable	4,477	12,653	895	3,796	1,119	6,327	12,439	9,684	4,691	4,915
6	Others	3,365	5,358	168	268	336	536	8,287	7,851	436	604
7	**Total (kgal)**	**138,378**	**189,504**	**12,623**	**31,399**	**19,541**	**42,773**	**283,860**	**265,568**	**44,022**	**50,941**

Table 8-3 summarizes sales by drought stages expressed as percent of non-drought year sales.

Table 8-3: Residential Reduction Goals (kGals)

		FY 2016 Projected Sales (kgal)		Stage 2 Sale Reduction Goals		Stage 3 Sale Reduction Goals		Residual Sales after Reduction		Sale Reduction	
		Winter (A)	Summer (B)	Winter (C)	Summer (D)	Winter (E)	Summer (F)	Stage 2 (G = A+B-C-D)	Stage 3 (H = A+B-E-F)	Stage 2 (I = C + D)	Stage 3 (J = E + F)
	Reduction Goal (Table 8-2)			**10,064**	**25,432**	**15,096**	**32,103**	**198,569**	**186,866**	**35,496**	**47,199**
1	**Residential (SFR & MFR)**										
2	**Tier 1**	57,073	57,749	0	0	0	0	114,821	114,821	0	0
3	Tier 2	24,444	30,699	0	0	0	0	55,143	55,143	0	0
4	Tier 3	8,325	13,994	0	0	4,296	1,121	22,319	16,902	0	4,296
5	Tier 4	10,800	30,982	10,064	25,432	10,800	30,982	6,286	0	35,496	36,232
6	**Total (kgal)**	**100,642**	**133,424**	**10,064**	**25,432**	**15,096**	**32,103**	**198,569**	**186,866**	**35,496**	**40,528**
7	**Total DSC Sales (Tiers 2-4)** *(rows 3+4+5)*							**83,748**	**72,045**		

8.2 DROUGHT SURCHARGE CALCULATION AND PROPOSED SURCHARGES

The basis for calculation of the drought surcharges is the baseline (non-drought) revenue requirement, assumed equal to the FY 2017 revenue requirement calculated in Section 4.1.6.

In general, to determine the drought surcharges, baseline revenue requirements have to be modified for each drought stage to account for cost savings from reduced water purchases (variable cost). However, since Scotts Valley Water District has its own groundwater resources, the water purchase cost is zero and consequently, the reduction in consumption does not have an effect on revenue requirements. Moreover, the reduced water sales will continue to generate unrecoverable fixed costs which include the costs associated with delivery, peaking, conservation, revenue offsets, etc. Those cost components remain the same, despite the reduction in water sales, and thus the overall revenue requirements for the functioning of the system will not change. RFC proposes general commodity drought surcharges designed to be revenue neutral against the backdrop of lower sales during drought stages, that is, the proposed drought surcharges for each stage should recover the FY 2017 revenue requirement.

The process of surcharge calculation includes several steps. First, sales revenue reduction is calculated (Table 8-4, Columns I and J) based on the proposed non-drought base rates (excluding supplemental water supply rates) by customer class and tier and the respective decrease in consumption.

Table 8-4: Sales Revenue Reduction

					Sales reduction (kgal)		Remaining Sales (kgal)		Sales Revenue Reduction	
Line	Customer Class / Tiers		Base Rates 2017	Sales (kgal) projections FY 2016	Stage 2	Stage 3	Stage 2	Stage 3	Stage 2	Stage 3
No.	A	B	C	D	E	F	G=D-E	H=D-F	I=C×E	J=C×F
1	**Residential**	*[1+2+3+4]*		234,066	**35,496**	**47,199**	**198,569**	**186,866**	**$573,263**	**$746,886**
2	Tier 1		$4.89	114,821	0	0	114,821	114,821	$0	$0
3	Tier 2		$8.18	55,143	0	0	55,143	55,143	$0	$0
4	Tier 3		$13.31	22,319	0	5,417	22,319	16,902	$0	$72,105
5	Tier 4		$16.15	41,782	35,496	41,782	6,286	0	$573,263	$674,781
6	**Non-Residential**	*[7+8+9+10]*		93,817	**8,526**	**15,115**	**85,291**	**78,702**	**$109,813**	**$192,316**
7	Business		$11.24	54,965	2,748	5,496	52,216	49,468	$30,890	$61,780
8	Industrial		$11.24	12,999	650	1,300	12,349	11,699	$7,305	$14,611
9	Landscape – Potable		$14.10	17,130	4,691	7,446	12,439	9,684	$66,149	$104,987
10	Others		$12.54	8,723	436	872	8,287	7,851	$5,469	$10,939
11	**Total**	*[1+6]*		**327,882**	**44,022**	**62,314**	**283,860**	**265,568**	**$683,077**	**$939,202**

Next, the unit drought rates of $2.41/kgal and $3.54/kgal for Stage 2 and Stage 3, respectively are determined by distributing the revenue reduction across all remaining sales (the sales which need to generate the recovery of revenue). Unit cost rates are the proposed rates for non-residential customers. (see Table 8-5)

Table 8-5: Unit Drought Rates

No. Line		Source	Stage 2	Stage 3
1	Sales reduction	Table 8-4 (columns I & J)	$683,077	$939,202
2	Remaining Sales in kgal	Table 8-4 (columns G & H)	283,860	265,568
3	**Unit Drought Rates ($/kgal)**	**[1]/[2]**	**$2.41**[54]	**$3.54**[55]

The revenue recovery amount to be collected from residential customers equals the unit drought rate multiplied by the remaining residential consumption under the respective drought stage; thus, the revenue to be recovered from residential customers under Stages 2 and 3 would be $479K and $662K, respectively (Table 8-6).

As noted above, consumption within Tier 1 represents efficient indoor consumption and as such it cannot be subject to reduction due to drought. Since the rate structure needs to ensure the affordability of standard consumption, Tier 1 customers do not contribute to the revenue recovery. Therefore, the cost allocated to residential customers is distributed between Tier 2, 3 and 4 customers, resulting in drought rates of $5.72/kgal and $9.19/kgal for Stages 2 and 3, respectively.

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[54] The ratio is rounded up to the nearest cent.
[55] The ratio is rounded up to the nearest cent.

Table 8-6: Allocation of Revenue Reductions to be Recovered by Customer Classes

No. Line	Customer classes	Stage 2 Remaining Sales A	Stage 3 Remaining Sales B	Stage 2 Drought Rev C = $2.41 x A	Stage 3 Drought Rev D = $3.54 x B
1	**Residential**	**198,569**	**186,866**	**$478,552**	**$661,506**
2	**Non-Residential**			**$205,551**	**$278,606**
3	Business	52,216	49,468	$125,841	$175,117
4	Industrial	12,349	11,699	$29,761	$41,414
5	Landscape – Potable	12,439	9,684	$29,978	$34,283
6	**Others**	**8,287**	**7,851**	**$19,971**	**$27,791**
7	**Total**	**283,860**	**265,568**	**$684,104**	**$940,112**

Table 8-7: Residential Drought Rates Calculation

No. Line		Source	Stage 2	Stage 3
1	Revenues to be collected from residential Customers	*Table 8-6 (C1 & D1)*	$478,552	$661,506
2	Sales to collect the drought rates[56] (kgal)	*Table 8-4 (Tiers 2-4)*	83,748	72,045
3	**Residential Drought Rates ($/kgal)**	***[1]/[2]***	**$5.72**[57]	**$9.19**[58]

Table 8-8 summarizes the proposed Drought Rates for Residential and Non-Residentail use under Stage 2 and Stage 3 as defined in the

Table 8-8: Proposed Drought Rates

	Stage 2	Stage 3
Residential		
Tier 1	$0.00 / kGal	$0.00 / kGal
Tier 2	$5.72 / kGal	$9.19 / kGal
Tier 3	$5.72 / kGal	$9.19 / kGal
Tier 4	$5.72 / kGal	$9.19 / kGal
Non-Residential	$2.41 / kGal	$3.54 / kGal

[56] Remaining sales in Tier 2, Tier 3 and Tier 4.
[57] The ratio is rounded up to the nearest cent.
[58] The ratio is rounded up to the nearest cent.

9. RECYCLED WATER PROPOSED RATES

9.1 BASIC METER CHARGES

To enhance revenue stability, RFC proposes that the District implement Recycled Water basic service charges based on meter sizes. RFC recommends the District utilize the same charges by meter as the Water Fund. In consideration of the impact of the new rates' introduction, RFC proposes a gradual implementation of the basic meter charges over five years. Table 9-1 shows the 5-year Phase-in Monthly Basic Meter Charges for RW services from FY 2017 to FY 2021, where as in FY 2021, RW services will pay the same Basic Meter Charges per month as potable water services. Note that potable water services are billed bi-monthly and RW services are billed monthly. The basic meter charges shown below are rounded up to the nearest cent.

Table 9-1: Proposed Phase-In Recycled Water Monthly Basic Meter Charges

	Current	Proposed New Structure	Proposed Dec 2016 (FY 2017)	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)
% of Potable Basic Meter Charge		0%	20%	40%	60%	80%	100%
RW Basic Meter Charge							
5/8"	$0.00	$0.00	$6.00	$13.79	$22.75	$33.37	$45.88
3/4"	$0.00	$0.00	$9.43	$21.69	$35.79	$52.49	$72.18
1"	$0.00	$0.00	$10.15	$23.33	$38.50	$56.47	$77.64
1 1/2"	$0.00	$0.00	$23.84	$54.83	$90.48	$132.70	$182.46
2"	$0.00	$0.00	$32.37	$74.45	$122.85	$180.17	$247.74
3"	$0.00	$0.00	$57.71	$132.73	$219.01	$321.22	$441.67
4"	$0.00	$0.00	$100.91	$232.08	$382.93	$561.64	$772.25
6"	$0.00	$0.00	$215.55	$495.76	$818.00	$1,199.73	$1,649.63
# of RW Meters							
5/8"			17	17	17	17	17
3/4"			8	8	8	8	8
1"			13	14	15	17	17
1 1/2"			1	1	1	1	1
2"			12	12	13	13	15
3"			3	3	3	3	3
4"							
6"							
Projected Revenues[59]			**$10,859**	**$26,145**	**$44,066**	**$68,953**	**$94,810**

[59] Example: FY 2017 Rev = Σ ($6.00 * 17 + $9.43*8+$10.15*13+$23.84*1+$32.37*12+$57.71*3)*12 bills = $10,859

9.2 COMMODITY RATE

RFC proposes that the District implement a uniform recycled water commodity rate. The uniform rate is calculated based on the residual recycled water costs after the service charge revenues are collected and the Supplemental Water Supply revenue offset is transferred from the Water Fund's restricted fund. Table 9-2 shows the remaining revenue requirements once the basic meter charge revenue and the revenue offset are subtracted.

Table 9-2: Recycled Water Revenue Requirements

No. Line	Revenue Requirements		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1	O&M Expenses	Table 4-25	$434,260	$457,982	$480,485	$504,247	$527,644	$551,997
2	Debt Service		$0	$0	$0	$0	$0	$0
3	PAYGO CIP	Table 4-14	$88,500	$78,030	$21,848	$15,918	$84,971	$11,041
4	Reserve Funding at Current Rate Rev		-$149,907	-$115,661	-$33,243	-$1,460	-$43,908	$56,089
5	**Subtotal Revenue Requirements**	**[1+2+3+4]**	**$372,853**	**$420,351**	**$469,090**	**$518,706**	**$568,708**	**$619,126**
6	**Subtotal Other Revenues**	**Table 4-29**	**$0**	**$0**	**$0**	**-$878**	**-$2,141**	**-$3,821**
7	**Net Rev. Requirement form Current Rates**	**[5-6]**	**$372,853**	**$420,351**	**$469,090**	**$517,828**	**$566,567**	**$615,305**
8	Proposed Rev Adjustment		0%	25%	15%	5%	3%	3%
9	Cumulative Rev. Adjustment		100%	125%	144%	151%	155%	160%
10	**Proposed Rev. Requirements**	**[7]*[9]**	**$372,853**	**$525,439**	**$674,316**	**$781,597**	**$880,817**	**$985,286**
11	Less Basic Meter Charges Revenues	Table 9-1	$0	*-$10,859*	*-$26,145*	*-$44,066*	*-$68,953*	*-$94,810*
12	Less Supplemental Potable Rates Offset	Table 7-17	$0	-$38,646	-$78,529	-$81,775	-$85,021	-$85,219
13	**Net Proposed RW commodity rate rev. req't**	**[10+11+12]**	**$372,853**	**$475,934**	**$569,643**	**$655,757**	**$726,843**	**$805,257**

As shown in Table 9-3, the net proposed usage rate revenue requirement is divided by the projected sales to calculate the uniform RW commodity rates per KGal for the study period.

Table 9-3: Recycled Water Proposed Commodity Rate Calculations

Line No.		Source	Current New Structure	Proposed Dec 2016 (FY 2017)	Proposed Dec 2017 (FY 2018)	Proposed Dec 2018 FY 2019)	Proposed Dec 2019 (FY 2020)	Proposed Dec 2020 (FY 2021)
1	**Net Proposed RW Commodity Rate Revenue Requirements**	Table 9-2	**$372,853**	**$475,934**	**$569,643**	**$655,757**	**$726,843**	**$805,257**
2	Projected Sales (kgal)	Table 4-23	36,510	40,442	45,095	49,749	54,402	59,055
3	**Uniform RW Commodity Rates ($/kgal)**	***[1/2]***	**$10.22**	**$11.77**	**$12.64**	**$13.19**	**$13.37**	**$13.64**

9.3 CUSTOMER BILL IMPACTS

Figure 9-1 summarizes the projected impacts on RW bills under FY 2017 proposed rates, phase-in basic meter charges and commodity rates shown in Table 9-1 and Table 9-3, respectively. 50 percent of customers will see a bill increase of 100 percent or greater. No customers will see a reduction and 4 percent of customers will see an increase under 10 percent.

Figure 9-1: Recycled Water Proposed FY 2017 Bill Impacts

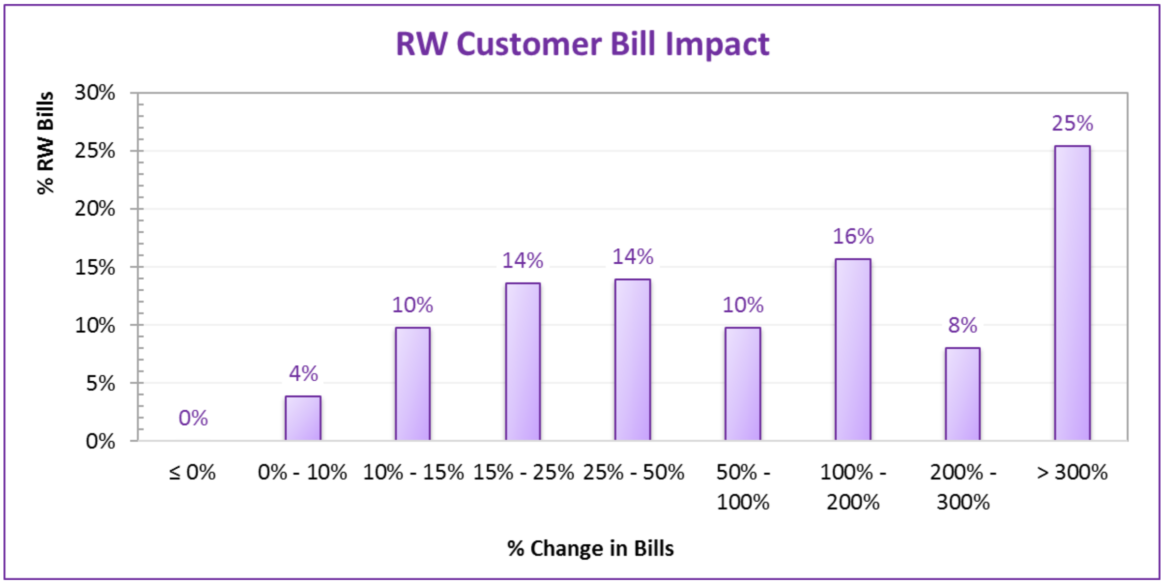
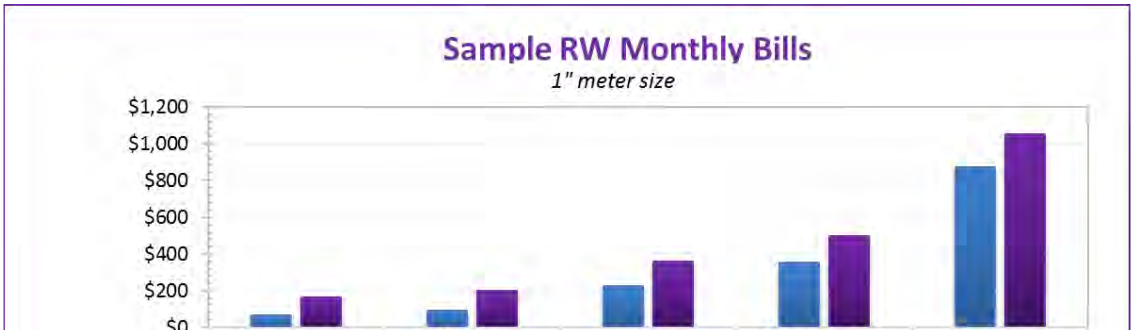


Figure 9-2 shows the projected RW bills under proposed rates effective Dec 2016 under different RW usage level. The average customer, using 29,500 gallons, will see approximately 60 percent increase of $134.44, resulting in a bill of $357.37. Lower use customers will see an approximately 142 percent increase. In contrast, customers using 3x the average (88,500 gal per month) will only see a 21 percent increase as the uniform rate benefits these users the most.

Figure 9-2: FY 2017 Sample Recycled Water Bills



	45th Percentile 13,000 gal	Median 16,000 gal	Average 29,500 gal	75th Percentile 41,500 gal	3xAverage 88,500 gal
Curent Bill	$67.40	$90.20	$222.93	$354.79	$871.28
Proposed Bill	$163.16	$198.47	$357.37	$498.61	$1,051.80
Impact $	$95.76	$108.27	$134.44	$143.81	$180.52
Impact %	142%	120%	60%	41%	21%

10. APPENDIX

Table 10-1: Capital Cost Allocation by Component and Cost Allocation Factors

				Cost Components										
Line No.	Potable Water Fixed Assets By Functions	Fuctional Cost Allocation Factors	2015 Replacement Cost	Variable Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	Meters & Services	Conserv ation	Rev Offsets	General	Fire Protection	Total
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Land/Rights of Way	General	$1,209,258									$1,209,258		$1,209,258
2	SCADA	Average demand	$766,842		$444,512	$237,126	$85,205							$766,842
3	Source of Supply	Source of Supply	$11,022,649		$11,022,649									$11,022,649
4	Pumps and Related	Pumping	$1,638,934		$484,465	$608,157	$546,311							$1,638,934
5	Pump Buildings	Pumping	$352,565		$104,218	$130,826	$117,522							$352,565
6	Well Pumps	Source of Supply	$58,688		$58,688									$58,688
7	Water Treatment	Source of Supply	$3,632,574		$3,632,574									$3,632,574
8	Treatment Plant	Water Treatment	$6,053,764		$2,684,219	$3,369,545								$6,053,764
9	Distrubution, Main	Transmission & Distribution	$14,510,479		$2,157,348	$2,708,155	$2,432,752		$3,584,604				$3,627,620	$14,510,479
10	Reservoir/Tanks	Storage	$10,002,649		$3,326,357	$4,175,630							$2,500,662	$10,002,649
11	Fire Hydrants	Fire protection	$332,066										$332,066	$332,066
12	Services	Transmission & Distribution	$1,650,342		$245,365	$308,011	$276,688		$407,693				$412,585	$1,650,342
13	Office/Shop Bldg	General	$1,185,052									$1,185,052		$1,185,052
14	Tools and Equip	General	$219,691									$219,691		$219,691
15	Office Equipment	General	$16,029									$16,029		$16,029
16	Transportation	General	$623,207									$623,207		$623,207
17	Shop Buildings	General	$257,846									$257,846		$257,846
18	Computer Equipment	General	$176,214									$176,214		$176,214
19	**TOTAL**	**{1+..+18]**	**$53,708,850**		**$24,160,394**	**$11,537,450**	**$3,458,477**	**$0**	**$3,992,298**	**$0**	**$0**	**$3,687,296**	**$6,872,934**	**$53,708,850**
20	Capital cost by functions	Line 20 as % of Total		**45%**	**21%**	**6%**	**0%**	**7%**	**0%**	**0%**	**7%**	**13%**	**100%**	

Table 10-2: O&M Allocation by Cost Components and Allocation Factors

Line No.	O&M Potable Water	Functional Cost Allocation	O&M Expenses FY 2016	Variable Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	Meters & Services	Conservation	Rev Offsets	General	Fire Protection
1	**Salaries and Benefits**												
2	*All other*	General	$1,970,480									$1,970,480	
3	*Conservation*	Conservation	$87,200							$87,200			
4	**G&A Services**												
5	*All other*	General	$638,610									$638,610	
6	*Conservation*	Conservation	$103,700							$103,700			
7	**Supplies**												
8	*All other*	Average demand	$31,640		$18,341	$9,784	$3,516						
9	*Conservation*	Conservation	$78,075							$78,075			
10	**Source of Supply**												
11	*All other*	Source of Supply	$50,000		$50,000								
12	*Conservation*	Conservation	$0							$0			
13	**Pumping**												
14	*Pumps - Electricity and Power*	Variable Supply	$296,500	$296,500									
15	*Pumps and Boosters*	Pumping	$65,000		$19,214	$24,119	$21,667						
16	**Water Treatment**												
17	*WT Chemicals and Supplies*	Variable Supply	$100,677	$100,677									
18	*Other Water Treatment Expenses*	Water Treatment	$170,000		$75,377	$94,623							
19	**Transmission & Distribution**	Transmission & Distribution	$303,600		$45,138	$56,662	$50,900		$75,000				$75,900
20	**WEU/Conservation**	Conservation	$0							$0			
21	**Customer Accounts**	Billing & CS	$66,400					$66,400					
22	**Other**	General	$14,600									$14,600	
23	**Total O&M allocation**	[1+..+22]	**$3,976,482**	**$397,177**	**$208,070**	**$185,188**	**$76,082**	**$66,400**	**$75,000**	**$268,975**	**$0**	**$2,623,690**	**$75,900**
24	**O&M allocation in percent**	Line 23 as % of total		**10%**	**5%**	**5%**	**2%**	**2%**	**2%**	**7%**	**0%**	**66%**	**2%**

Table 10-3: Water Fund Cost Component Revenue Requirement Allocations

					COST COMPONENTS										
Line No.	Cost allocation Potable Water		Allocation Factors by Functions	FY 2016	Variable Water Supply	Base Fixed	Max Day	Max Hour	Billing & CS	Meters & Services	Conservation	Rev Offsets	General	Fire Protection
	A		B	C	D	E	F	G	H	I	J	K	L	M
1	**REVENUE REQUIREMENTS**													
2	O&M Expenses		O&M Costs	$3,976,482	$397,177	$208,070	$185,188	$76,082	$66,400	$75,000	$268,975	$0	$2,623,690	$75,900
3	Debt Service		Capital Costs	$355,681	$0	$160,000	$76,406	$22,903	$0	$26,439	$0	$0	$24,419	$45,515
4	PAYGO CIP		Capital Costs	$1,209,833	$0	$544,232	$259,890	$77,905	$0	$89,930	$0	$0	$83,059	$154,818
5	Reserve Funding		Capital Costs	-$1,034,216	$0	-$465,232	-$222,165	-$66,596	$0	-$76,876	$0	$0	-$71,002	-$132,345
6														
7	**Subtotal revenue requirements**	**[2+3+4+5]**		**$4,507,781**	**$397,177**	**$447,069**	**$299,319**	**$110,294**	**$66,400**	**$114,493**	**$268,975**	**$0**	**$2,660,165**	**$143,888**
8														
9	**NON-RATE REVENUE**													
10	Other operating revenue		General	$76,749	$0	$0	$0	$0	$0	$0	$0	$0	$76,749	$0
11	Property Taxes		Revenue Offset	$703,680	$0	$0	$0	$0	$0	$0	$0	$703,680	$0	$0
12	Interest		General	$14,600	$0	$0	$0	$0	$0	$0	$0	$0	$14,600	$0
13	Misc. Non-Operating Revenue		General	$1,800	$0	$0	$0	$0	$0	$0	$0	$0	$1,800	$0
14	**Subtotal non-rate revenues**	**[10+11+12+13]**		**$796,829**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$703,680**	**$93,149**	**$0**
15														
16	**Net Revenue Requirements**	**[7-14]**		**$3,710,952**	**$397,177**	**$447,069**	**$299,319**	**$110,294**	**$66,400**	**$114,493**	**$268,975**	**-$703,680**	**$2,567,016**	**$143,888**
17	Reallocation factors for "General"					43%	29%	11%	6%	11%				
18	General Cost Allocation					$1,106,073	$740,531	$272,874	$164,277	$283,261			- **$2,567,016**	
19	Public Fire Protection Cost Reallocation									$131,390				$131,390
20	**Net Adjusted Revenue Requirements**	**[16+18+19]**		**$3,710,952**	**$397,177**	**$1,553,143**	**$1,039,850**	**$383,168**	**$230,677**	**$529,144**	**$268,975**	**-$703,680**	**$0**	**$12,498**

Table 10-4: Potable Water Cost Components to Rate Components

			RATE COMPONENTS								
No. line	Cost Components	Net Adjusted Revenue Requirements	Variable Supply	Delivery	Peaking	Water Use Efficiency	Revenue Offsets	Billing & CS	Meters & Services	Capacity	Private Fire Protection
	A	B	C	D	E	F	G	H	I	J	K
1	Variable Water Supply	$397,177	$397,177								
2	Base Fixed	$1,553,143		$1,048,580						$504,563	
3	Peaking	$1,423,018			$1,423,018						
4	Billing & CS	$230,677						$230,677			
5	Meters & Services	$529,144							$529,144		
6	Conservation	$268,975				$268,975					
6	Rev Offsets	-$703,680					-$703,680				
7	Private Fire	$12,498									$12,498
8	**Total Revenue Requirements**	**$3,710,952**	**$397,177**	**$1,048,580**	**$1,423,018**	**$268,975**	**-$703,680**	**$230,677**	**$529,144**	**$504,563**	**$12,498**

Table 10-5: Residential Water Rate Increase

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Revised COS Water Rates w/ Rev. Offset						
Effective increase		*25%*	*15%*	*10%*	*10%*	*10%*
Residential						
Tier 1	$7.78	$9.73	$11.19	$12.31	$13.55	$14.91
Tier 2	$8.48	$10.60	$12.19	$13.41	$14.76	$16.24
Tier 3	$12.58	$15.73	$18.09	$19.90	$21.89	$24.08
Tier 4	$14.85	$18.57	$21.36	$23.50	$25.85	$28.44
Rev. Offset						
Effective increase		*20%*	*15%*	*10%*	*10%*	*10%*
Residential						
Tier 1	-$4.04	-$4.84	-$5.56	-$6.11	-$6.72	-$7.39
Tier 2	-$2.02	-$2.42	-$2.78	-$3.05	-$3.35	-$3.68
Tier 3	-$2.02	-$2.42	-$2.78	-$3.05	-$3.35	-$3.68
Tier 4	-$2.02	-$2.42	-$2.78	-$3.05	-$3.35	-$3.68
Total Revised COS rates						
Residential						
Tier 1	$3.74	$4.89	$5.63	$6.20	$6.83	$7.52
Tier 2	$6.46	$8.18	$9.41	$10.36	$11.41	$12.56
Tier 3	$10.56	$13.31	$15.31	$16.85	$18.54	$20.40
Tier 4	$12.83	$16.15	$18.58	$20.45	$22.50	$24.76

APPENDIX B:

New Connection Fee Schedule (2020s)

SCOTTS VALLEY
WATER DISTRICT

FEE SCHEDULE FOR NEW CONNECTIONS

Effective 12/13/20

Potable Service Connections			
Meter Size	**Capacity Fee**	**Meter Fee ***	**Total Fee**
5/8"	$22,428	$237	$22,665
COMBO SMALL SYSTEM **	$22,428	$474	$22,902
5/8" MULTI UNIT RESIDENTIAL ***	$13,457	$237	$13,694
DETAIL 4A (3/4") MULTI UNIT RESIDENTIAL ****	$13,457	$266	$13,723
COMBO MULTI UNIT RESIDENTIAL **/***	$13,457	$474	$13,931
3/4"	$33,644	$266	$33,910
1"	$56,071	$330	$56,401
1 1/2"	$112,141	$586-$1,102	varies
2"	$179,426	$797-$2,337	varies
3"	$392,494	$1,415-$2,868	varies
4"	$706,488	$2,010-$4,227	varies

Recycled Service Connections			
Meter Size	**Capacity Fee**	**Meter Fee ***	**Total Fee**
5/8"	$6,361	$237	$6,598
3/4"	$9,541	$266	$9,807
1"	$15,902	$330	$16,232
1 1/2"	$31,804	$586-$1,102	varies
2"	$50,887	$797-$2,337	varies
3"	$111,315	$1,415-$2,868	varies
4"	$200,366	$2,010-$4,227	varies

Fire Service Connections *****			
Meter Size/Hydrant	**Capacity Fee**	**Meter Fee ***	**Total Fee**
Private Fire Service (5/8" detection meter)	$0	$237	$237
Fire Hydrant - Publicly Owned	$0	-	$0
Fire Hydrant - Privately Owned	$0	-	$0

* Cost of the actual meter provided and installed by District

** Combo Small System combined 5/8" domestic meter with 5/8" fire detection meter

*** 5/8 Multi Unit Residential is a domestic meter (for indoor use) installed for individual units in a high-density development that uses recycled water for irrigation

**** Detail 4A (3/4") Multi Unit Residential is a domestic meter (for indoor use) installed for individual units in a high-density development that uses recycled water for irrigation

***** Regardless of the required pipe size, District installs 5/8" detection meter for all Private Fire Services

Note: Capacity Fees will be subject to annual adjustments based on Engineering News Record (ENR) Cost Index and Meter Fees will be subject to annual adjustments based on actual costs

APPENDIX C:

Audited Financial Source (2015-2021)

SCOTTS VALLEY WATER DISTRICT

Balance Sheets

June 30, 2020 and 2019

ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	June 30, 2020	June 30, 2019
Current assets:		
Cash and cash equivalents (Note 2)	$ 3,791,756	$ 2,519,128
Accrued interest receivable	14,245	7,098
Accounts receivable, net (Note 4)	1,645,176	1,404,967
Property taxes receivable	84,758	49,824
Other receivables	15,291	52,053
Notes receivable (Note 5)	169,412	173,019
Inventory – materials and supplies	271,380	232,601
Prepaid expenses	66,781	68,430
Total current assets	6,058,799	4,507,120
Non-current assets:		
Restricted – cash and cash equivalents (Note 2 and 3)	610,477	516,092
Notes receivable (Note 5)	98,333	267,745
Investment in Santa Margarita Groundwater Agency – JPA (Note 6)	91,291	40,754
Prepaid contribution to the Santa Margarita Groundwater Agency – JPA (Note 7)	295,821	291,256
Capital assets – not being depreciated (Note 8)	1,213,219	1,078,608
Capital assets – being depreciated, net (Note 8)	20,571,981	20,563,817
Total non-current assets	22,881,122	22,758,272
Total assets	28,939,921	27,265,392
Deferred outflows of resources:		
Deferred amounts related to net OPEB obligation (Note 12)	142,970	153,549
Deferred amounts related to net pension liability (Note 11)	694,399	680,989
Total deferred outflows of resources	837,369	834,538
Total assets and deferred outflows of resources	$ 29,777,290	$ 28,099,930

LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION	June 30, 2020	June 30, 2019
Current liabilities:		
Accounts payable and accrued expenses	$ 683,344	$ 494,579
Customer deposits for services	126,332	166,905
Accrued interest payable (Note 3)	43,179	47,513
Long-term liabilities – due within one year:		
Compensated absences (Note 9)	40,998	30,508
Loan payable (Note 3 and 10)	567,298	468,579
Total current liabilities	1,461,151	1,208,084
Non-current liabilities:		
Long-term liabilities – due in more than one year:		
Compensated absences (Note 9)	122,992	91,522
Loan payable (Note 10)	4,100,714	4,668,012
Net OPEB obligation (Note 12)	2,245,495	2,758,814
Net pension liability (Note 11)	2,304,037	2,070,658
Total non-current liabilities	8,773,238	9,589,006
Total liabilities	10,234,389	10,797,090
Deferred inflows of resources:		
Deferred amounts related to net pension liability (Note 11)	215,460	212,281
Total deferred inflows of resources	215,460	212,281
Net position:		
Net investment in capital assets (Note 13)	17,684,486	16,974,413
Unrestricted	1,642,955	116,146
Total net position	19,327,441	17,090,559
Total liabilities, deferred inflows of resources and net position	$ 29,777,290	$ 28,099,930

SCOTTS VALLEY WATER DISTRICT

Statements of Revenues, Expenses and Changes in Net Position

For the Fiscal Years Ended June 30, 2020 and 2019

	June 30, 2020	June 30, 2019
Operating revenues:		
Water sales	$ 4,566,923	$ 4,052,051
Water service	2,076,643	1,927,303
Other fees and charges	31,273	46,311
Total operating revenues	6,674,839	6,025,665
Operating expenses:		
Source of supply	182,735	99,307
Pumping	480,655	466,512
Water treatment	239,722	293,069
Recycled water	472,247	434,404
Transmission and distribution	1,990,814	1,849,596
Finance, customer service and conservation	659,450	649,335
General and administrative	993,681	837,784
Total operating expenses	5,019,304	4,630,007
Operating income before depreciation	1,655,535	1,395,658
Depreciation expense	(1,069,751)	(1,085,254)
Operating income	585,784	310,404
Non-operating revenues(expenses):		
Property taxes	1,030,321	975,085
Change in investment in Santa Margarita Groundwater Agency-JPA (Note 6)	(240,719)	-
Investment earnings	66,477	35,893
Interest expense	(86,262)	(94,956)
Other non-operating revenues	119,616	62,910
Total non-operating income	889,433	978,932
Change in net position before capital contributions	1,475,217	1,289,336
Capital contributions:		
Capacity buy-in fee	783,284	669,772
Capacity buy-back	(21,619)	(235,856)
Local capital grant	-	720
Total capital contributions	761,665	434,636
Change in net position	2,236,882	1,723,972
Net position:		
Beginning of year	17,090,559	15,366,587
End of year	$ 19,327,441	$ 17,090,559

Scotts Valley Water District
Statement of Net Position
June 30, 2018

		2018
Current assets:		
Cash and cash equivalents (note 2)	$	1,494,191
Accrued interest receivable		7,509
Accounts receivable, net		1,314,663
Accounts receivable – property tax		54,828
Accounts receivable – other		59,259
Materials and supplies inventory		211,827
Prepaid expenses and deposits		94,535
Note receivable – due in one year (note 3)		161,639
Total current assets		3,398,451
Non-current assets:		
Note receivable – due in more than one year (note 3)		392,431
Capital assets – not being depreciated (note 5)		733,176
Capital assets – being depreciated (note 5)		21,067,532
Total non-current assets		22,193,139
Total assets		25,591,590
Deferred outflows of resources:		
Deferred pension outflows (note 9)		656,179
Loss on defeasance of debt (note 8)		36,171
Total deferred outflows of resources	$	692,350

Continued on next page

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statement of Net Position, continued
June 30, 2018

		2018
Current liabilities:		
Accounts payable and accrued expense	$	342,344
Accrued wages and related payables		80,885
Customer deposits		112,436
Long-term liabilities – due in one year:		
Compensated absences (note 6)		25,862
Total current liabilities		561,527
Non-current liabilities:		
Unearned revenue		8,142
Long-term liabilities – due in more than one year:		
Compensated absences (note 6)		77,585
Net OPEB liability (note 7)		2,848,438
Net pension liability (note 9)		2,106,130
Loan payable (note 8)		5,136,591
Total non-current liabilities		10,176,886
Total liabilities		10,738,413
Deferred inflows of resources:		
Deferred pension inflows (note 9)		183,523
Total deferred inflows of resources		183,523
Net position: (note 11)		
Net investment in capital assets		16,700,288
Unrestricted (deficit)		(1,338,284)
Total net position	$	15,362,004

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statement of Revenues, Expenses and Change in Net Position
For the Fiscal Year Ended June 30, 2018

		2018
Operating revenues:		
Water sales - potable	$	3,504,698
Service charges - potable and recycled		2,293,336
Water sales – recycled		455,073
Other revenue		17,514
Total operating revenues		6,270,621
Operating expenses:		
Source of supply		163,709
Pumping		584,787
Water treatment		829,736
Recycled water		486,683
Transmission and distribution		835,658
Conservation		163,778
Customer accounts		198,613
General and administrative expenses		1,871,927
Total operating expenses		5,134,891
Operating income before depreciation		1,135,730
Depreciation expense		(998,094)
Operating income		137,636
Non-operating revenue (expense):		
Property tax revenues		923,894
Investment earnings		22,574
Interest expense		(107,603)
Loss on disposal of capital assets		(347,958)
Other non-operating revenue		170,233
Total non-operating revenues, net		661,140
Net income before capital contributions		798,776
Capital contributions:		
Capital grants		720
Total capital contributions		720
Change in net position		799,496
Net position, beginning of period, as previously stated		16,123,574
Prior period adjustment (note 4)		(1,561,066)
Net position, beginning of period, as restated		14,562,508
Net position, end of period	$	15,362,004

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Net Position
June 30, 2017 and 2016

		2017	2016
Current assets:			
Cash and cash equivalents (note 2)	$	2,331,365	2,924,816
Cash and cash equivalents – restricted (note 2)		-	749,404
Accrued interest receivable		6,649	6,467
Accounts receivable, net		1,105,970	848,798
Accounts receivable – property tax		61,524	42,991
Accounts receivable – other		183,620	53,734
Materials and supplies inventory		160,614	201,758
Prepaid expenses and deposits		93,345	92,278
Note receivable – due in one year (note 3)		161,784	160,339
Total current assets		4,104,871	5,080,585
Non-current assets:			
Note receivable – due in more than one year (note 3)		554,070	715,853
Capital assets – not being depreciated (note 5)		851,170	3,185,716
Capital assets – being depreciated (note 5)		19,948,767	16,842,017
Total non-current assets		21,354,007	20,743,586
Total assets		25,458,878	25,824,171
Deferred outflows of resources:			
Deferred pension outflows (note 4 and 10)		456,821	209,294
Loss on defeasance of debt (note 4)		40,190	460,564
Total deferred outflows of resources	$	497,011	669,858

Continued on next page

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Net Position, continued
June 30, 2017 and 2016

		2017	2016
Current liabilities:			
Accounts payable and accrued expense	$	265,933	325,292
Accrued wages and related payables		64,500	53,896
Accrued interest payable		59,067	125,557
Customer deposits		110,346	33,893
Long-term liabilities – due in one year:			
Compensated absences (note 6)		26,103	22,051
Certificates of Participation (note 8)		-	165,000
Loan payable (note 8)		452,927	215,000
Total current liabilities		978,876	940,689
Non-current liabilities:			
Unearned revenue		10,178	1,770
Long-term liabilities – due in more than one year:			
Compensated absences (note 6)		78,305	66,154
Other post-employment benefits payable (note 7)		1,173,326	1,184,517
Net pension liability (note 10)		1,782,379	1,233,015
Certificates of Participation (note 8)		-	2,332,413
Loan payable		5,596,621	4,110,000
Total non-current liabilities		8,640,809	8,927,869
Total liabilities		9,619,685	9,868,558
Deferred inflows of resources:			
Deferred pension inflows (note 9 and 10)		212,630	411,468
Total deferred inflows of resources		212,630	411,468
Net position: (note 11)			
Net investment in capital assets		14,790,579	13,665,884
Restricted for debt service		-	749,404
Unrestricted		1,332,995	1,798,715
Total net position	$	16,123,574	16,214,003

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Revenues, Expenses and Change in Net Position
For the Fiscal Years Ended June 30, 2017 and 2016

	2017	2016
Operating revenues:		
Water sales - potable	$ 2,646,488	2,242,642
Service charges - potable and recycled	1,497,782	1,348,590
Water sales – recycled	352,298	382,366
Other revenue	53,170	75,366
Total operating revenues	4,549,738	4,048,964
Operating expenses:		
Source of supply	150,614	97,655
Pumping	536,653	524,177
Water treatment	660,704	688,601
Recycled water	472,105	546,568
Transmission and distribution	797,494	776,096
Conservation	158,507	241,892
Customer accounts	192,925	207,833
General and administrative expenses	1,706,288	1,695,591
Total operating expenses	4,675,290	4,778,413
Operating income before depreciation	(125,552)	(729,449)
Depreciation expense	(937,847)	(913,955)
Operating loss	(1,063,399)	(1,643,404)
Non-operating revenue (expense):		
Property tax revenues	839,095	775,679
Investment earnings	25,159	39,106
Interest expense	(703,031)	(417,796)
Gain on disposal of capital assets, net	-	487,735
Other non-operating revenue	8,468	10,335
Total non-operating revenues, net	169,691	895,059
Net loss before capital contributions	(893,708)	(748,345)
Capital contributions:		
Capital contributions	10,500	89,000
Capital grants – state	792,779	246,704
Total capital contributions	803,279	335,704
Change in net position	(90,429)	(412,641)
Net position, beginning of period	16,214,003	16,626,644
Net position, end of period	$ 16,123,574	16,214,003

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Net Position
June 30, 2016 and 2015

		2016	2015
Current assets:			
Cash and cash equivalents (note 2)	$	2,924,816	5,251,395
Cash & cash equivalents – restricted (note 2)		749,404	932,329
Accrued interest receivable		6,467	6,221
Accounts receivable, net		848,798	763,700
Accounts receivable – property tax		42,991	17,905
Accounts receivable – other		53,734	840,565
Materials and supplies inventory		201,758	180,040
Prepaid expenses and deposits		92,278	76,558
Note receivable – due in one year (note 3)		160,339	11,512
Total current assets		5,080,585	8,080,225
Non-current assets:			
Note receivable – due in more than one year (note 3)		715,853	118,023
Capital assets – not being depreciated (note 4)		3,185,716	1,752,402
Capital assets – being depreciated (note 4)		16,842,017	17,769,454
Total non-current assets		20,743,586	19,639,879
Total assets		25,824,171	27,720,104
Deferred outflows of resources:			
Deferred pension outflows (note 5 and 10)		209,294	619,531
Loss on defeasance of debt (note 5)		460,564	603,814
Total deferred outflows of resources	$	669,858	1,223,345

Continued on next page

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Net Position, continued
June 30, 2016 and 2015

		2016	2015
Current liabilities:			
Accounts payable and accrued expense	$	325,292	988,052
Accrued wages and related payables		53,896	39,293
Accrued interest payable		125,557	147,430
Customer deposits		33,893	105,468
Long-term liabilities – due in one year:			
Compensated absences (note 6)		22,051	18,255
Note payable (note 9)		215,000	210,000
Certificates of Participation (note 9)		165,000	160,000
Bonds payable (note 9)		-	150,000
Total current liabilities		940,689	1,818,498
Non-current liabilities:			
Unearned revenue		1,770	3,542
Long-term liabilities – due in more than one year:			
Compensated absences (note 6)		66,154	54,764
Other post-employment benefits payable (note 7)		1,184,517	1,211,880
Net pension liability (note 10)		1,233,015	1,329,971
Note payable (note 9)		4,110,000	4,325,000
Certificates of Participation (note 9)		2,332,413	2,495,449
Bonds payable (note 9)		-	630,769
Total non-current liabilities		8,927,869	10,051,375
Total liabilities		9,868,558	11,869,873
Deferred inflows of resources:			
Deferred pension inflows (note 8 and 10)		411,468	446,932
Total deferred inflows of resources		411,468	446,932
Net position: (note 12)			
Net investment in capital assets		13,665,884	12,154,452
Restricted for debt service		749,404	932,329
Unrestricted		1,798,715	3,539,863
Total net position	$	16,214,003	16,626,644

See accompanying notes to the basic financial statements

Scotts Valley Water District
Statements of Revenues, Expenses and Change in Net Position
For the Fiscal Years Ended June 30, 2016 and 2015

		2016	2015
Operating revenues:			
Water sales	$	2,242,642	2,350,163
Service charges		1,348,590	1,566,851
Water sales – recycled		382,366	317,926
Other revenue		75,366	264,919
Total operating revenues		4,048,964	4,499,859
Operating expenses:			
Source of supply		105,192	1,638
Pumping		564,632	478,911
Water treatment		741,746	558,991
Recycled water		546,568	102,152
Transmission and distribution		820,443	1,129,053
Conservation		241,892	202,521
Customer accounts		207,833	188,335
General and administrative expenses		1,550,108	1,522,036
Total operating expenses		4,778,414	4,183,637
Operating income before depreciation		(729,450)	316,222
Depreciation expense		(913,955)	(883,615)
Operating loss		(1,643,405)	(567,393)
Non-operating revenue (expense):			
Property tax revenues		775,679	724,433
Investment earnings		39,106	24,848
Interest expense		(417,796)	(361,513)
Gain on disposal of fixed assets, net		487,735	19,822
Other non-operating revenue		10,336	20,788
Total non-operating revenues, net		895,060	428,378
Net loss before capital contributions		(748,345)	(139,015)
Capital contributions:			
Capital contributions		89,000	-
Capital grants – state		246,704	399,554
Total capital contributions		335,704	399,554
Change in net position		(412,641)	260,539
Net position, beginning of period, as previously stated		16,626,644	18,007,372
Prior period adjustment (note 11)		-	(1,641,267)
Net position, beginning of period, as restated		16,626,644	16,366,105
Net position, end of period	$	16,214,003	16,626,644

See accompanying notes to the basic financial statements

APPENDIX D:

Adopted Budget (FY 2020-21)

SCOTTS VALLEY
WATER DISTRICT

Fiscal Year 2021

Approved Budget

Mission

Scotts Valley Water District delivers a sustainable, high quality water service in an environmentally responsible and financially sound manner.

Core Values

Scotts Valley Water District is:

- Innovative
- Efficient
- Adaptable
- Collaborative
- Approachable

Vision

Scotts Valley Water District is a results-driven, data-oriented public agency that provides effective actions, superior customer service and visionary leadership.

Scotts Valley Water District

Board of Directors

July 1, 2020

Name	Title	Elected / Appointed	Current Term
Wade Leishman	President	Elected	2018-2022
William “Bill” Ekwall	Vice President	Elected	2018-2022
Chris Perri	Director	Elected	2016-2020
Danny Reber	Director	Elected	2016-2020
Ruth Stiles	Director	Elected	2018-2022

SCOTTS VALLEY
WATER DISTRICT

June 11, 2020

Board of Directors
Scotts Valley Water District

Re: FY 2021 Budget Transmittal Letter

The FY 2021 Budget was developed to implement the FY 2021 Work Plan in support of the District strategic goals:

- Water Resource Management: SVWD meets the water supply needs of its customers by developing new, sustainable sources and maximizing the use of existing sources.
- Infrastructure Integrity: SVWD provides continuous investment in its infrastructure and process improvements to ensure the efficiency of its operations.
- Financial Stewardship: SVWD manages its financial resources in a manner that ensures the reliability of its operations and provides the greatest value to its customers.
- Community Engagement: SVWD proactively creates opportunities for strategic alliances and mutually beneficial relationships with its customers and partners.
- Organizational Vitality: SVWD recruits and retains the highest quality employees and board members by offering a work environment in which they can thrive and succeed.

The Work Plan in its entirety is attached for reference.

The total FY 2021 Budget amounts to $10,962,429 in expenditures, including $6,034,268 in Operating Expenses, $643,161 in Debt Service, $1,630,000 in New Projects, $2,640,000 in Project Carryover, and $15,000 in Purchase Order Carryover, and as described in the FY 2021 Budget Summary below.

In the March and April 2020 meetings, the Finance and Personnel Committee reviewed Budget Assumptions and the preliminary Proposed Operating Budget. During its April meeting, the Water Resource and Engineering Committee reviewed and commented on the Proposed Projects Budget. In May, the Board of Directors reviewed the Proposed Projects Budget and the Proposed Operating Budget.

The District successfully completed the Comprehensive Rate and Fee Study in compliance with the Proposition 218 requirements in December 2016 and implemented the new rate plan in February 2017. In November 2019, the Board approved a lower rate than 2016 adopted Rate Schedule. The approved/projected rate changes for FY 2020 through FY 2021 are below:

Potable Water

Effective Date	Change in Basic Meter Charge	Change in Tiered Rate
December 13, 2019	3%	3%
December 13, 2020	3% (TBD)	3% (TBD)

Recycled Water

Effective Date	Change in Basic Meter Charge	Change in Tiered Rate
December 13, 2019	46.7%	1.36%
December 13, 2020	37.5%	2.02%

To comply with the 2014 Sustainable Groundwater Management Act, the District along with the County of Santa Cruz and San Lorenzo Valley Water District formed the Santa Margarita Groundwater Agency (SMGWA), which operations are initially funded by the three member agencies. The FY 2021 Expense Budget includes funding of $290,490, or $18,669 more than the prior year budget, for SMGWA.

The Debt Service budget in the FY 2021 Budget is prepared pursuant to the payment schedule specified in the 2016 Installment Purchase Agreement. Debt service payments in FY 2021 increase 16% from $554,841 to $643,161. The Debt Service Coverage Ratio (DSCR) for the FY 2021 Budget is 4.4, exceeding the required 1.2 ratio. The ratio lowers to 3.1 if all development revenues from new service connections projected for FY 2021 were delayed to future years.

The FY 2021 Operating Expense Budget increases 7.5%, or $423,973 from the prior year. The primary reason for the increase is that the FY 2021 budget provides funding for six professional service agreements that are operating in nature but do not occur annually. These budget enhancements total $280,620. The total Operating Expense Budget, excluding these one-time enhancements would total $5,741,079, a 2% increase from the FY 2020 Budget.

The budget for Salaries & Benefits in FY 2021 reflects a 3.15% Cost-of-Living Adjustment (COLA) increase for all non-exempt positions. Contributions to CalPERS for each of the Districts three pension plans also increased in FY 2021. Further, the minimum required payment on the District's Unfunded Accrued Liability increased 19% from $148,000 to $176,000. Overall, Salaries & Benefits are budgeted to increase by 3% in FY 2021.

Services & Supplies and Debt Service combined are budgeted to increase 10% in FY 2021.

FY 2021 BUDGET SUMMARY

	Potable Water Fund 01	Recycled Water Fund 02	District Total Funds 01 and 02
REVENUE			
Operating Revenue			
Water Sales	3,783,811	482,653	4,266,464
Water Services	2,168,674	65,345	2,234,019
New Connections	786,110	32,126	818,236
Subtotal	6,738,595	580,124	7,318,719
Non-Operating Revenue			
Property Taxes	1,077,212	-	1,077,212
Notes Receivable (principal)	-	169,412	169,412
Other	98,179	8,573	106,752
Subtotal	1,175,391	177,985	1,353,376
TOTAL REVENUE	**7,913,986**	**758,109**	**8,672,095**
EXPENSES			
Operating Expenses			
Administration	1,351,885	112,896	1,464,781
Finance/Customer Service/WUE	892,295	93,986	986,281
Operations	2,746,887	396,032	3,142,919
Engineering	266,949	29,661	296,610
Board	129,309	14,368	143,677
Subtotal	5,387,325	646,943	6,034,268
Debt Service (principal & interest)	390,270	252,891	643,161
Projects	1,622,800	7,200	1,630,000
TOTAL EXPENSES	**7,400,395**	**907,034**	**8,307,429**
FY 2020 Projects Carryover	2,115,000	525,000	2,640,000
FY 2020 Purchase Orders Carryover	15,000	-	15,000
TOTAL BUDGET W/CARRYOVER	**9,530,395**	**1,432,034**	**10,962,429**
Surplus/(Deficit)	-1,616,409	-673,925	-2,290,334

REVENUE

The FY 2021 Budget comprises a total revenue of $8,672,096 with $7,913,987 in the Potable Water (01) Fund and $758,109 in the Recycled Water (02) Fund.

Water Sales revenue includes consumption-based sales of potable water, recycled water, and bulk water. The FY 2021 Water Sales revenue budget assumes consumption will be equal to the recent three-year average, and a rate increase of 3% in December 2020.

Water Service revenue is based on monthly or bimonthly basic service charges and the number of existing meters for both potable and recycled water. For new connections added to the system in FY 2020, Water Service revenue is anticipated in FY 2021 and is included in the budget.

New Connections revenue is based on the development projects which are underway in the Service Area and anticipated to be completed in FY 2021. New Connections revenue has proven to be volatile and difficult to predict. The FY 2021 Budget is based on the most likely scenario projected at this time.

Non-Operating Revenue includes property taxes, notes receivable, interest, dividends, sale of surplus items, etc. Property tax revenue for FY 2021 is budgeted at 5.0% more than the FY 2020 estimated actual, based on the 5-year history of property tax revenue growth. Interest and dividends are budgeted based on current interest rates. Notes receivable, primarily the Reimbursement for the Reduction of the Recycled Water Entitlement from the City of Scotts Valley, is included in the proposed FY 2021 budget.

EXPENSES

The FY 2021 Operating Budget totals $6,034,268 including $5,387,325 in the Potable Water (01) Fund and $646,943 in the Recycled Water (02) Fund. The FY 2021 Operating Budget is comprised of $3,050,086 in Salaries and Benefits and $2,984,183 in Services, Supplies and Production Costs, as detailed below.

Salaries and Benefits

Salaries and Benefits	FY 2020 Approved Budget	FY 2021 Proposed Budget	Change	%
Administration	624,052	641,272	17,220	3%
Finance	537,784	563,967	26,183	5%
Operations	1,589,423	1,619,059	29,636	2%
Engineering	95,241	105,710	10,469	11%
Board	118,000	120,077	2,077	2%
Total	**2,964,500**	**3,050,085**	**85,585**	**3%**

The FY 2021 Salaries and Benefits budget provides for an increase of $85,585, or 3%, over the FY 2020 budget. The Salaries budget includes scheduled step increases for eligible hourly employees and compensation adjustments for exempt employees. The budget also includes a COLA of 3.15%, as mentioned above, based upon the calendar year 2019 CPI-U average for hourly employees. Directors Fees for the board include compensation for Directors and Associate Directors to attend board and committee meetings as well as time spent at conferences, training events and other functions. The Benefits budget includes an average increase of 4% in medical premium rates; an increase of $28,012 or 19%, for the unfunded pension liability related to prior service by employees; an increase of $23,687, or 14%, for normal pension costs covering current service by employees; and moderate increases in other benefits.

The number of positions remains unchanged at 18, including the 0.5 full-time equivalent (FTE) Administrative Office Assistant position which supports the Santa Margarita Groundwater Agency (SMGWA). The costs of this position are included within the Administration Division salary and benefit line item budgets. The cost of this position is offset with a revenue item budget (within the revenue budget) because fifty percent of the position is funded by SMGWA. A summary of budgeted full-time equivalent (FTE) positions follows:

Positions

Position	FTE in FY 2020	FTE in FY 2021
General Manager	1	1
Operations Manager	1	1
Assistant to the General Manager	1	1
Finance & Customer Service Manager	1	1
Engineering Technician	1	1
Operations Supervisor	1	1
Water Use Efficiency Coordinator	1	1
Lead Water Facilities Operator	2	2
Water Facilities Operator III	2	2
Water Facilities Operator II	2	2
Utility Service Representative, Field	1	1
Electrician/Instrumentation Technician	1	1
Accounting Specialist	1	1
Administrative Office Assistant	0.5	0.5
Administrative Office Assistant - SMGWA	0.5	0.5
Utility Service Representative, Office	1	1
Total Positions	**18**	**18**

Services, Supplies and Production Costs

Description	FY 2020 Approved Budget	FY 2021 Proposed Budget	Change	%
Services	836,808	1,098,941	262,133	31%
Supplies	58,900	40,000	-18,900	-32%
General Production	86,100	97,000	10,900	13%
Source of Supply	511,821	460,490	-51,331	-10%
Pumping	386,930	513,400	126,470	33%
Water Treatment	448,000	430,000	-18,000	-4%
Transmission & Distribution	134,100	131,200	-2,900	-2%
Customer Accounts	180,138	207,113	26,975	15%
Other	3,000	6,039	3,039	101%
Total	**2,645,797**	**2,984,183**	**338,386**	**13%**

As shown on the prior page, total FY 2021 Services, Supplies and Production costs are budgeted at $2,984,183, an increase of 13% from the prior year. Services costs increased 31% to

$1,098,941 from $836,808 in FY 2020. The driver for this increase was the various Budget Enhancements for Professional Services in the Administration, Finance/Customer Service and Engineering Divisions.

The following initiatives planned in Fiscal Year 2021 comprise the Budget Enhancements in the Services category: Urban Water Management Plan, Risk and Resilience Study, Rate Study, Recycled Water Alternatives Study and Pressure Analysis Report. These initiatives total $280,620. Excluding these Budget Enhancements, the FY 2021 Services, Supplies and Production costs would instead total $2,703,563 an increase of $57,766, or 2% more than the amount budgeted in FY 2020.

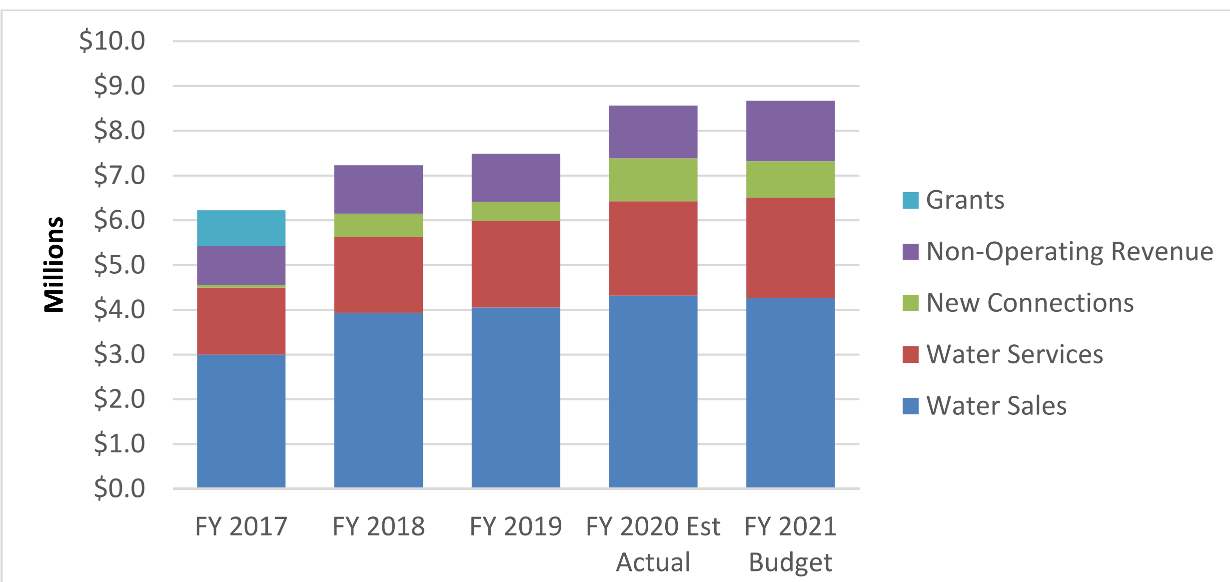
FY 2021 Purchase Order Carryover

One purchase order with an estimated balance of $15,000 was encumbered in FY 2020, but not expected to be completed by year-end. The balance will be rolled into the FY 2021 Operating Budget to continue the work and is reflected in the budget as an FY 2020 Purchase Order Carryover in FY 2021.

FIVE-YEAR TREND/COMPARISON:

Revenue:

The following chart provides a five-year trend of District revenues, excluding Notes Receivable:



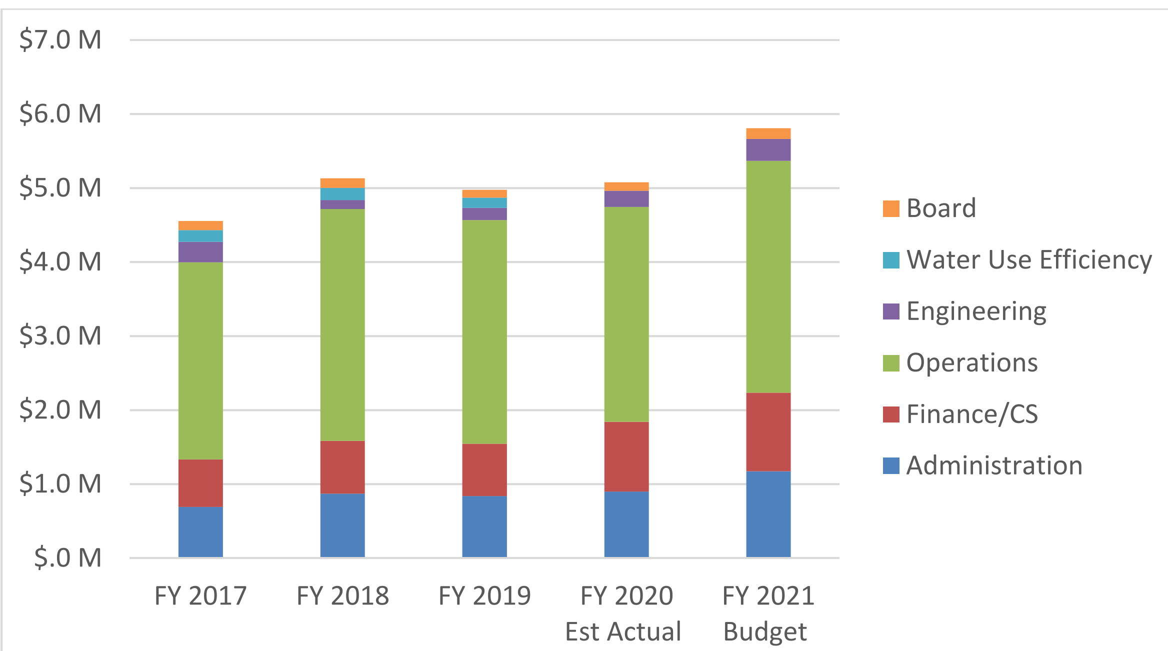
Revenue has steadily increased since FY 2017. FY 2017 was the first year impacted by the Districts current Rate Schedule, a five-year plan that became effective in December of 2016, impacting the second half of FY 2017. FY 2018 was the first full year impacted by the new rate plan and reflects the expected trend of increasing revenues.

FY 2020 Estimated Actuals reflect continued revenue growth. However, the growth is not as significant as was originally estimated in the FY 2020 Budget. The Board implemented a 3% rate increase, replacing an originally adopted 10%, in December 2019. Water Sales revenue in FY 2020 is essentially flat, with revenue growth coming from Water Services, New Connections and Non-Operating (property tax) increases.

The projected FY 2021 Water Sales revenue assumes that overall consumption will mirror the 3-year average. Water Service revenue has increased steadily throughout the implementation of the Rate Schedule. Total revenue is anticipated to be essentially flat in FY 2021. The District projects that the 'Shelter in Place' requirements will result in decreased consumption in commercial sector. However, consumption decreases will be offset by the projected three percent rate increase.

Expenses:

The following chart provides a five-year trend of District expenses by Division.



The figures above exclude Debt Service. In FY 2020 the Water Use Efficiency division budget shifted to the Finance / CS division to align with the changed organizational structure.

DEBT SERVICE

The FY 2021 Debt Service budget totals $643,161, including $390,270 in the Potable Water (01) Fund and $252,891 in the Recycled Water (02) Fund, a decrease of $10,585 in total from the FY 2020 Budget of $653,746.

	PW (01) Fund	RW (02) Fund	Total
2016 JP Morgan Loan			
Interest	$46,034	$29,829	$75,863
Principal	$344,236	$223,062	$567,298
Total	$390,270	$252,891	$643,161

DEBT SERVICE COVERAGE RATIO (DSCR)

The 2016 Refunding Loan requires that the District prescribe, revise and collect such charges for providing water, which, after allowances for contingencies and errors, produce sufficient income in each fiscal year to provide net revenues equal to at least 1.20 times the sum of 1) 2016 Loan installment payments becoming due and payable in such fiscal year and 2) all debt service and any related payments required with respect to any additional parity debt for such fiscal year. Parity debt consists of any additional debt obligations incurred by the District and secured by a debt on District revenues equally and ratably with the 2016 Loan payments. No parity debt currently exists.

The FY 2021 Budget presents a debt coverage ratio of 4.4, which is well above the minimum requirement of 1.20. New Connections revenue including Meter Fees, Capacity Fees, Will Serve Fees, and Development Project Review Fees are budgeted for a total of $0.8 million and included in the calculation. In the worst case, if all New Connections revenues were delayed and thus not included in this calculation, the DSCR would be adjusted to 3.1.

PROJECTS

The FY 2021 Projects budget totals $1,630,000, with $1,622,800 in the Potable Water Fund and $7,200 in the Recycled Water Fund. Additionally, projects that are in progress in FY 2020 are projected to have a total unspent balance of $2,640,000 by FY 2020 year-end, and this amount will be carried forward into FY 2021, so that those projects may be completed. Combining the FY 2021 Project budget of $1,630,000 with the carryover budget of $2,640,000, the Proposed FY 2021 Projects budget will have a total of $4,270,000. Project spending in FY 2021 will be funded by rate revenues. Budgeted projects are listed below:

Category	**Project**	**Potable Water (01) Fund**	**Recycled Water (02) Fund**	**FY 2020 Carryover**	**FY 2021 Total**
Transmission Mains	Main Replacement Program	550,000		75,000	625,000
Treatment Plants	Orchard Run Water Treatment Plant Improvements	310,000		1,890,000	2,200,000
	El Pueblo Water Treatment Plant Improvements			30,000	30,000
	Well 10 WTP Water Quality Improvements	113,000			113,000
	Treatment Facility for New Production Well	100,000			100,000
Storage Tanks	Bethany Tank Rehabilitation	100,000		100,000	200,000
Pump Stations	Polo Ranch PS	75,000			75,000
Wells	Lompico Formation Production Well (Well 9 Replacement)	100,000			100,000
Recycled Water Supply	Purified Recycled Water Recharge			525,000	525,000
Meters	Automated Metering Infrastructure (AMI)	100,000			100,000
	Meter Replacement Program	75,000			75,000
Technology	Utility Billing Software Improvements	10,000		20,000	30,000
Fleet	Vehicle Replacement Program	37,800	4,200		42,000
	Specialized Operations Equipment	25,000			25,000
Buildings	Administrative Building Improvements	27,000	3,000		30,000
	Totals:	**1,622,800**	**7,200**	**2,640,000**	**4,270,000**

Summary of the FY 2021 Projects Budget:

The most significant FY 2021 projects are described further below:

$2,200,000 Orchard Run Water Treatment Plant Improvements:

Implement esthetic taste and odor improvements to treatment process by adding new Granular Activated Carbon (GAC) filter and chlorine analyzer injection system. Infrastructure improvements include replacing ammonia-based air scrubbing system with a Bio Filtration scrubber. Replace 40,000 gallon bolted steel back wash tank and install new sewer lateral.

$525,000 Purified Recycled Water Recharge:

Supplemental supply project to increase groundwater reliability, especially in dry years (climate related change). Could be shifted to SMGWA or replaced with conjunctive use with other water suppliers.

$625,000 Main Replacement Program:

Replace and upgrade 1,100 feet of potable water main lines at Vine Hill School Rd, Johnston Way, Scott Ct, and Upper Sunset Terrace.

$200,000 Bethany Tank Rehabilitation:

Construct additional tank on-site to allow for roof reconstruction and interior and exterior coating replacement of 400,000 gallon Bethany Tank.

BUDGETARY CONTROL

Through approval of the budget, the board appropriates the resources necessary to maintain District service levels and achieve specified objectives. The District prepares a detailed line item operating budget, which represents an estimate based on operations at the time the budget is prepared. Throughout the fiscal year management applies best business practices to improve operational efficiencies. As a result, actual expenses may differ from the budget.

The level of budgetary control is set at the major expense category by division. Each Division Manager is responsible for his/her division budget. The General Manager is responsible for the District budget with authority to move appropriations between divisions. Budgetary control for projects is set at the total Projects budget amount approved for the year, including carryover project funding. Spending on a project not listed in the budget would require the board's review and approval through an agenda report.

FUND BALANCE

Fund Balance is defined as funds readily available for new expenses and/or commitments. It is based on working capital, calculated as current assets (excluding Notes Receivable, shown separately below) minus current liabilities (excluding Debt Service, shown separately below).

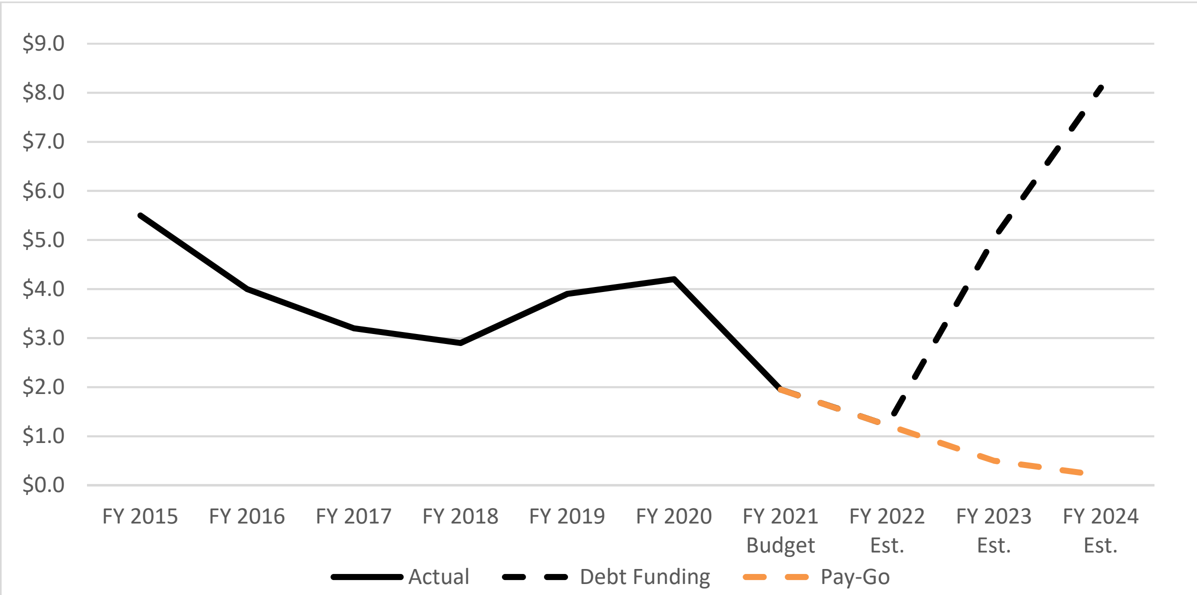
FY 2020 Estimated Actual	Potable Fund	Recycled Fund	District Total
Audited Fund Balance 6/30/2019	3,283,458	15,578	3,299,036
Revenue	7,998,300	565,096	8,563,396
Notes Receivable	-	173,019	173,019
Operating Expense	(4,781,795)	(515,028)	(5,296,823)
Debt Service	(336,678)	(218,163)	(554,841)
Project Costs	(1,782,146)	(198,016)	(1,980,162)
Increase / (Decrease) of Fund Balance	1,097,682	(193,093)	904,589
Transfer from 01 Fund to 02 Fund	(177,515)	177,515	-
Projected Fund Balance 6/30/2020	**4,203,625**	**-**	**4,203,625**

The total Fund Balance is projected to increase $0.9 million by the end of FY 2020, from $3.3 million to $4.2 million. This increase is primarily due to the District not spending the full budget for projects in FY 2020. The Estimated Actual for projects in FY 2020 is $2.0 million. It is anticipated that $2.6 million will be required in FY 2021 as carryover project funding.

FY 2021 Budget	Potable Fund	Recycled Fund	District Total
Projected Fund Balance 6/30/2020	4,203,625	-	4,203,625
Revenue	7,913,987	588,697	8,502,684
Notes Receivable	-	169,412	169,412
Operating Expense	(5,387,325)	(646,942)	(6,034,267)
Debt Service	(390,270)	(252,891)	(643,161)
Project Costs	(1,622,800)	(7,200)	(1,630,000)
Increase / (Decrease) of Fund Balance	513,592	(148,925)	364,668
FY 2020 Purchase Orders Carryover	15,000	-	15,000
FY 2020 Projects Carryover	(2,640,000)	-	(2,640,000)
Transfer from 01 Fund to 02 Fund	(148,925)	148,925	-
Projected Fund Balance 6/30/2021	**1,943,292**	**-**	**1,943,292**

The FY 2021 Budget anticipates a $2.2 million draw on Fund Balance from $4.2 million on 6/30/2020 to $2.0 million on 6/30/2021. The FY 2021 budget includes a sizable $4.3 million spending in projects. While the budget represents the financial resources that are needed for the project, it is likely that the full budget amount will not be needed in the fiscal year.

Fund Balance (in millions of $)



After four consecutive years of budget deficits from FY 2015 through FY 2018, the FY 2019 Fund Balance reversed the trend by ending the year in a surplus. This trend continued in FY 2020. As discussed above and shown in the Fund Balance chart above, the FY 2021 budget will draw on fund balance. As the District continues to see revenue grow, and as essential projects are completed, fund balance is anticipated decrease for a few years and then grow in future years.

Estimating future year fund balances requires making numerous assumptions. One of the most significant assumptions is how the District will pay for the Purified Recycled Water Project, the largest project in the Capital Improvement Program. The Fund Balance chart above depicts two funding scenarios: Debt Funding and Pay-Go. The Debt Funding scenario assumes that grant funding and debt financing will fully fund the project. In this scenario, fund balance will continue to increase to meet or exceed the Target Reserve. The Pay-Go scenario assumes that the project will be funded by a combination of grant funding, rate revenue and fund balance. In this scenario, the District will draw on fund balance to pay for the project and the District would not achieve the Reserve Target in the forecast period.

ALLOCATION OF EXPENSES BETWEEN POTABLE FUND AND RECYCLED FUND

In general, recycled water revenue receipts, portions of debt service for the 2016 Refunding Loan, water meters for recycled accounts, repairs and maintenance of the recycled water plant and 10% of the general and administrative expenses are budgeted in the Recycled Water Fund. As the budget needs to be balanced by fund, a $137,736 loan from the Potable Water Fund to the Recycled Water Fund is required to make the Recycled Water Fund whole for FY 2021. It should be noted that all District fund balance reserves are allocated to the Potable Fund and none is currently allocated to the Recycled Fund. The repayment of the cumulative interfund loans will be addressed in future budgets as the District implements continuing rate adjustments and completes various capital projects.

TARGET RESERVE

As part of the 2016 rate study, various reserve types and respective levels were discussed and recommended to the Board. The target reserves were established in District Policy P200-17-2. For FY 2021, the calculated target reserve amount is approximately $4.5 million, as summarized below. The projected Reserve Balance, based upon fund balance at June 30, 2021, is $1.95 million, or $2.5 million less than the Target Reserve. It is highly unlikely that 100% of the budgeted Project expenditures will actually be spent in the FY 2021 and therefore it is anticipated that the actual Reserve Balance will exceed the $1.95 million.

District Reserve Components:		
Operating Reserve		**FY 2021**
FY 2021 Operating Expense Budget	6,034,268	
Reserve Level: 90 days (25%)	25%	1,508,567
Rate Stabilization Reserve		
FY 2021 Water Sales Revenue Budget	4,266,464	
20% of volumetric water sales revenue	20%	853,293
Emergency Reserve		
Net Asset Value @ 6/30/2019	21,067,532	
2.5% of Net Asset Valuation	2.50%	526,688
Capital Reserve		
FY 2019 Depreciation	998,094	
1 year of Depreciation	100%	998,094
Debt Service Reserve		
FY 2021 Debt Service	643,161	
100% of Debt Service	100%	643,161
Target Reserve:		**4,529,803**

In summary, the FY 2021 Budget reflects a Revenue budget of cautious optimism, an Operating Expense budget that maintains the Districts high service levels, and a detailed Projects budget. Looking ahead, the District plans to complete a Rate Study in FY 2021 to evaluate future revenue requirements. This FY 2021 Budget ensures that high service levels are maintained, essential projects are completed, with the District remaining on the path toward achieving the target reserve level over time.

Respectfully submitted,

Piret Harmon
General Manager

Scotts Valley Water District
FY 2021 Proposed Budget: Revenue

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
Fund (01)	**POTABLE WATER**			
R10	Operating Revenue - Water Sales			
01-000-41101	Residential Consumption - SF	$2,321,579	$2,194,244	$2,292,073
01-000-41102	Residential Consumption - MF	$167,537	$165,133	$169,499
01-000-41103	CII Consumption	$1,231,742	$1,130,989	$964,099
01-000-41105	Irrigation Consumption	$324,929	$311,295	$332,394
01-000-41200	Bulk Water	$16,000	$33,484	$25,745
	R10 Operating Revenue-Water Sales Total:	**$4,061,787**	**$3,835,146**	**$3,783,811**
R20	Operating Revenue - Water Services			
01-000-41300	Late Penalty	$27,260	$24,030	$25,800
01-000-42100	Standby Basic Meter Charge	$1,975,029	$1,972,585	$2,074,649
01-000-42121	Standby FP Basic Meter Charge	$50,397	$56,043	$57,725
01-000-43300	Other Operating Revenue	$13,269	$10,475	$10,500
	R20 Operating Revenue - Water Services Total:	**$2,065,955**	**$2,063,133**	**$2,168,674**
R25	Operating Revenue - New Connections			
01-000-42101	Meter Fee	$12,093	$14,549	$12,891
01-000-42102	Capacity Buy-in Fee	$1,448,187	$898,861	$761,528
01-000-42120	FP Meter Fee	$4,946	$5,537	$4,691
01-000-43100	Will Serve	$788	$1,375	$1,000
01-000-43200	Development Project Review	$2,118	$7,354	$6,000
	R25 Operating Revene - New Connections Total:	**$1,468,130**	**$927,676**	**$786,110**
R30	Non-Operating Revenue			
01-000-46000	Property Taxes	$920,746	$1,025,917	$1,077,212
01-000-47110	Interest & Dividend	$4,869	$28	$21
01-000-47120	Interest - LAIF	$11,737	$25,345	$52,500
01-000-47520	Miscellaneous Non-Operating Revenue	$3,000	$117,992	$45,658
01-000-47530	Unrealized Gain/Loss on Investment	$0	$3,063	$0
	R30 Non-Operating Revenue Total:	**$940,352**	**$1,172,345**	**$1,175,391**
Fund (01) Potable Water Revenue Total:		**$8,536,225**	**$7,998,300**	**$7,913,987**

Scotts Valley Water District
FY 2021 Proposed Budget: Revenue

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
Fund (02)	**RECYCLED WATER**			
R10	Operating Revenue - Water Sales			
02-000-41105	Irrigation Consumption	$465,177	$473,099	$482,653
02-000-41200	Bulk Water	$25,000	$5,758	$0
	R10 Operating Revenue - Water Sales Total:	**$490,177**	**$478,857**	**$482,653**
R20	Operating Revenue - Water Services			
02-000-42100	Standby Basic Meter Charge	$45,124	$47,528	$65,345
	R20 Operating Revenue - Water Services Total:	**$45,124**	**$47,528**	**$65,345**
R25	Operating Revenue - New Connections			
02-000-42101	Meter Fee	$0	$797	$825
02-000-42102	Capacity Fee	$90,869	$27,591	$31,301
	R25 Operating Revenue - New Connections Total:	**$90,869**	**$28,388**	**$32,126**
R30	Non-Operating Revenue			
02-000-47110	Interest and Dividend	$7,598	$10,323	$8,573
02-000-47560	Notes Receivable	$163,019	$173,019	$169,412
	R30 Non-Operating Revenue Total:	**$170,617**	**$183,342**	**$177,985**
Fund (02) Recycled Water Revenue Total:		**$796,787**	**$738,115**	**$758,109**
Fund (01) and Fund (02) Revenue Total:		**$9,333,012**	**$8,736,415**	**$8,672,096**
Total Revenue excluding Notes Receivable		$9,169,993	$8,563,396	$8,502,684

Scotts Valley Water District
Potable Water Fund (01)
FY 2021 Proposed Budget: Expense

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
Fund (01)	**Potable Water**			
Dept (100)	**Administration**			
E01	**Salaries & Benefits**			
01-100-51110	Regular Pay	337,955	330,695	343,228
01-100-51111	Temporary Pay	10,000	4,000	11,000
01-100-51114	Overtime Pay	-	282	-
01-100-51115	Separation Pay	-	2,439	-
01-100-51116	Bonus Pay	-	3,669	-
01-100-51132	Special Vacation Pay	10,000	7,345	7,500
01-100-51150	Vehicle & Phone Allowance	3,840	3,852	3,840
01-100-51161	Medicare	5,165	5,018	5,371
01-100-51202	Retirement - Tier 2	26,110	25,789	29,500
01-100-51203	Retirement - Tier 3	4,766	4,491	4,782
01-100-51204	Unfunded Pension Liability	147,796	142,714	175,808
01-100-51206	Retirement - Survivor Benefit	73	80	73
01-100-51210	Medical Insurance	47,010	32,551	29,450
01-100-51212	Dental Insurance	3,329	2,699	2,461
01-100-51213	Vision Insurance	668	693	668
01-100-51214	Life & AD&D Insurance	1,170	1,146	1,209
01-100-51215	457 & HSA Contributions	12,800	11,413	12,800
01-100-51216	Employee Assistance Program	85	102	97
01-100-51220	Other Post-Employment Benefits	6,240	6,124	6,222
01-100-51240	Workers' Compensation	1,795	1,958	2,014
01-100-51250	Tuition Reimbursement	5,250	-	5,250
01-100-51698	Reimbursement from SMGWA	(52,188)	-	-
01-100-51700	Allocation to Fund (02)	(57,186)	(58,706)	(64,127)
	E01 Salaries & Benefits Totals:	**514,678**	**528,352**	**577,145**
E03	**Services**			
01-100-52110	Contractual Services	20,000	18,000	21,800
01-100-52120	Landscape Maint	5,000	4,180	5,000
01-100-52210	Professional Services	77,000	68,600	207,000
01-100-52230	IT Services	70,000	70,000	70,000
01-100-52231	Website Maint	5,500	4,500	5,500
01-100-52250	Legal Counsel	36,000	36,000	36,000
01-100-52280	Election Service	-	-	14,000
01-100-52310	Sewer Service	485	418	500
01-100-52320	Solid Waste Service	600	608	625
01-100-52330	Electricity & Gas	11,288	10,886	11,500
01-100-52340	Telephone & Internet	9,600	8,376	9,600
01-100-52410	Software Licensing & Maint	1,000	976	1,000
01-100-52420	Equipment Rental & Maint	5,100	4,800	4,900
01-100-52510	Travel & Meetings	12,000	5,400	12,000
01-100-52520	Training	4,000	1,500	4,000
01-100-52530	Dues & Memberships	24,000	22,000	24,060
01-100-52540	Employee Recognition	5,000	3,049	6,000

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
01-100-52570	Printing Services	2,500	2,100	2,400
01-100-52620	Legal Advertising	200	-	200
01-100-52630	Advertising & Promotion	13,000	12,000	13,000
01-100-52660	Recruitment	1,000	269	500
01-100-52700	Safety Services	2,000	1,069	2,000
01-100-52725	HR Processing Fees	2,100	1,980	2,170
01-100-52800	Regulatory Oversight & Comp	200	68	100
01-100-52810	General Building Maint	18,500	15,000	17,000
01-100-52980	Allocation to Fund (02)	(32,607)	(29,168)	(47,086)
	E03 Services Totals:	**293,466**	**262,612**	**423,770**
E05	**Supplies**			
01-100-53100	Office Supplies	4,000	4,032	4,200
01-100-53110	Building Maint Supplies	2,000	1,130	2,000
01-100-53400	Books & Subscriptions	550	100	1,000
01-100-53500	Safety Supplies	-	5,775	1,000
01-100-53700	Special Division Supplies	5,000	635	5,000
01-100-53910	Office Equipment	3,000	1,500	2,000
01-100-53920	Furniture & Furnishings	3,000	4,213	2,000
01-100-53980	Allocation to Fund (02)	(1,755)	(1,738)	(1,720)
	E05 Supplies Totals:	**15,795**	**15,646**	**15,480**
E10	**Source of Supply**			
01-100-52211	Contributions to SMGWA	271,821	295,821	290,490
01-100-52212	Professional Services	100,000	-	30,000
01-100-52290	Regional Groundwater Activities	10,000	2,000	10,000
	E10 Source of Supply Totals:	**381,821**	**297,821**	**330,490**
E70	**Other**			
01-100-52950	Contingency for Litigation	-	500	5,000
	E70 Other Totals:	**-**	**500**	**5,000**
	Dept 100 Sub Totals:	**1,205,760**	**1,104,931**	**1,351,885**
Dept (200)	**Finance/Customer Service**			
E01	**Salaries & Benefits**			
01-200-51110	Regular Pay	356,387	368,299	382,639
01-200-51111	Temporary Pay	10,000	604	5,000
01-200-51114	Overtime Pay	1,000	113	1,000
01-200-51150	Vehicle & Phone Allowance	960	963	960
01-200-51161	Medicare	5,286	5,260	5,667
01-200-51202	Retirement - Tier 2	19,695	20,545	23,020
01-200-51203	Retirement - Tier 3	10,682	10,786	12,608
01-200-51206	Retirement - Survivor Benefit	97	100	97
01-200-51210	Medical Insurance	77,629	75,407	76,229
01-200-51212	Dental Insurance	3,243	3,243	3,243
01-200-51213	Vision Insurance	891	891	891
01-200-51214	Life & AD&D Insurance	1,127	1,293	1,488
01-200-51215	457 & HSA Contributions	8,800	6,617	8,800
01-200-51216	Employee Assistance Program	114	118	130
01-200-51220	Other Post-Employment Benefits	39,798	38,986	39,668
01-200-51240	Workers' Compensation	2,075	1,713	2,527

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
01-200-51700	Allocation to Fund (02)	(53,778)	(53,499)	(56,397)
	E01 Salaries & Benefits Totals:	**484,006**	**481,490**	**507,570**
E03	**Services**			
01-200-52210	Professional Services	69,550	22,550	88,170
01-200-52240	Audit Services	30,000	15,000	15,000
01-200-52260	Financial/Regulatory Reporting	1,250	1,250	1,250
01-200-52300	Auto & Liability Insurance	47,000	46,918	48,790
01-200-52400	Property Insurance	14,000	14,855	15,450
01-200-52410	Software Licensing & Maint	12,705	13,013	13,403
01-200-52420	Equipment Rental & Maint	480	-	-
01-200-52510	Travel & Meetings	4,950	3,700	3,900
01-200-52520	Training	3,000	300	1,500
01-200-52550	Printing & Mailing Services	500	50	50
01-200-52630	Advertising & Promotion	1,500	1,250	2,500
01-200-52720	Payroll Processing Fees	6,510	7,795	8,300
01-200-52740	Bank Service Fees	5,600	4,420	4,600
01-200-52745	Fiscal Agent Fees	1,000	-	-
01-200-52760	Health Benefits Admin Fees	508	473	500
01-200-52980	Allocation to Fund (02)	(16,830)	(13,832)	(21,016)
01-200-54015	Property Tax Admin Fees	6,750	6,750	6,750
	E03 Services Totals:	**188,473**	**124,492**	**189,147**
E05	**Supplies**			
01-200-53200	Postage	3,000	3,000	3,000
01-200-53290	Promotional Give-Aways	2,000	200	1,000
01-200-53980	Allocation to Fund (02)	(300)	(320)	(400)
	E05 Supplies Totals:	**4,700**	**2,880**	**3,600**
E35	**Customer Accounts**			
01-200-52415	Software Licensing & Portal	19,895	33,847	35,031
01-200-52555	Printing & Mailing	19,800	11,039	20,493
01-200-52560	Collection Agency Fees	1,107	275	1,146
01-200-52650	AMI Data Subscription	29,904	32,089	30,951
01-200-52710	Payment Processing Fees	56,770	57,816	58,757
01-200-53250	Rebates - Pressure Regulators	-	2,175	3,000
01-200-53260	Rebates- Turf / Drip Replacement	40,000	38,657	40,000
01-200-53270	Rebates- Outdoor Efficiency	5,000	686	1,000
01-200-53280	Rebates- Indoor Efficiency	5,500	3,324	5,000
01-200-53700	Special Division Supplies	5,500	1,046	3,000
01-200-54980	Allocation to Fund (02)	(12,898)	(14,307)	(15,438)
01-200-59400	Bad Debt	-	8,000	8,000
	E35 Customer Accounts Totals:	**170,578**	**174,647**	**190,940**
E70	**Other**			
01-200-54010	Property Taxes	1,000	1,017	1,038
	E70 Other Totals:	**1,000**	**1,017**	**1,038**

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
E80	**Debt Service**			
01-200-54740	Bond Interest - 2016 JPMorgan	52,402	52,344	46,034
01-200-54750	Bond Principal - 2016 JPMorgan	344,326	284,334	344,236
	E80 Debt Service Totals:	**396,728**	**336,678**	**390,270**
	Dept 200 Sub Totals:	**1,245,485**	**1,121,204**	**1,282,565**
Dept (300)	**Operations**			
E01	**Salaries & Benefits**			
01-300-51110	Regular Pay	1,025,683	982,106	1,054,771
01-300-51114	Overtime Pay	64,480	82,497	82,300
01-300-51132	Special Vacation Pay	12,900	4,640	13,300
01-300-51150	Vehicle & Phone Allowance	6,240	6,629	6,240
01-300-51161	Medicare	15,150	15,106	15,621
01-300-51201	Retirement - Tier 1	26,372	26,075	29,282
01-300-51202	Retirement - Tier 2	51,647	51,056	59,299
01-300-51203	Retirement - Tier 3	19,306	18,543	22,494
01-300-51206	Retirement - Survivor Benefit	266	268	266
01-300-51210	Medical Insurance	221,856	188,868	190,672
01-300-51211	Medical Cash-in-lieu	-	2,667	3,000
01-300-51212	Dental Insurance	10,910	11,319	11,288
01-300-51213	Vision Insurance	2,450	2,499	2,450
01-300-51214	Life & AD&D Insurance	2,446	2,525	3,095
01-300-51215	457 & HSA Contributions	23,000	18,009	24,100
01-300-51216	Employee Assistance Program	313	367	356
01-300-51220	Other Post-Employment Benefits	78,203	70,798	68,703
01-300-51240	Workers' Compensation	28,201	28,850	31,822
01-300-51700	Allocation to Fund (02)	(158,941)	(151,282)	(161,906)
	E01 Salaries & Benefits Totals:	**1,430,482**	**1,361,539**	**1,457,153**
E03	**Services**			
01-300-52120	Landscape Maint	11,300	15,260	15,000
01-300-52210	Professional Services	20,600	3,750	10,000
01-300-52310	Sewer Service	400	418	600
01-300-52320	Solid Waste Service	3,100	3,054	3,100
01-300-52340	Telephone & Internet	8,200	11,078	11,400
01-300-52420	Equipment Rental & Maint	20,600	22,339	24,000
01-300-52500	Uniform Laundering Services	5,300	4,540	5,300
01-300-52510	Travel & Meetings	7,700	6,044	7,000
01-300-52520	Training	15,500	7,508	10,000
01-300-52550	Printing & Mailing Services	800	250	800
01-300-52700	Safety Services	2,100	2,100	1,500
01-300-52810	General Building Maint	4,100	4,340	4,560
01-300-52830	Landfill Fees	3,100	6,014	5,000
01-300-52910	Vehicle Maint	27,800	20,087	22,000
01-300-52930	Facility Site Maint	41,200	59,597	60,000
01-300-52980	Allocation to Fund (02)	(19,240)	(19,885)	(20,526)
01-300-55130	GIS Maint	20,600	32,467	25,000
	E03 Services Totals:	**173,160**	**178,961**	**184,734**

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
E05	**Supplies**			
01-300-53100	Office Supplies	1,500	1,689	1,500
01-300-53110	Building Maint Supplies	-	1,000	-
01-300-53400	Books & Subscriptions	500	755	500
01-300-53500	Safety Clothing & Equipment	13,000	9,903	14,500
01-300-53600	Vehicle Fuel	14,500	21,871	500
01-300-53910	Office Equipment	-	1,904	-
01-300-53920	Furniture & Furnishings	1,000	98	-
01-300-53980	Allocation to Fund (02)	(3,050)	(3,722)	(1,700)
	E05 Supplies Totals:	**27,450**	**33,498**	**15,300**
E07	**General Production Costs**			
01-300-52800	Regulatory Oversight & Comp	21,500	28,861	29,000
01-300-53300	Small Tools & Equipment	18,500	16,396	16,000
01-300-53700	Special Division Supplies	9,200	6,756	8,000
01-300-55980	Allocation to Fund (02)	(8,510)	(9,748)	(8,900)
01-300-56500	SCADA Maint	35,900	45,467	36,000
	E07 General Production Totals:	**76,590**	**87,732**	**80,100**
E10	**Source of Supply**			
01-300-55230	Well Maint	130,000	167,921	130,000
	E10 Source of Supply Totals:	**130,000**	**167,921**	**130,000**
E15	**Pumping**			
01-300-56310	Pumps & Boosters	40,000	82,356	50,000
01-300-56330	Pumps - Electricity & Gas	342,930	355,197	411,900
	E15 Pumping Totals:	**382,930**	**437,553**	**461,900**
E20	**Water Treatment**			
01-300-52315	Wastewater Disposal	76,600	78,536	60,000
01-300-55110	Chemical Supplies	102,500	66,745	85,000
01-300-55120	Laboratory Services	35,900	32,451	35,000
01-300-55210	Treatment Plant Maint	123,000	58,970	120,000
	E20 Water Treatment Totals:	**338,000**	**236,702**	**300,000**
E25	**Transmission & Distribution**			
01-300-52410	Software Licensing & Maint	6,200	6,699	6,200
01-300-55240	Tank & Reservoir Maint	24,600	5,509	24,000
01-300-56100	Main Maint & Repair	56,400	29,768	50,000
01-300-56200	Service Lateral Maint & Repair	14,400	12,487	14,000
01-300-56400	Fire Hydrant Maint	8,700	2,687	8,500
01-300-56600	Meter Maint	10,300	31,748	15,000
	E25 Transmission & Distribution Totals:	**120,600**	**88,899**	**117,700**
	Dept 300 Sub Totals:	**2,679,212**	**2,592,805**	**2,746,887**
Dept (400)	**Engineering**			
E01	**Salaries & Benefits**			
01-400-51110	Regular Pay	78,810	74,533	84,975
01-400-51114	Overtime Pay	2,500	-	2,500
01-400-51150	Vehicle & Phone Allowance	480	473	480
01-400-51161	Medicare	1,186	1,127	1,319

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
01-400-51202	Retirement - Tier 2	7,629	7,272	8,909
01-400-51206	Retirement - Survivor Benefit	24	25	24
01-400-51211	Medical Cash-in-lieu	3,000	3,000	3,000
01-400-51212	Dental Insurance	782	946	1,273
01-400-51213	Vision Insurance	223	223	223
01-400-51214	Life & AD&D Insurance	83	98	109
01-400-51215	457 & HSA Contributions	-	2,171	2,200
01-400-51216	Employee Assistance Program	28	33	32
01-400-51240	Workers' Compensation	496	554	666
01-400-51700	Allocation to Fund (02)	(9,524)	(9,045)	(10,571)
	E01 Salaries & Benefits Totals:	**85,717**	**81,409**	**95,139**
E03	**Services**			
01-400-52210	Professional Services	20,000	1,335	20,000
01-400-52215	Professional Services (3rd-Party Funded)	(20,000)	-	(10,000)
01-400-52220	Engineering Services	87,760	113,905	170,000
01-400-52410	Software Licensing & Maint	200	7,500	7,500
01-400-52510	Travel & Meetings	1,500	1,711	1,400
01-400-52520	Training	750	1,593	1,000
01-400-52980	Allocation to Fund (02)	-	(12,604)	(18,990)
	E03 Services Totals:	**90,210**	**113,440**	**170,910**
E05	**Supplies**			
01-400-53700	Special Division Supplies	1,000	1,000	1,000
01-400-53980	Allocation to Fund (02)	-	(100)	(100)
	E05 Supplies Totals:	**1,000**	**900**	**900**
	Dept 400 Sub Totals:	**176,927**	**195,749**	**266,949**
Dept (900)	**Board of Directors**			
E01	**Salaries & Benefits**			
01-900-51120	Director Fees	33,500	22,697	38,240
01-900-51161	Medicare	508	328	554
01-900-51162	Social Security	2,170	1,407	2,371
01-900-51212	Dental Insurance	3,734	3,734	3,734
01-900-51213	Vision Insurance	891	891	891
01-900-51214	Life & AD&D Insurance	223	238	290
01-900-51220	Other Post-Employment Benefits	21,932	22,494	21,305
01-900-51240	Workers' Compensation	192	124	227
01-900-51260	Medical Premiums	54,850	53,861	52,465
01-900-51700	Allocation to Fund (02)	(11,800)	(10,577)	(12,008)
	E01 Salaries & Benefits Totals:	**106,200**	**95,197**	**108,069**
E03	**Services**			
01-900-52410	Software Licensing & Maint	120	120	200
01-900-52510	Travel & Meetings	15,700	9,420	15,600
01-900-52520	Training	7,000	-	7,000
01-900-52980	Allocation to Fund (02)	(2,282)	(954)	(2,280)
	E03 Services Totals:	**20,538**	**8,586**	**20,520**

Account Number	Account Description	FY 2020 Budget	FY 2020 Estimated Actual	FY 2021 Budget
E05	**Supplies**			
01-900-53100	Office Supplies	250	-	200
01-900-53910	Office Equipment	600	-	600
01-900-53980	Allocation to Fund (02)	(85)	-	(80)
	E05 Supplies Totals:	**765**	**-**	**720**
	Dept 900 Sub Totals:	**127,503**	**103,783**	**129,309**
	Expense Totals:	**5,434,887**	**5,118,473**	**5,777,595**

Scotts Valley Water District
Recycled Water Fund (02)
FY 2021 Proposed Budget: Expense

Account Number	Account Description	Approved Budget	FY 2020 Estimated Actual	FY 2021 Budget
Fund (02)	**Recycled Water**			
Dept (100)	**Administration**			
E01	**Salaries & Benefits**			
02-100-51700	Allocation from Fund (01)	57,186	58,706	64,127
	E01 Salaries & Benefits Totals:	**57,186**	**58,706**	**64,127**
E03	**Services**			
02-100-52980	Allocation from Fund (01)	32,607	29,168	47,049
	E03 Services Totals:	**32,607**	**29,168**	**47,049**
E05	**Supplies**			
02-100-53980	Allocation from Fund (01)	1,755	1,738	1,720
	E05 Supplies Totals:	**1,755**	**1,738**	**1,720**
	Dept 100 Sub Totals:	**91,548**	**89,612**	**112,896**
Dept (200)	**Finance/Customer Service**			
E01	**Salaries & Benefits**			
02-200-51700	Allocation from Fund (01)	53,778	53,499	56,397
	E01 Salaries & Benefits Totals:	**53,778**	**53,499**	**56,397**
E03	**Services**			
02-200-52980	Allocation from Fund (01)	16,830	12,657	21,016
	E03 Services Totals:	**16,830**	**12,657**	**21,016**
E05	**Supplies**			
02-200-53980	Allocation from Fund (01)	300	320	400
	E05 Supplies Totals:	**300**	**320**	**400**
E35	**Customer Accounts**			
02-200-52650	AMI Data Subscription	662	715	735
02-200-54980	Allocation from Fund (01)	12,898	14,307	15,438
	E35 Customer Accounts Totals:	**13,560**	**15,022**	**16,173**
E80	**Debt Service**			
02-200-54740	Bond Interest - 2016 JPMorgan	33,956	33,918	29,829
02-200-54750	Bond Principal - 2016 JPMorgan	223,062	184,245	223,062
	E80 Debt Service Totals:	**257,018**	**218,163**	**252,891**
	Dept 200 Sub Totals:	**341,486**	**299,661**	**346,877**

Dept (300)	**Operations**			
E01	**Salaries & Benefits**			
02-300-51700	Allocation from Fund (01)	158,941	151,282	161,906
	E01 Salaries & Benefits Totals:	**158,941**	**151,282**	**161,906**
E03	**Services**			
02-300-52980	Allocation from Fund (01)	19,240	19,885	20,526
	E03 Services Totals:	**19,240**	**19,885**	**20,526**
E05	**Supplies**			
02-300-53980	Allocation from Fund (01)	3,050	3,722	1,700
	E05 Supplies Totals:	**3,050**	**3,722**	**1,700**
E07	**General Production Costs**			
02-300-53700	Special Division Supplies	1,000	-	8,000
02-300-55980	Allocation from Fund (01)	8,510	9,748	8,900
	E07 General Production Totals:	**9,510**	**9,748**	**16,900**
E15	**Pumping**			
02-300-56310	Pumps and Boosters	2,500	1,000	50,000
02-300-56330	Electricity	1,500	1,500	1,500
	E15 Pumping Totals:	**4,000**	**2,500**	**51,500**
E20	**Water Treatment**			
02-300-55210	Treatment Plant Maint	110,000	110,000	130,000
	E20 Water Treatment Totals:	**110,000**	**110,000**	**130,000**
E25	**Transmission & Distribution**			
02-300-55240	Tank and Reservoir Maint	1,000	1,000	1,000
02-300-56100	Main Maint & Repair	7,500	7,500	7,500
02-300-56200	Service Lateral Maint & Repair	3,000	3,000	3,000
02-300-56600	Meter Maint	1,000	1,000	1,000
02-300-56800	Recycled Water Monitoring	1,000	1,000	1,000
	E25 Transmission & Distribution Totals:	**13,500**	**13,500**	**13,500**
E30	**Water Use Efficiency**			
02-300-56900	Recycled Water Fill Station	2,000	-	-
	E30 Water Use Efficiency Totals:	**2,000**	**-**	**-**
	Dept 300 Sub Totals:	**320,241**	**310,637**	**396,032**
Dept (400)	**Engineering**			
E01	**Salaries & Benefits**			
02-400-51700	Allocation from Fund (01)	9,524	9,045	10,571
	E01 Salaries & Benefits Totals:	**9,524**	**9,045**	**10,571**
E03	**Services**			
02-400-52980	Allocation from Fund (01)	-	12,604	18,990
	E03 Services Totals:	**-**	**12,604**	**18,990**
E05	**Supplies**			
02-400-53980	Allocation from Fund (01)	-	100	100
	E05 Supplies Totals:	**-**	**100**	**100**
	Dept 400 Sub Totals:	**9,524**	**21,750**	**29,661**

Dept (900)	**Board of Directors**			
E01	**Salaries & Benefits**			
02-900-51700	Allocation from Fund (01)	11,800	10,577	12,008
	E01 Salaries & Benefits Totals:	**11,800**	**10,577**	**12,008**
E03	**Services**			
02-900-52980	Allocation from Fund (01)	2,282	954	2,280
	E03 Services Totals:	**2,282**	**954**	**2,280**
E05	**Supplies**			
02-900-53980	Allocation from Fund (01)	85	-	80
	E05 Supplies Totals:	**85**	**-**	**80**
	Dept 900 Sub Totals:	**14,167**	**11,531**	**14,368**
	Expense Totals:	**776,966**	**733,192**	**899,834**

Scotts Valley Water District
FY 2021 Proposed Budget: Project Costs
Capital Improvement and Maintenance Projects

Category	Project Name	Project Description	FY 2020 Carryover	FY 2021 Request	FY 2021 Budget
Transmission Mains	Main Replacement Program - Potable	Replace and upgrade potable water mains based on leak history, service life, and size	$ 75,000	**$ 550,000**	$ 625,000
Treatment Plants	Orchard Run Water Treatment Plant Improvements	Implement esthetic taste & odor improvements to treatment process by adding new GAC filter and chlorine analyzer injection system. Infrastructure improvements incude replacing ammonia based H2S air scrubbing system with a Bio Filtration scubber. Replace 40,000 gallon bolted steel back wash tank and install new sewer lateral.	$ 1,890,000	**$ 310,000**	$ 2,200,000
	El Pueblo Water Treatment Plant Improvements	Replace manual 1980's filter control system with programable automated control system linked with SCADA.	$ 30,000	**$ -**	$ 30,000
	Well 10 WTP Water Quality Improvements	Implement esthetic taste & odor improvements by adding additional filter bed and Chlorine analyzer equiment.	$ -	**$ 113,000**	$ 113,000
	Treatment Facility for New Production Well	New Lompico Formation Production Well and Treatment Plant.	$ -	**$ 100,000**	$ 100,000
Storage Tanks	Bethany Tank Rehabilitation	Construct additional tank on-site to allow for roof reconstruction and interior and exterior coating replacement of 400,000 gallon Bethany Tank. Project extends tank service life and provides additional permanent storage and redundancy.	$ 100,000	**$ 100,000**	$ 200,000
Pump Stations	Polo Ranch Pump Station	Polo Ranch Flow control station has been modified to provide booster pumping into the Southwood pressure zone when needed. The Southwood Booster station on Granite Creek Road will be retired.	$ -	**$ 75,000**	$ 75,000
Wells	Lompico Formation Production Well (Well 9 Replacement)	Construct a new production well that is needed to offset lost production capacity from Well 9 & Well 11A. The replacement well will in part be sited to provide for a more balanced withdrawal rate from the Lompico Aquifer.	$ -	**$ 100,000**	$ 100,000
Recycled Water Supply	Purified Recycled Water Recharge	Supplemental supply project to increase groundwater reliability, especially in dry years (climate change related change). Could be shifted to SMGWA or replaced with conjunctive use.	$ 525,000	**$ -**	$ 525,000
Meters	Automated Metering Infrastructure (AMI)	Install AMI transmitters on all meters over 3-4 year period.	$ -	**$ 100,000**	$ 100,000
	Meter Replacement Program	Replace all meters installed before 2012 at the rate of 800-1000 meters per year.	$ -	**$ 75,000**	$ 75,000
Technology	Utility Billing Software Improvements	Improvements and/or enhancements to Utility Billing (UB) and Payment Processing softwares	$ 20,000	**$ 10,000**	$ 30,000
Fleet	Vehicle Replacement Program	Replace aging fleet: one vehicle per year on average, starting FY 2019.	$ -	**$ 42,000**	$ 42,000
	Specialized Operations Equipment	Replace heavy equipment and specialized vehicles on as-needed basis.	$ -	**$ 25,000**	$ 25,000
Buildings	Administrative Building Improvements	Repairs and modifications to the office facility to support business operations	$ -	**$ 30,000**	$ 30,000
	Total Projects		**$ 2,640,000**	**$ 1,630,000**	**$ 4,270,000**

APPENDIX E:

Water System Assessment & Master Plan (2017)

Water System Condition Assessment and Master Plan

FINAL Report

Prepared for:
Scotts Valley Water District
2 Civic Center Drive
Scotts Valley, CA 95066

Prepared by:
Michael Baker International
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Rancho Cordova, CA 95670

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March 28, 2017

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SECTION 1

INTRODUCTION AND SYSTEM OPERATIONS

1. INTRODUCTION AND SYSTEM OPERATIONS

1.1 INTRODUCTION

The Scotts Valley Water District (SVWD or District) contracted with Michael Baker International (Michael Baker) to develop a Water System Condition Assessment Master Plan (Master Plan). This Master Plan evaluates the physical condition of the SVWD potable and recycled water facilities (with the exception of the recycled water treatment plant) and uses information collected from SVWD's records and interviews with staff to identify and prioritize capital improvement projects based on the current age, condition and expected remaining useful service life of these facilities.

The results and recommendations presented within this Master Plan will be used by SVWD to plan and budget future infrastructure improvement projects for the potable and recycled water system facilities.

1.2 BACKGROUND AND SYSTEM INFORMATION

The SVWD was formed in 1961 as a County Water District under County Water District Act with the purpose of providing water for domestic, commercial, municipal and firefighting purposes. The District is located six miles north of the City of Santa Cruz, along State Highway 17 and covers approximately six square miles. The District is located in the Santa Cruz Mountains approximately five miles inland from the Monterrey Bay and the service boundary, as shown on Figure 1-1, runs approximately five miles from north to south and one mile from east to west encompassing the majority of the incorporated area of the City of Scotts Valley (population 11,600) and a portion of the unincorporated area north of the City. Notable exceptions to the service area include the Pastatiempo Pines and Mañana Woods subdivisions, Vista Del Lago and Spring Lakes Mobile Home Parks that are served by the San Lorenzo Valley Water District.

The District's customer base is predominantly single and multi-family residential customers with some commercial, industrial, institutional, recreational and landscape customers.

The District operates and maintains both a potable water and recycled water distribution system to serve customers within its service boundary. The District delivers approximately 900 to 1,200 acre feet per year (AFY) of potable water to its customers. In 2013, recycled water delivery was approximately 200 AFY equaling about 13% of the District's total demand.

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T:_GIS\Santa_Cruz_County\MXD\Scotts Valley\District Boundary.mxd (4/1/2016)

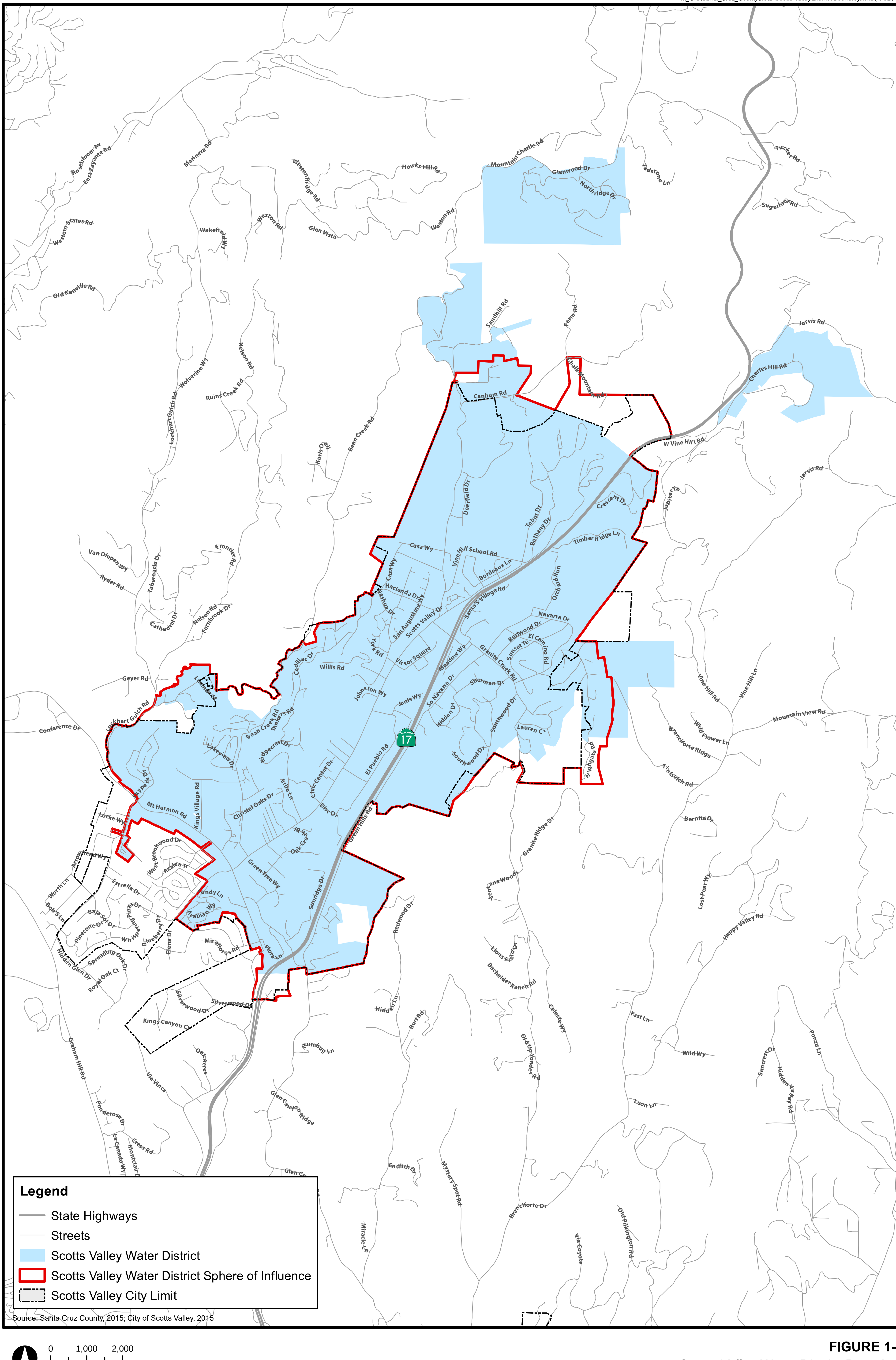

FIGURE 1-1

Scotts Valley Water District Boundary

Michael Baker INTERNATIONAL

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1.3 POTABLE WATER SYSTEM

The District operates and maintains a potable water distribution system (Distribution System) that includes groundwater wells, treatment facilities, storage tanks, pumping stations, pressure reducing stations and distribution mains and services to meet the potable water demands of its customers.

The District operates its Distribution System facilities primarily through a radio based Supervisory Control and Data Acquisition (SCADA) system. District operators continually assess system supply and demand conditions throughout each day using the SCADA system and make adjustments to system operations as needed. A primary operational objective is maintaining adequate storage within the District's eight storage tanks. The District relies on its local groundwater basin for its entire water supply. Therefore, Distribution System operations are driven by groundwater well and treatment plant production. The following is a general description of the Distribution System and its operating characteristics.

1.4 PRESSURE ZONES

The Distribution System operates with a total of thirteen pressure zones, each with a unique hydraulic gradient that provides water service within acceptable operating pressure ranges. Pressure zones are defined as areas of service that are supplied by a source (or combination of sources) that provide a constant hydraulic gradient. Pressure zone boundaries are determined by ground elevations and facility locations. Some of the pressure zones have similar hydraulic gradients but are hydraulically independent from one another due to the location of pump stations or storage tanks. A hydraulic schematic of the District's Distribution System is provided in Figure 1-2.

Each pressure zone is isolated by boundary conditions, such as pumps, pressure reducing stations, storage tanks, and normally closed valves. The hydraulic grade line (HGL) of each pressure zone is generally based on the high-water level of the storage tank serving each respective zone. The HGL of the pressure reduced zones were established based on the design discharge pressure and ground elevation of the pressure reducing station. Finally, the HGL of "closed" pressure zones were established based on the design discharge pressure and ground elevation of the pump station.

Table 1-1 and Figure 1-3 identifies the potable water system pressure zones, their HGL and the facility establishing the HGL for each zone and a brief description of each follows:

Table 1-1 – Potable Water System Pressure Zones		
Pressure Zone Name	**HGL (ft.)**	**Facility Establishing HGL**
Green Valley	565	Watkins Johnson PRV
Camp Evers (Sequoia)	820	MacDorsa Tank
Glenwood	946	Glenwood Tank
MacDorsa	961	MacDorsa Tank
Hacienda (Closed)	1,052	Hacienda Pump Station
Southwood	1,077	Southwood Tank
Bethany	1,082	Bethany Tank
Monte Fiore (Closed)	1,115	Monte Fiore Pump Station
Green Acres No. 2	1,160	Green Acres PRV #2 & #3
Villa Fonteney	1,178	Villa Fonteney Tank
Sand Hill	1,202	Sand Hill PRV
Green Acres No. 1	1,307	Green Acres PRV #1
Northridge	1,480	Mt. Roberta Tank

1.4.1 Green Valley Pressure Zone

The Green Valley pressure zone is relatively small and covers the northwest portion of the District's service area. The Green Valley Pressure Zone receives water from the Camp Evers (Sequoia) pressure zone through the Watkins Johnson Water Exchange Valve (WEV).

1.4.2 The Camp Evers (Sequoia) Pressure Zone

The Camp Evers (Sequoia) pressure zone is one of the larger pressure zones in terms of area, and covers the southern portion of the District's service area. The zone is fed by the Well 9 and Well 10A Pump Stations which are supplied by the Well 9 and 10A Water Treatment Plants, respectively. The Sequoia Tank provides storage for this zone. This zone can also receive water from the Scotts Valley Drive WEV, which is normally closed, or the MacDorsa pressure zone. The Camp Evers (Sequoia) pressure zone provides water to the Monte Fiore pressure zone through the Monte Fiore Booster Pump Station and to the El Pueblo Tank through the El Pueblo WEV.

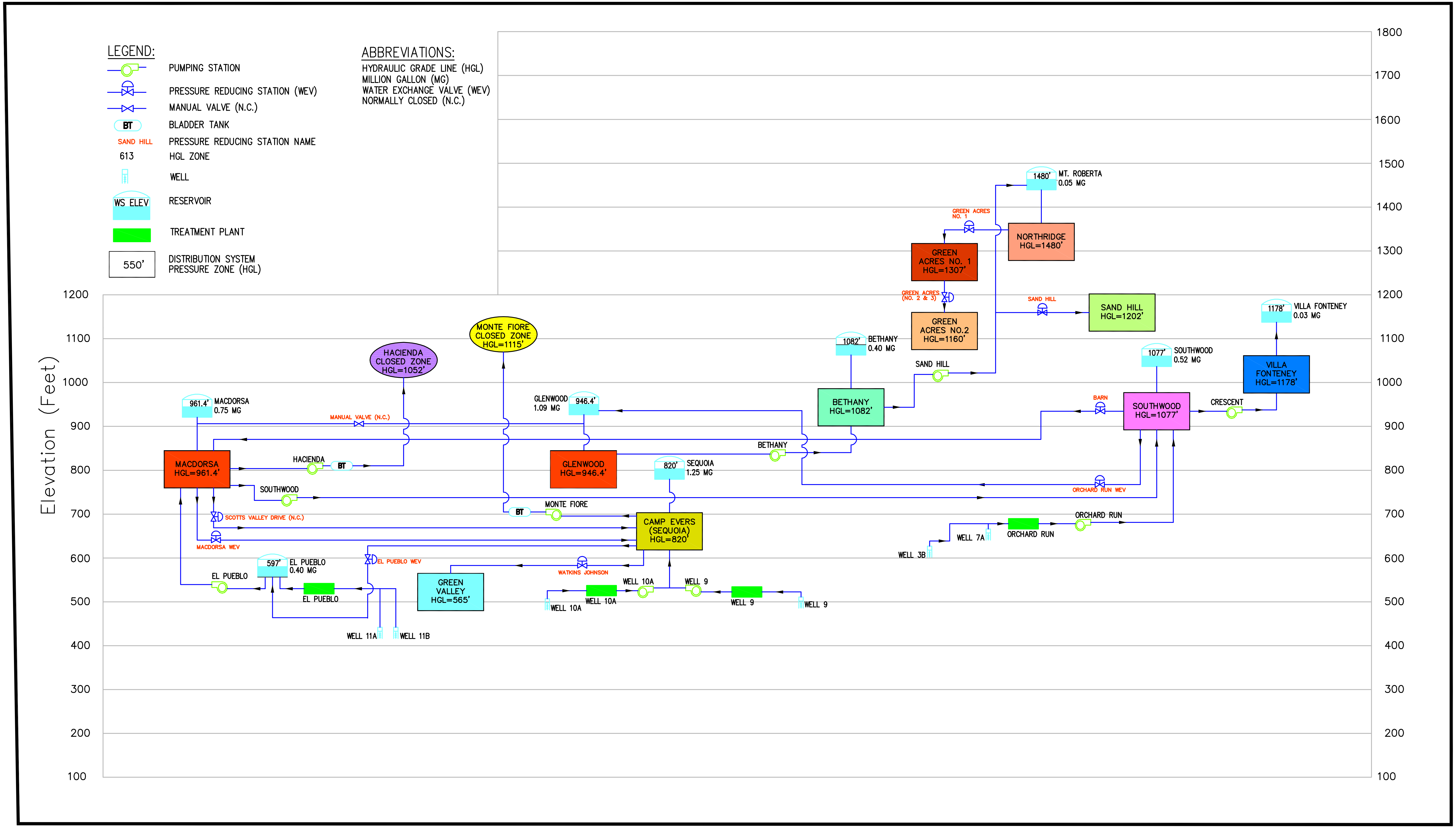

FIGURE 1-2
Scotts Valley Water District
Distribution System Hydraulic Schematic

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T:_GIS\Santa_Cruz_County\MXD\Scotts Valley\Updated_3_23_17\1-3 Pressure Zones.mxd (3/24/2017)

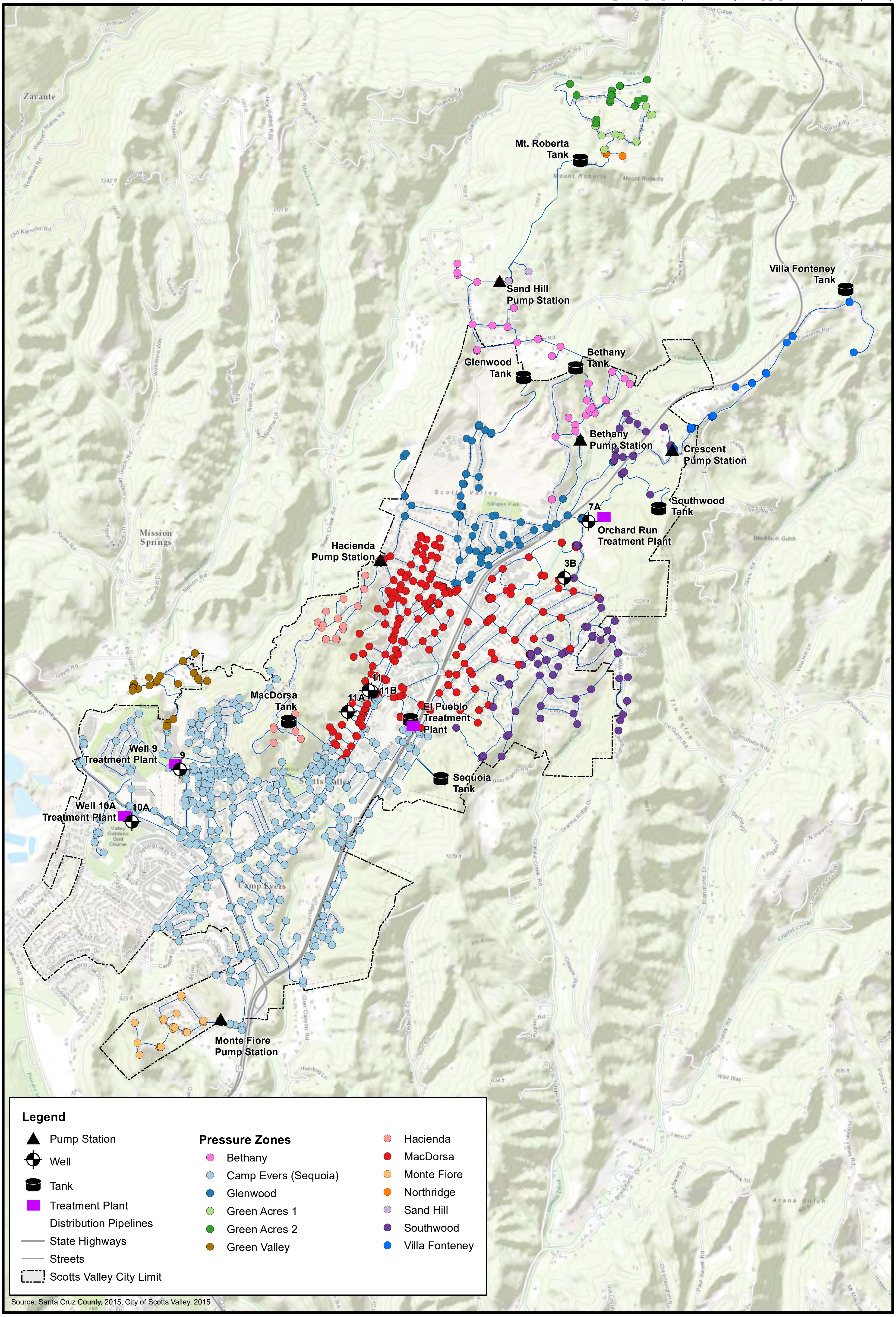

FIGURE 1-3
Scotts Valley Water District
Distribution System Pressure Zones

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1.4.3 Glenwood Pressure Zone

The Glenwood pressure zone is located in a small area of the northern portion of the District's service area. The zone is fed by the Glenwood Tank which is filled from the by the Southwood pressure zone through the Orchard Run WEV. The Glenwood tank provides storage for this zone. The Glenwood Tank is also connected to the MacDorsa Tank through a manual valve which is normally closed but is available for emergency operations. The higher operating pressure of the MacDorsa Tank negatively impacts the ability to equivilate tank levels limiting use during normal operations. The Glenwood pressure zone feeds water to the Bethany pressure zone through the Bethany Booster Pump Station.

1.4.4 MacDorsa Pressure Zone

The MacDorsa pressure zone, another large pressure zone in terms of area, covers the central portion of the District's service area. The zone is fed directly by the El Pueblo Tank through the El Pueblo Pump Station which receives treated groundwater from Wells 11A and 11B from the El Pueblo Water Treatment Plant. This zone also receives water directly from the Southwood pressure zone via the Barn WEV. The MacDorsa Tank provides storage for this zone. The MacDorsa Tank is connected to the Glenwood Tank, for emergency use, through a normally closed valve. It is noted that the higher operating pressure of the MacDorsa Tank negatively impacts this operation and the ability to equivilate tank levels.

The MacDorsa pressure zone provides water to the Hacienda pressure zone through the Hacienda Booster Pump Station and to the Camp Evers (Sequoia) pressure zone through the Scotts Valley Drive WEV, which is normally closed, and the MacDorsa WEV. Additionally, this zone provides water to the Southwood pressure zone through the Southwood Pump Station.

1.4.5 Hacienda Pressure Zone

The Hacienda pressure zone is a very small area around the midwestern portion of the District's service area. This zone is fed by the Hacienda Booster Pump Station which boosts water from the MacDorsa pressure zone. The Hacienda pressure zone is a "closed" zone since there is no storage tank to establish the HGL. Instead, the HGL for this pressure zone is established by the discharge pressure of the Hacienda Booster Pump Station.

1.4.6 Southwood Pressure Zone

The Southwood pressure zone covers the eastern edge of the District's service area. The zone is fed by the Orchard Run Pump Station which is supplied by the Orchard Run Water Treatment Plant that treats groundwater from Wells 3B and 7A. The zone is also fed by the MacDorsa pressure zone through the Southwood Pump. The Southwood Tank provides storage for this zone. This zone provides water to the Glenwood Tank through the Orchard Run WEV and back to the MacDorsa pressure zone through the Barn WEV. Additionally, the Villa Fonteney pressure zone receives water directly from the Southwood pressure zone through the Crescent Pump Station.

1.4.7 Bethany Pressure Zone

The Bethany pressure zone covers the northcentral portion of the District's service area. The zone is fed by the Bethany Pump Station which takes water directly from the Glenwood pressure zone. The Bethany Tank provides storage for the Bethany pressure zone. The Bethany pressure zone provides water to the Mt. Roberta Tank through the Sand Hill Pump Station.

1.4.8 Monte Fiore Pressure Zone

The Monte Fiore pressure zone, in the southwestern corner of the District's service area, is fed by the Monte Fiore Booster Pump Station which boosts water from the Camp Evers (Sequoia) pressure zone. The Monte Fiore pressure zone is a "closed" zone since there is no storage tank to establish the HGL. Instead, the HGL for this pressure zone is established by the discharge pressure of the Monte Fiore Booster Pump Station.

1.4.9 Green Acres #2 Pressure Zone

The Green Acres #2 pressure zone is a small zone in the far north reach in the west region of the District's service area. The zone is served by the Green Acres #2 and Green Acres #3 WEVs which take water from the Green Acres #1 pressure zone. Storage for this zone is the Mt. Roberta Tank.

1.4.10 Villa Fonteney Pressure Zone

The Villa Fonteney pressure zone covers the northeast corner of the District's service area. This zone is fed by the Crescent Pump Station which takes water from the Southwood pressure zone. Storage for this zone is provided by the Villa Fonteney Tank.

1.4.11 Sandhill Pressure Zone

The Sandhill pressure zone covers a very small portion in the northern region of the District's service area. The pressure zone is fed from the Bethany pressure zone through the Sandhill WEV which receives water from the Sand Hill Pump Station..

1.4.12 Green Acres #1 Pressure Zone

The Green Acres #1 pressure zone covers a small portion in the far north reach of the western portion of the District's service area. The Green Acres #1 pressure zone is served by the Northridge pressure zone through the Green Acres #1 WEV. Storage for this zone is provided by the Mt. Roberta Tank.

1.4.13 Northridge Pressure Zone

The Northridge pressure zone is located in the northern portion of the District's service area. This zone is fed by the Mt. Roberta Tank which receives water from the Bethany pressure zone through the Sandhill Pump Station Storage for the Northridge pressure zone is provided by the Mt. Roberta Tank.

1.5 GROUNDWATER WELLS

The District relies on the local groundwater basin for the entire Distribution System's potable water supply, which is extracted by seven (7) groundwater wells, all of which receive treatment to meet potable water quality requirements. Table 1-2 provides a summary of the groundwater production wells.

Table 1-2 – Potable Water System Wells

Groundwater Well	Nominal Production (gpm)	Status (Active or Standby)	Water treatment plant
3B	320	Active	Orchard Run
7A	450	Active	Orchard Run
9	90	Active (Emergency)	WTP Well 9
10	0	Abandoned	-
10A	300	Active	WTP Well 10A
11A	100	Disconnected	El Pueblo
11B	300	Active	El Pueblo

1.6 GROUNDWATER TREATMENT PLANTS

There are four (4) groundwater treatment plants that remove various constituents and disinfect the groundwater supply to meet State and Federal water quality requirements. Table 1-3 provides a summary of the groundwater treatment plants followed by a brief description of each groundwater treatment plant as well as the facilities directly related to the conveyance of the treated water

Table 1-3 – Groundwater Treatment Plants				
Treatment Plant	**Rated Capacity (gpm)**	**Sources**	**Constituents**	**Treatment Regime**
Well 9	100	Well 9	Sulfate, MTBE, VOC's, hydrogen sulfide	Chlorination, Granular Activated Carbon Filtration
Well 10A	400	Well 10 Well 10A	Iron, manganese, VOC's, hydrogen sulfide	Air Stripper, Chlorination, Dual Media Filtration, Sequestering Agent, Standby GAC Filtration, PO4 Corrosion Inhibitor
El Pueblo	800	Well 11A Well 11 B	Iron, manganese, arsenic, VOC's	pH Adjustment, Chlorination, Dual Media Filtration, Sequestering Agent, PO4 Corrosion Inhibitor
Orchard Run	1,200	Well 3B Well 7A	Iron, manganese, hydrogen sulfide	Air Stripper, Chlorination, Dual Media Filtration, Sequestering Agent, PO4 Corrosion Inhibitor

1.6.1 Well 9 Water Treatment Plant

The Well 9 Water Treatment Plant (WTP) is typically operated only under an "emergency condition".

This water treatment plant treats groundwater from the on-site Well 9 and has a treatment process that generally consists of granular activated carbon (GAC) pressure filters with sodium hypochlorite serving as the disinfectant. Well 9 pumps directly into the treatment process and the treated well water is then discharged to a small above-ground concrete clear well located at the site.

From the clear well, the Well 9 Water Treatment Plant Booster pump conveys the treated groundwater into the Camp Evers pressure zone.

The level of the Sequoia Tank controls and dictates operation of Well 9, while the level within the small on-site clear well dictates the operation of the Well 9 Booster pump.

1.6.2 Well 10A Water Treatment Plant

The Well 10A Water Treatment Plant operates under "normal conditions" to satisfy customer demands and maintain adequate storage tank levels.

This water treatment plant treats groundwater from on-site Wells 10 and 10A and has a treatment process that generally consists of air stripping, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent. The treatment process also has GAC filtration equipment, however during the condition assessment District Operations staff reported that the GAC filtration process is in standby mode and is not currently required to meet water quality goals and standards.

Well 10A is the primary production well at this site. District Operations staff reported that Well 10 is in Standby mode due to a well casing issue that requires further evaluation.

Currently, Well 10A pumps directly into the treatment process and the treated well water is then discharged to a small below-ground concrete clear well located at the site. From the clear well, the Well 10A Water Treatment Plant Booster pump conveys the treated groundwater into the Camp Evers pressure zone.

The level of the Sequoia Tank controls and dictates operation of Well 10A, while the level within the on-site concrete clear well dictates the operation of the Well 10A Booster pumps. Well 10A is typically activated when the Sequoia Tank level drops below 22-feet and is shut-off when the tank level reaches 26-feet. Tank overflow is at 27-feet.

1.6.3 El Pueblo Water Treatment Plant

The El Pueblo Water Treatment Plant operates under “normal conditions” to satisfy customer demands and maintain adequate storage tank levels.

This water treatment plant treats groundwater from off-site Wells 11A and 11B and has a treatment process that generally consists of pH adjustment, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent.

Currently, Wells 11A and 11B pump directly into the treatment process and the treated well water is then discharged to the 0.40 MG above-ground welded steel El Pueblo tank which is co-located with the water treatment plant. From the El Pueblo Tank, the El Pueblo Water Pump Station conveys the treated groundwater into the MacDorsa pressure zone and can transfer water from the MacDorsa pressure zone to the Camp Evers (Sequoia) pressure zone via the MacDorsa WEV, which is co-located at the El Pueblo WTP.

The level of the El Pueblo Tank controls and dictates the operation of Wells 11A and 11B, while the level within the MacDorsa Tank dictates the operation of the El Pueblo Pump Station or the Glenwood Tank (depending on the configuration of pressure zones.

1.6.4 Orchard Run Water Treatment Plant

The Orchard Run Water Treatment Plant operates under “normal conditions” to satisfy customer demands and maintain adequate storage tank levels.

This water treatment plant treats groundwater from off-site Well 3B and on-site Well 7A and has a treatment process that generally consists of air stripping, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent.

Both Well 3B and 7A are active production wells, with Well 7A being the larger producing well.

Currently, both Wells 3B and 7A pump directly into the treatment process and the treated well water is then discharged to a partially buried concrete clear well which is co-located with the water treatment plant. From the clear well, the Orchard Run Water Treatment Plant Pump Station conveys the treated groundwater into the Southwood pressure zone.

The level of the Southwood Tank controls and dictates operation of Wells 3B and 7A, while the level within the on-site clear well dictates the operation of the Orchard Run Pump Station.

1.7 PUMP STATIONS

The District relies upon ten (10) pump stations to boost water to higher elevations and storage tanks within the distribution system. The pumps range in size, type and capacity. As previously noted, four of these pump stations are co-located at the groundwater treatment plants and convey treated water from the treatment plant sites to the upper hydraulic gradients. Pump stations are critical elements of the District's distribution system, moving the source water to the higher elevations. As noted below, the majority of the District's pump stations have the provision for either portable auxiliary power or an on-site diesel generator to provide power in the event of an electrical service interruption. Table 1-4 contains a summary of these pump stations followed by a brief description of each pump station, with the exception of pump stations co-located at the groundwater treatment plants.

Table 1-4 – Potable Water Pump Stations

Pump Station	Nominal Capacity (gpm)	Number of Pumps	Pump Size (HP)	Auxiliary Power
Sand Hill	240	2	40	Generator Receptacle
Crescent	280	2	15	Generator Receptacle
Bethany	230	2	15	Generator Receptacle
Southwood	150	2	15	Generator Receptacle
Monte Fiore	12 – 15	2	15	On-Site Diesel Generator
Hacienda	4 – 6	2	5	None

Table 1-4 – Potable Water Pump Stations				
Pump Station	**Nominal Capacity (gpm)**	**Number of Pumps**	**Pump Size (HP)**	**Auxiliary Power**
Well 9 WTP Booster	200	1	40	Generator Receptacle
Well 10A WTP Booster	420	3	20	Generator Receptacle
El Pueblo WTP Booster	1,000	3	75	On-Site Diesel Generator
Orchard Run WTP Booster	720	3	75	On-Site Diesel Generator

1.7.1 Sand Hill Pump Station

The Sand Hill Pump Station conveys water from the Bethany pressure zone to the Northridge pressure zone. The level of the Mt. Roberta Tank dictates and controls the operation of this pump station, with the pump station activated when the Mt. Roberta Tank level drops below 12.5-ft and shuts-off when the tank level reaches 17-ft.

1.7.2 Crescent Pump Station

The Crescent Pump Station conveys water from the Southwood pressure zone to the Villa Fonteney pressure zone. The level of the Villa Fonteney Tank dictates and controls the operation of this pump station, with the pump station activated when the Villa Fonteney Tank level drops below 7.5-ft and shuts-off when the tank level reaches 10-ft.

1.7.3 Bethany Pump Station

The Bethany Pump Station conveys water from the Glenwood pressure zone to the Bethany pressure zone. The level of the Bethany Tank dictates and controls the operation of this pump station, with the pump station activated when the Bethany Tank level drops below 24-ft and shuts-off when the tank level reaches 28-ft.

1.7.4 Southwood Pump Station

The Southwood Pump Station conveys water from the MacDorsa pressure zone to the Southwood pressure zone. The level of the Southwood Tank dictates and controls the operation of this pump station, with the pump station activated when the Southwood Tank level drops below 23-ft and shuts-off when the tank level reaches 25-ft.

1.7.5 Monte Fiore Booster Pump Station

The Monte Fiore Booster Pump Station conveys water from the Camp Evers (Sequoia) pressure zone to the Monte Fiore pressure zone. This pump station is one of two pump stations that serves a “closed” pressure zone and relies upon variable speed pumps to maintain pressure and minimize pump starts/stops during low demand periods. A pressure set point at the booster pump station dictates and controls the operation of this booster pump station, with the pumps activated when the pressure at the site drops below 200 psi and shuts-off when the pressure rises above 215 psi. The variable speed pumps are set to maintain the system pressure at 200 psi.

This booster pump station also has a dedicated fire pump to meet fire flow demands in the Monte Fiore pressure zone. This fire pump is also controlled by a pressure set point, with the pump activating when the pressure at the pump station site drops below 155 psi.

1.7.6 Hacienda Booster Pump Station

The Hacienda Booster Pump Station conveys water from the MacDorsa pressure zone to the Hacienda pressure zone. This pump station is one of two booster pump stations that serves a “closed” pressure zone and relies upon variable speed pumps to maintain pressure and minimize starts/stops during low demand periods. A pressure set point at the pump station dictates and controls the operation of this booster pump station, with the pumps activated when the pressure at the site drops below 135 psi and shuts-off when the pressure rises above 180 psi. The variable speed pumps are set to maintain the system pressure at 135 psi.

1.8 STORAGE TANKS

The District owns, operates and maintains eight (8) potable water storage tanks, all of which are located above ground. The storage tanks are located on separate sites and range in capacity from 0.03 million gallons (MG) to 1.25 MG providing a total nominal storage capacity of 4.5 MG. The storage tanks provide storage to meet peak demands and emergency storage for fire protection. Table 1-5 contains a summary of these potable water tanks followed by a brief description of each storage tank.

Table 1-5 – Potable Water Storage Tanks

Tank	Nominal Capacity (MG)	Material	Dimensions (Diameter x Height)	Pressure Zone Served
Bethany	0.40	Welded Steel	46’ x 32’	Bethany
El Pueblo	0.40	Welded Steel	46’ x 32’	N/A (Clear Well)
Glenwood	1.09	Bolted Steel	81’ x 28’-5”	Glenwood
MacDorsa	0.75	Welded Steel	64’ x 32’-2”	MacDorsa
Mt. Roberta	0.05	Redwood	21’-6” x 20'	Northridge
Sequoia	1.25	Welded Steel	85’ x 32’	Camp Evers
Southwood	0.52	Bolted Steel	56’ x 28’-5”	Southwood
Villa Fonteney	0.03	Redwood	20’ x 14’	Villa Fonteney

1.8.1 Bethany Tank

The Bethany Tank is fed by the Bethany Pump Station and provides storage for the Bethany pressure zone. This 0.40 MG welded steel tank cannot be removed from service as it is the only facility providing storage for this pressure zone.

1.8.2 El Pueblo Tank

The El Pueblo Tank is fed by the El Pueblo Treatment Plant and is the clear well providing suction for the El Pueblo Pump Station. This 0.40 MG welded steel storage tank also provides source water for the backwash pump for the dual media pressure filter at the El Pueblo Treatment Plant.

1.8.3 Glenwood Tank

The Glenwood Tank is normally fed by the Southwood pressure zone through the Orchard Run WEV. This storage tank is connected to the MacDorsa Tank through a manual valve that is normally closed. Opening this valve allows the MacDorsa Tank and Glenwood Tank to operate together. This 1.09 MG bolted steel storage tank is at a lower elevation than the MacDorsa Tank, which impacts operations and the ability to equivilate tank levels within the two pressure zones.

1.8.4 MacDorsa Tank

The MacDorsa Tank is primarily fed by the El Pueblo Tank through the El Pueblo Pump Station and the Southwood pressure zone through the Barn WEV. This storage tank provides storage for the MacDorsa pressure zone. As noted above, this 0.75 MG welded steel tank is connected to the Glenwood Tank through a manual valve, normally kept closed. However, the MacDorsa Tank is at a higher elevation than the Glenwood Tank which impacts operations and the ability to equivilate tank levels within the two pressure zones. If necessary, the MacDorsa Tank can be taken out of service due to the redundancy of the Glenwood Tank.

1.8.5 Mt. Roberta Tank

The Mt. Roberta Tank is fed by the Sand Hill Pump Station and provides storage for the Northridge, Green Acres No. 1, Green Acres No. 2 and Sand Hill pressure zones. This 0.05 MG redwood storage tank cannot be removed from service as it is the only facility providing storage for these pressure zones.

1.8.6 Sequoia Tank

The Sequoia Tank is fed by the Well 9 and 10 Pump Stations and provides storage for the Camp Evers and Green Valley pressure zones. This 1.25 MG welded steel storage tank cannot be removed from service as it is the only facility providing storage for these pressure zones.

1.8.7 Southwood Tank

The Southwood Tank is fed by the MacDorsa Tank through the Orchard Run Pump Station and the Orchard Run WTP through the Orchard Run Pump Station and provides storage for the Southwood pressure zone. This 0.52 MG bolted steel storage tank cannot be removed from service as it is the only facility providing storage for this pressure zone.

1.8.8 Villa Fonteney Tank

The Villa Fonteney Tank is fed by the Crescent Pump Station and provides storage for the Villa Fonteney pressure zone. This 0.03 MG redwood storage tank cannot be removed from service as it is the only facility providing storage for this pressure zone.

1.9 RECYCLED WATER SYSTEM

The City of Scotts Valley (City) operates the Water Reclamation Facility (WRF) which includes a tertiary water treatment plant with a design treatment capacity of 1.0 MGD. The facility is used to treat secondary effluent to a tertiary level using chemical coagulation and flocculation, filtration, denitrification, and ultraviolet (UV) disinfection. The effluent meets the California State Water Resources Control Board (SWRCB) Division of Drinking Water Title 22 recycled water standards for disinfected tertiary recycled water. Revisions to Title 22 lists 40 specific uses for disinfected tertiary recycled water including irrigation of food crops, parks, playgrounds, school yards, residential landscaping and any other use allowed under Title 22 and not restricted by other sections of the California Code of Regulations.

While the City is responsible for producing recycled water, the Scotts Valley Water District is responsible for the distribution of the recycled water to irrigation customers within its service area.

To serve the irrigation customers within its service area, the District owns, operates and maintains a storage tank, a recycled water pump station, pressure reducing station and nearly 6 miles of recycled water distribution mains to supply recycled water to its irrigation customers.

The general operation of the recycled water system is as follows. Water is produced by the City's WRF and is pumped to the District's recycled water tank which provides storage and establishes the hydraulic gradient for the majority of the recycled water system. There are two additional pressure zones within the recycled water system, a pressure reduced zone and a "closed zone" served by the Siltanen Pump Station. Table 1-6 contains a summary of the recycled water system pressure zones.

Table 1-6 – Recycled Water System Pressure Zones		
Pressure Zone Name	**HGL (ft.)**	**Facility Establishing HGL**
1	786	Recycled Water Tank
2	972	Siltanen Pump Station
3	662	Pressure Reducing Station

The Siltanen pump station, which is controlled by a pressure set point and has a small bladder tank to accommodate low demands and limit pump starts/stops, serves Pressure Zone 2 of the recycled water system. Table 1-7 contains a summary of this pump station's characteristics.

Table 1-7 – Recycled Water Pump Station				
Pump Station	**Nominal Capacity (gpm)**	**Number of Pumps**	**Pump Size (HP)**	**Auxiliary Power**
Siltanen	350	2	15	Generator Receptacle

The recycled water system has one storage tank that provides storage for the entire recycled water system and establishes the hydraulic gradient for Pressure Zone 1. Table 1-8 contains a summary of the tank's characteristics.

Table 1-8 – Recycled Water Storage Tank				
Tank	**Nominal Capacity (MG)**	**Material**	**Dimensions (Diameter x Height)**	**Pressure Zone Served**
Recycled	0.63	Bolted Steel	61.5' x 28.5'	1

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SECTION 2

CONDITION ASSESSMENT

2. CONDITION ASSESSMENT

2.1. FIELD OBSERVATION

As part of the Scotts Valley Water District (District) Water System Condition Assessment and Master Plan (Project), Michael Baker International (Michael Baker) performed a water facilities condition assessment to evaluate the current external physical condition and the general operational condition of the District's major potable water and recycled water system facilities. The condition assessment was performed by a registered Professional Civil Engineer and included discussions with City operations staff, field visits to District facilities, review of operation and maintenance records, and review of available previous studies. The condition assessment field investigations were conducted on June 8th and 9th of 2015.

The following potable water facilities were assessed as part of this work; groundwater wells, groundwater treatment plants, pump stations and storage tanks.

In addition, the recycled water pump station and recycled water storage tank were also assessed as a part of this project.

Each facility was examined for general conformance with industry standards based on their existing physical condition, performance history, and collection of information from District staff. Each facility was assessed based on the following categories:

- Site Conditions
- Piping Mechanical Configuration and Mechanical Equipment Condition
- External Coatings Condition and Corrosion
- SCADA/Telemetry Equipment Condition
- Structural Condition
- Electrical Equipment Condition
- Safety

A discussion of the assessment of each facility including any observations or deficiencies along with corresponding recommendations is included herein. Facility condition assessment summary sheets, which include detailed notes from the field visits, are included in Appendix A. A compact disc with additional photographs from each site has been included in Appendix B.

The following evaluations were not specifically included as a part of this study: internal reservoir inspections (dive reports), cathodic protection system evaluation, materials testing, pump testing, treatment regimens, and site security evaluation.

2.2. GROUNDWATER WELLS

The following groundwater wells were assessed as a part of this study:

- Well 3B
- Well 7A
- Well 9
- Well 10
- Well 10A
- Well 11A
- Well 11B

2.2.1. Well 3B

Well 3B is located off of Orchard Run near Sucinto Drive. This groundwater well, which has a nominal capacity of approximately 320 gpm, is located within a large fenced site with asphalt paving. The well head is situated near the northwest corner of the site. In addition to the submersible pump and motor, mechanical equipment at the well head includes above ground 6-inch and 8-inch ductile iron discharge piping equipped with various appurtenances including swing check valves, isolation valves and a magnetic flow meter. The well head also has the ability to pump-to-waste via a manual 4-inch discharge pipeline.

The electrical equipment is located beneath a canopy shade structure located along the southern fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the groundwater well.

The overall site and the mechanical and electrical equipment were observed to be in good condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Asphalt paving has surface cracks that have allowed vegetation to grow in some areas.	Apply crack sealer and monitor pavement conditions.

Photo 2-1: Well 3B Mechanical Layout

Photo 2-2: Well 3B Site Cracked Paving

2.2.2. Well 7A

Well 7A is located at the Orchard Run Water Treatment Plant. This groundwater well, which has a nominal capacity of approximately 450 gpm, is located immediately adjacent to the chemical feed storage building. In addition to the submersible pump and motor, mechanical equipment at the well head, which travels within the chemical feed storage building, includes above ground 6-inch and 8-inch ductile iron and PVC discharge piping equipped with various appurtenances including swing check valves, isolation valves and a magnetic flow meter. The well head also has the ability to pump-to-waste via a manual 6-inch discharge pipeline.

The electrical equipment for this groundwater well, along with the Orchard Run Water Treatment Plant, is located beneath a canopy shade structure located along the northern fence line. The Orchard Run Water Treatment Plant site contains a permanent diesel generator set.

The overall site condition is discussed under Section 2.3.4 as a part of the Orchard Run Water Treatment Plant assessment. The Well 7A mechanical and electrical equipment were observed to be in good condition. District staff noted that due to the hydrogen sulfide scrubber located at the northeast corner of the site, accelerated corrosion has been observed at this site. This corrosion was observed throughout the site, including at the well head. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Well head flange coating has deteriorated.	Repair coating on well head flange.
Portions of the discharge pipe and valve arrangement has light corrosion occurring where protective coating has been damaged.	Repair damaged protective coating on pipe and valve arrangement.

Photo 2-3: Well 7A Mechanical Layout

Photo 2-4: Well 7A Corrosion on Well Head Flange, Valves and Pipe

2.2.3. Well 9

Well 9 is located at the Well 9 Water Treatment Plant site near the intersection of Blue Bonnet Lane and Kings Village Road. This groundwater well, which has a nominal capacity of approximately 90 gpm, is located within a large fenced site that also contains the Well 9 treatment equipment and distribution pump. The well head is situated immediately adjacent to the on-site above ground concrete clear well. In addition to the submersible pump and motor, mechanical equipment at the well head includes above ground 4-inch galvanized steel (painted) discharge piping. The well head also has the ability to pump-to-waste to an on-site storm drain via a manual 4-inch discharge pipeline.

The electrical equipment is located beneath a canopy shade structure located along the western fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the well.

The overall site condition is discussed under Section 2.3.1 as a part of the Well 9 Water Treatment Plant assessment. The Well 9 mechanical and electrical equipment were observed to be in fair condition. District staff noted that this groundwater well and the associated water treatment plant and pump station are only operated in an emergency if other water supply sources are unavailable. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
No check valve was observed on the well head discharge piping.	Install check valve on above ground well discharge pipe at well head. While recently replaced pump has a check valve installed in-line with the pump/drop pipe, this type of valve is more susceptible to leak-by and/or failure.
Very minor corrosion on well discharge pipe.	Repair damaged coating.

Photo 2-5: Well 9 Mechanical Layout

Photo 2-6: Well 9 Mechanical – Minor Corrosion & No Check Valve

2.2.4. Well 10

Well 10 is located at the Well 10A Water Treatment Plant site off of Mount Hermon Road. This groundwater well, which had a nominal capacity of approximately 180 gpm, is located within a large fenced site that also contains the Well 10A treatment equipment and pump station. The well head is situated immediately adjacent to the on-site pump station/chemical feed storage building. This groundwater well is currently out of service and is not physically connected to the Well 10A Water Treatment Plant. The only equipment visible during the condition assessment was the well head which had no discharge piping connected.

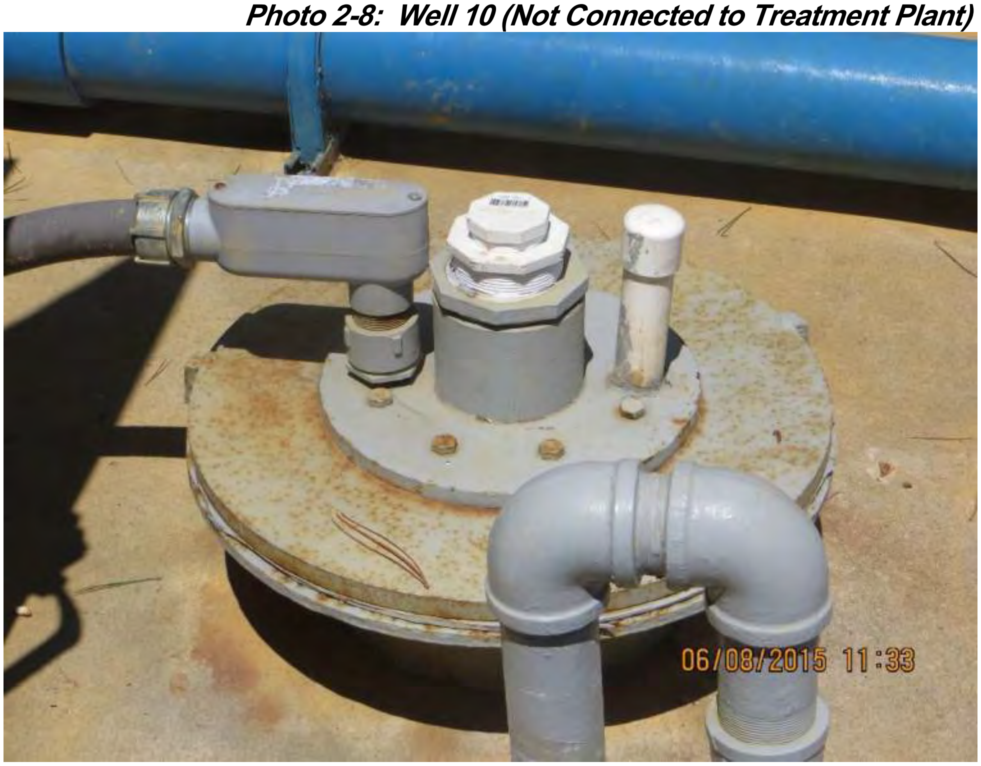
The electrical equipment is located beneath a canopy shade structure located along the eastern fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the treatment plant, pump station and Well 10A.

The overall site condition is discussed under Section 2.3.2 as a part of the Well 10A Water Treatment Plant assessment. District staff noted that this well was placed in “stand-by” mode when the well began pumping sand. Well 10A was drilled and equipped to replace this failing well. A downhole video inspection report was reviewed which indicates that the casing has moderate to heavy corrosion with several locations with small holes. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
District staff noted that well was pumping sand and was subsequently removed from service. Review of down-hole video indicates casing has moderate to heavy corrosion with several locations where small holes are present.	Monitor corrosion levels of well casing and evaluate possible installation of well liner at locations where holes are present.

Photo 2-7: Well 10 Location (Adjacent to Well 10A Pump Station and Chemical Feed Bldg.)

Photo 2-8: Well 10 (Not Connected to Treatment Plant)



2.2.5. Well 10A

Well 10A is located at the Well 10A Water Treatment Plant site off of Mount Hermon Road. This groundwater well, which has a nominal capacity of approximately 300 gpm, is located within a large fenced site that also contains the Well 10A treatment equipment and pump station. The well head is situated immediately adjacent to the northern fence line where a double swing gate provides access to the groundwater well and site. This groundwater well was recently constructed (2007) to replace Well 10 which had a casing failure. In addition to the submersible pump and motor, mechanical equipment at the well head includes above ground 6-inch PVC (painted) discharge piping with ductile iron fittings. The discharge pipeline is equipped with various appurtenances including a swing check valve, isolation valves and a magnetic flow meter. The well head also has the ability to pump-to-waste to an on-site catch basin via a manual 6-inch discharge pipeline.

The electrical equipment is located beneath a canopy shade structure located along the eastern fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the treatment plant, pump station and Well 10A.

The overall site condition is discussed under Section 2.3.2 as a part of the Well 10A Water Treatment Plant assessment. The Well 10A mechanical and electrical equipment were observed to be in excellent condition. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Well discharge piping (painted PVC) is above ground and exposed to UV rays.	Monitor paint on discharge piping and re-coat as necessary to provide satisfactory UV protection.

Photo 2-9: Well 10A Mechanical Layout

Photo 2-10: Well 10A Exposed PVC Discharge Pipe

2.2.6. Well 11A

Well 11A is west of Scotts Valley Drive and is accessed via Castle Ridge Way. This groundwater well, which has a nominal capacity of approximately 100 gpm, is located within a large fenced site which does not have any surface improvements. The well head is situated near the center of the site. In addition to the submersible pump and motor, mechanical equipment at the well head includes above ground 4-inch painted steel discharge piping equipped with various appurtenances including swing check valves, isolation valves and a propeller flow meter. The well head also has the ability to pump-to-waste to an on-site catch basin via a manual 4-inch discharge pipeline.

The electrical equipment is located within a NEMA 3R cabinet on concrete pad located in the northeast corner of the site. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the groundwater well.

The overall site and the mechanical and electrical equipment were observed to be in good condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Portions of piping and valving have damaged coating.	Repair damaged protective coating on piping and valving.
Section of bare/exposed ductile iron pipe and flange on the pump to waste pipeline.	Apply protective coating to bare ductile iron pipe and flange.

Photo 2-11: Well 11A Site

Photo 2-12: Well 11A Mechanical Layout – Exposed Ductile Iron Pipe/Flanges

2.2.7. Well 11B

Well 11B is west of Scotts Valley Drive and is accessed via Frapwell Circle. This groundwater well, which has a nominal capacity of approximately 300 gpm, is located within a fenced site with asphalt paving. The well head is situated near the center of the site. In addition to the submersible pump and motor, mechanical equipment at the well head includes above ground 6-inch painted ductile iron discharge piping equipped with various appurtenances including swing check valves, isolation valves, a globe valve and a magnetic flow meter. The well head also has the ability to pump-to-waste to an on-site catch basin via a manual 4-inch discharge pipeline that is equipped with a 4-inch flow meter.

The electrical equipment is located within a NEMA 3R cabinet on concrete pad located adjacent to Well 11B within a separate fenced enclosure. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the groundwater well.

The overall site and the mechanical and electrical equipment were observed to be in good condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Minor corrosion observed on discharge head flange and bolts.	Repair protective coating on discharge head and bolts.

Photo 2-13: Well 11B Mechanical Layout

Photo 2-14: Well 11B Minor Corrosion Observed on Discharge Head Flange/Bolts

2.3. Groundwater Treatment Plants

The District relies on its local groundwater basin for its entire potable water supply, which is extracted by seven (7) groundwater wells, all of which receive treatment to meet potable water quality requirements. The water treatment plants consist mainly of dual media pressure filters. Depending on the constituents present in the raw groundwater, some of the water treatment plants also include a combination granular activated carbon (GAC) pressure filters, air strippers and other chemical feed systems to ensure water quality goals and requirements are met. The following water treatment plants were assessed as a part of this study:

- Well 9 Water Treatment Plant
- Well 10A Water Treatment Plant
- El Pueblo Water Treatment Plant
- Orchard Run Water Treatment Plant

2.3.1. Well 9 Water Treatment Plant

The Well 9 Water Treatment Plant is located near the intersection of Blue Bonnet Lane and Kings Village Road. This groundwater treatment plant, which has a nominal capacity of approximately 100 gpm, is located within a large fenced site that also contains Well 9 and the distribution pump. This water treatment plant treats groundwater from Well 9 and has a treatment process that generally consists of granular activated carbon (GAC) pressure filters with sodium hypochlorite serving as the disinfectant. Well 9 pumps directly into the treatment process and the treated well water is then discharged to a small above-ground concrete clear well located at the site.

The electrical equipment is located beneath a canopy shade structure located along the western fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the water treatment plant.

The overall site, mechanical and electrical equipment is in fair condition. District staff noted that this water treatment plant is only operated in an emergency if other water supply sources are unavailable. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Chemical feed storage building has severe corrosion on inside of door.	Replace door.
GAC pressure filters have corrosion occurring in areas that protective coating has been damaged (manways, lower section of the filter vessels, and the steel base frame).	Repair damaged coating on GAC pressure filter assemblies.
District staff reported that filter media has not been inspected or been core sampled in last 9 +/- years.	Schedule inspection of filter media and perform core sample. Schedule concurrent inspection of tank interior coating.
District O&M staff request the following improvements.	Schedule an inspection of the clearwell.

Photo 2-15: Well 9 Water Treatment Plant GAC Pressure Filters and Electrical Gear

Photo 2-16: Well 9 Water Treatment Plant Chemical Feed Building and Clear Well

Photo 2-17: Well 9 Water Treatment Plant GAC Pressure Filters

Photo 2-18: Well 9 Water Treatment Plant Corrosion on Manway

2.3.2. Well 10A Water Treatment Plant

The Well 10A Water Treatment Plant is located off of Mount Hermon Road. This groundwater treatment plant, which has a nominal capacity of approximately 400 gpm, is located within a fenced site that also contains Well 10, Well 10A and the Well 10A distribution pump station. This water treatment plant currently treats groundwater from Well 10A only (Well 10 is currently disconnected from the treatment plant) and has a treatment process that generally consists of air stripping, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent. The treatment process also has GAC filtration equipment, however during the condition assessment District Operations staff reported that the GAC filtration process is in standby mode and is not currently required to meet water quality goals and standards. The treatment equipment is located outdoors with the exception of the chemical feed systems which are co-located with the distribution pump station within a building which sits atop the buried clear well.

The electrical equipment is located beneath a canopy shade structure located along the eastern fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the water treatment plant.

The overall site, mechanical and electrical equipment is in good condition. Below are observations and recommendations for this facility. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Dual media pressure filter has corrosion near manways and also has missing/damaged coating.	Repair areas of corrosion on dual media pressure filter and apply protective coating where damaged or missing as needed.
Asphalt paving in vicinity of Well 10A is developing large cracks	Apply crack sealer and monitor pavement conditions.
GAC filter unit is supported by timber and does not appear to be anchored.	Install permanent housekeeping pad or other structural element and anchor/secure filter unit.
Plant piping (painted PVC) is above ground and exposed to UV rays.	Monitor paint on plant piping and re-coat as necessary to provide satisfactory UV protection.
District O&M staff request the following improvements.	Recoat clearwell Install permanent backwash piping with automatic valve Recoat double containment Install new backwash tank

Photo 2-19: Well 10A Water Treatment Plant Dual Media Pressure Filter, GAC Filters, Exposed PVC Pipe

Photo 2-20: Well 10A Water Treatment Plant Chemical Feed Building, Air Stripper and Cracked AC

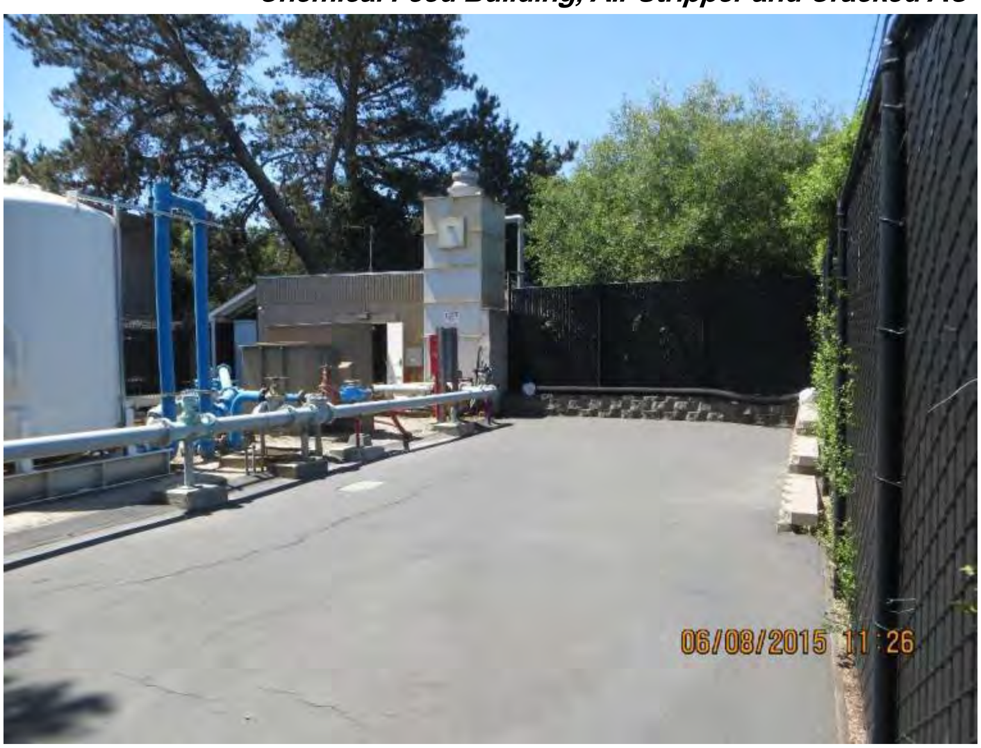


Photo 2-21: Well 10A Water Treatment Plant Dual Media Pressure Filter Corrosion/Damaged Coating

Photo 2-22: Well 10A Water Treatment Plant GAC Filter Timber Support (Un-anchored)

2.3.3. El Pueblo Water Treatment Plant

The El Pueblo Water Treatment Plant is located off of El Pueblo Road. This groundwater treatment plant, which has a nominal capacity of approximately 800 gpm, is located at the District's Corporation Yard which also contains the El Pueblo tank and the El Pueblo distribution pump station. This water treatment plant treats groundwater from Wells 11A and 11B and has a treatment process that generally consists of pH adjustment, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent. The treatment equipment is located outdoors with the exception of the chemical feed systems which are located within a chemical feed building adjacent to the El Pueblo tank.

The electrical equipment is located beneath a canopy shade structure. A permanent diesel generator at the site provides power during a disruption in electrical service but power must be manually transferred from the electrical service to the diesel generator.

The overall site, mechanical and electrical equipment is in fair to good condition. Below are observations and recommendations for this facility. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Chemical feed building has corrosion occurring on metal support columns. Access to tanks and equipment constrained.	Repair columns and apply protective coating. Evaluate chemical storage building retrofit to improve access.
Minor signs of corrosion occurring on dual media pressure filter at base of tank and at manway location. All-thread and nuts at butterfly valves corroding near filter corroding.	Repair protective coating as needed. Replace all-thread and nuts with stainless steel.
Sedimentation basins have significant cracking that has been previously repaired.	Monitor sedimentation basins and repair cracks as needed. Reseal basins.
Reclaim pump has minor corrosion.	Repair protective coating as needed.
Site pavement is severely deteriorated in many locations.	Evaluate possible pavement rehabilitation for site which serves as Corporation Yard.
District O&M staff request the following improvements.	Filter panel upgrade. Add backwash line

Photo 2-23: El Pueblo Water Treatment Plant Dual Media Pressure Filter & Backwash Tank

Photo 2-24: El Pueblo Water Treatment Plant Reclaim Pump and Sedimentation Basins

Photo 2-25: El Pueblo Water Treatment Plant Chemical Feed Building (Corrosion at Column)

Photo 2-26: El Pueblo Water Treatment Plant Chemical Feed Building (Interior View)

Photo 2-27: El Pueblo Water Treatment Plant Dual Media Pressure Filter Corrosion at Manway

Photo 2-28: El Pueblo Water Treatment Plant Yard Piping with Corrosion on All-Thread & Bolts

2.3.4. Orchard Run Water Treatment Plant

The Orchard Run Water Treatment Plant is located off Orchard Run Road. This groundwater treatment plant, which has a nominal capacity of approximately 1,200 gpm, also contains Well 7A and the Orchard Run distribution pump station. This water treatment plant treats groundwater from Wells 3B and 7A and has a treatment process that generally consists of air stripping, sodium hypochlorite for disinfection, dual media pressure filtration, and the addition of a sequestering agent. The treatment equipment is located outdoors with the exception of the chemical feed systems which are located within a chemical feed building.

The electrical equipment is located beneath a canopy shade structure. A permanent diesel generator at the site provides power during a disruption in electrical service which is transferred via an automatic transfer switch.

The overall site, mechanical and electrical equipment is in fair condition. Below are observations and recommendations for this facility. District staff did discuss the fact that the decant system and backwash pump fails to perform which requires the use of trucks to dispose of water to an off-site sewer. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion throughout site appears to be accelerated and may be attributed to aqueous ammonia at the Flume Scrubber.	Ensure Flume Scrubber functioning properly.
Corrosion observed on most exposed metallic surfaces throughout site including pipe, valves, filter vessel, generator enclosure and electrical shade structure.	Repair coatings on pipe, valves, filter vessel and all other exposed metallic surfaces as needed.
Chemical Feed Building has severe corrosion throughout. Floor does not appear capable of providing double containment due to damage from corrosion.	Replace Chemical Feed Building.
Bolted steel backwash tank has severe corrosion occurring in several locations with signs of past leakage. District reports that backwash pump and decant system does not function properly.	Replace backwash tank and associated pumps, valves and appurtenances.
District O&M staff request the following improvements.	Re-plumb Well 3B for a separate meter. Currently shares meter with Well 7.

Photo 2-29: Orchard Run Water Treatment Plant Layout

Photo 2-30: Orchard Run Water Treatment Plant Dual Media Pressure Filter and Treatment Equipment

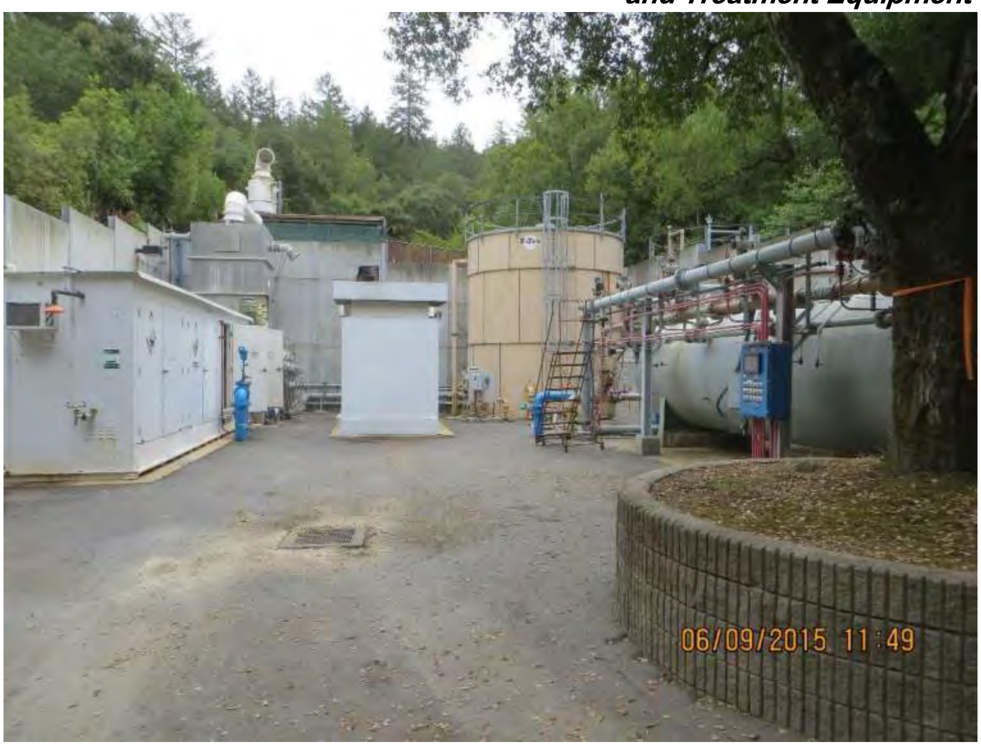


Photo 2-31: Orchard Run Water Treatment Plant Flume Scrubber

Photo 2-32: Orchard Run Water Treatment Plant Chemical Feed Building

Photo 2-33: Orchard Run Water Treatment Plant Chemical Feed Building

Photo 2-34: Orchard Run Water Treatment Plant Chemical Feed Building (Corrosion)

Photo 2-35: Orchard Run Water Treatment Plant Backwash Tank

Photo 2-36: Orchard Run Water Treatment Plant Backwash Tank (Corrosion and Past Leakage)

Photo 2-37: Orchard Run Water Treatment Plant Dual Media Pressure Filter (External Corrosion)

Photo 2-38: Orchard Run Water Treatment Plant Typical Yard Piping with Damaged Coating/Corrosion

2.4. Pump Stations

The following pump stations were assessed as a part of this study:

- Sand Hill
- Crescent
- Bethany
- Southwood
- Monte Fiore
- Hacienda
- Well 9 WTP Booster
- Well 10A WTP Booster
- El Pueblo WTP Booster
- Orchard Run WTP Booster

2.4.1. Sand Hill Pump Station

The Sand Hill Pump Station is located at 345 Sand Hill Road. This pump station conveys water from the Bethany pressure zone to the Northridge pressure zone. The new pump station currently consists of a skid-mounted Grundfos pump syste, new electrical equipment including soft starts, and a new pre-fabricated building enclosing the pump and electrical equipment. All existing equipment was removed. Each pump has a capacity of 240 gpm. Pumps alternate after each pump run cycle, with one pump on at a time. Both pumps can be put into service manually and operated simultaneously if a system condition would require it.

As the station was undergoing a complete upgrade during the time at which the Condition Assessment was conducted. No recommendations for this facility were made and this project has been satisfactorily completed as indicated by SVWD staff with no near term improvements.

Photo 2-39: Sand Hill Pump Station Site

Photo 2-40A: Sand Hill Pump Station

Photo 2-40B: Sand Hill Pump Station - Pumps

Photo 2-40C: Sand Hill Pump Station - Electrical

2.4.2. Crescent Pump Station

The Crescent Pump Station is located off of Crescent Drive near Crescent Court. This pump station conveys water from the Southwood pressure zone to the Villa Fonteney pressure zone. This pump station is located outdoors within a small fenced site. The pump station has two vertically-mounted centrifugal pumps with a capacity of approximately 350 gallons per minute each. Mechanical equipment at the pump station includes above ground 4-inch, 6-inch and 8-inch painted ductile iron discharge piping equipped with various appurtenances including swing check valves, isolation valves and a magnetic flow meter. This pump station is also equipped with a 2-inch pressure relief/surge anticipating valve that relieves high pressure to the suction pipeline.

The electrical equipment is located within a NEMA 3R cabinet on housekeeping pad. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set is stored on-site and would provide power to this facility during a disruption in electrical service.

The overall site, mechanical and electrical equipment is in good condition. Below are observations and recommendations for this facility. District staff indicated that a sound attenuating enclosure will be installed over the pumps in the near term. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Sections of ductile iron pipe and flange on discharge are bare (no protective coating).	Apply protective coating to exposed/bare ductile iron pipe and flanges as required.
Minor corrosion observed on pipe, valves and appurtenances where coating has been damaged.	Repair protective coating as needed.
District O&M staff request the following improvements.	A new building.

Photo 2-41: Crescent Pump Station Site and Uncoated Sections of Ductile Iron Pipe

Photo 2-42: Crescent Pump Station Corrosion on Ductile Iron Fitting

2.4.3. Bethany Pump Station

The Bethany Pump Station is located adjacent to 570 Bethany Drive. This pump station conveys water from the Macdorsa pressure zone to the Bethany pressure zone. This pump station is located within a concrete masonry building with a timber framed roof. Due to the surrounding site features, a portion of the building wall acts as a retaining wall. The pump station has two submersible pumps with a capacity of approximately 230 gallons per minute each located within sealed steel pump cans. Mechanical equipment at the pump station includes above ground 6-inch painted welded steel discharge piping equipped with various appurtenances including swing check valves, isolation valves and a magnetic flow meter located on the suction line.

The electrical equipment is located within the building in a NEMA 3R cabinet, however the cabinet doors have been removed. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the pump station.

The overall mechanical and electrical equipment is in poor to fair condition. During the condition assessment District staff indicated that the sealed steel pump cans have significant interior corrosion with spot repairs made to pump can number 2. Staff also noted that the removal and maintenance of the submersible pumps is difficult due to the low ceiling height and lack of roof hatches to facilitate pump removal. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Minor staining of interior cement mortar wall observed where wall is serving as retaining wall. Staining indicative of moisture.	Ensure adequate drainage provided on exterior of retaining wall.
Significant corrosion observed on exterior of pump cans where coating is missing and/or damaged.	Lack of ventilation within building may be accelerating corrosion. Install ventilation system.
District staff reported that interior of pump cans have significant corrosion and that spot repairs have been made on occasion.	Remove submersible pumps and inspect interior of pump cans to evaluate remaining service life. If cans cannot be repaired, consider replacing pumps with vertical in-line centrifugal pumps similar to other District installations.
Minor termite/dry rot damage at door frame.	Repair damage and monitor timber framing on roof for termite/dry rot damage.
Corrosion observed on electrical cabinet and interior of hollow metal door for building entrance.	Lack of ventilation within building may be accelerating corrosion. Install ventilation system.

Photo 2-43: Bethany Pump Station Mechanical Layout (Staining on Walls in Background)

Photo 2-44: Bethany Pump Station Sealed Pump Can Arrangement

Photo 2-45: Bethany Pump Station Corrosion on Sealed Pump Can

Photo 2-46: Bethany Pump Station Building Exterior – Retaining Soil on Right Side of Photo

Photo 2-47: Bethany Pump Station Corrosion on Interior of Door and Dry Rot/Termite Damage

2.4.4. Southwood Pump Station

The Southwood Pump Station is located in the 3000 block of Granite Creek Road. This pump station conveys water from the Macdorsa pressure zone to the Southwood pressure zone. This pump station is located within a completely buried concrete vault with a fully removable galvanized steel hatch system. The pump station has two vertical centrifugal pumps with a capacity of approximately 150 gallons per minute each. Mechanical equipment at the pump station includes 3 and 4-inch ductile iron piping equipped with various appurtenances including swing check valves, isolation valves and a propeller flow meter located on the suction line. The pump station also includes a 6-inch bypass line that is equipped with a hydraulically actuated valve.

The electrical equipment is located in a NEMA 1 cabinet above ground adjacent to the vault. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the pump station.

The overall mechanical and electrical equipment is in poor to fair condition. The site generally consists of a small pull-out area, however parking at site prohibits full access to the vault. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Standing water (<1") observed in vault along with staining of interior walls which may indicate groundwater intrusion during wet weather events. Evidence of elevated water levels present (heavy debris on top of Cla-Val).	Evaluate leakage at vault and consider sealing/grouting vault as required.
Significant corrosion of all piping, pump volutes, gate valves and other mechanical appurtenances.	Evaluate possible pump and motor upgrade/replacement along with replacement of corroded valves, piping and appurtenances.
No ladder installed within vault.	Install ladder and appropriate safety equipment to provide access to pump equipment.
District O&M staff request the following improvements.	Install a pump station at the Barn PRV and abandon the Southwood Pump Station.

Photo 2-48: Southwood Pump Station Site, Vault and Electrical Equipment

Photo 2-49: Southwood Pump Station – Mechanical Layout

Photo 2-50: Southwood Pump Station – Corrosion on Pump Volute & Standing Water

Photo 2-51: Southwood Pump Station – Corrosion of Valve and Piping & Debris on Cla-Val

2.4.5. Monte Fiore Pump Station

The Monte Fiore Pump Station is located off of Silverwood Drive near La Madrona Drive. This pump station conveys water from the Camp Evers pressure zone to the Monte Fiore pressure zone. This pump station is located outdoors within a walled site. The pump station has two vertically-mounted centrifugal pumps with a capacity of approximately 90 gallons per minute each. This pump station, which is the sole source of supply for the pressure zone, also has a horizontal split case fire pump with a capacity of 1,000 gpm. Mechanical equipment at the pump station includes above ground 2-inch, 3-inch and 4-inch painted welded steel piping equipped with various appurtenances including swing check valves, isolation valves and a positive displacement flow meter located on the suction header. This pump station is also equipped with a 2-inch pressure relief/surge anticipating valve that relieves high pressure to the suction pipeline. The site also contains a 250 gallon horizontal bladder tank.

The electrical equipment is located within a NEMA 3R cabinet on a housekeeping pad. This pump station is equipped with variable frequency drives to allow pump output to match the system demands in this closed pressure zone. A permanent diesel generator set is located on-site and would provide power to this facility during a disruption in electrical service.

The overall site, mechanical and electrical equipment is in good condition. Below are observations and recommendations for this facility. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Some minimal corrosion observed on un-coated flanges and at some locations where coating has been damaged.	Apply protective coating as required.

Photo 2-52: Monte Fiore Pump Station Mechanical Layout

Photo 2-53: Monte Fiore Pump Station – Uncoated Flanges and Areas of Minor Corrosion

2.4.6. Hacienda Pump Station

The Hacienda Pump Station is located on Hacienda Drive near the intersection of Hacienda and Nashua Drive. This pump station conveys water from the Macdorsa pressure zone to the Hacienda pressure zone. This pump station is located outdoors within a fenced enclosure that has a timber shade structure. The pump station has two vertically-mounted centrifugal pumps with a capacity of approximately 150 gallons per minute each. Mechanical equipment at the pump station includes above ground 2 ½ -inch painted galvanized steel piping equipped with various appurtenances including center guided check valves, isolation valves and a magnetic flow meter. The site also contains a small bladder tank.

The electrical equipment is located within a NEMA 3R cabinet on a housekeeping pad. This pump station is equipped with variable frequency drives to allow pump output to match the system demands in this closed pressure zone.

The overall site, mechanical and electrical equipment is in good condition. Immediately adjacent to the pump station is a large steel horizontal surge tank. District staff indicated that this surge tank is abandoned and is not active. Below are observations and recommendations for this facility. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Shade structure in good condition but some portions not painted/protected.	Paint exposed portions of timber framing.
Some minor corrosion on galvanized steel piping, specifically on exposed threads. Some minor corrosion on exposed flanges.	Paint exposed piping and flanges as required.
No provisions for back-up power in the event of an electrical outage. Also, no provision for fire protection.	Evaluate need for back-up power at site. Evaluate need for emergency fire pump for higher capacity fire flows at this pump station.
District O&M staff request the following improvements.	Install fire pump Install SCAD

Photo 2-54: Hacienda Pump Station Site Layout

Photo 2-55: Hacienda Pump Station – Unpainted Timber in Background & Corrosion on Piping

2.4.7. Well 9 WTP Booster Pump Station

The Well 9 WTP Booster Pump Station is located at the Well 9 WTP site. This pump station conveys water from the treatment plant clear well to the Camp Evers pressure zone. This pump station is located outdoors. The pump station has one horizontally-mounted centrifugal pump with a capacity of approximately 200 gallons per minute. Mechanical equipment at the pump station includes above ground 4-inch and 6-inch painted ductile iron piping equipped with various appurtenances including a swing check valve, isolation valves and a turbine flow meter.

The electrical equipment is located beneath a canopy shade structure located along the western fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the water treatment plant.

The mechanical and electrical equipment is in fair condition. The site evaluation is contained within Well 9 WTP assessment section. It is noted that this pump station does not typically operate due to the fact that the Well 9 WTP is only operated in an emergency. Below are observations and recommendations for this facility. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion observed at several areas of piping and valving where coating has been damaged.	Repair damaged coating on piping and valving as required.
Sections of newer ductile iron pipe are not coated and are beginning to show signs of corrosion.	Coat bare/exposed sections of ductile iron piping.

Photo 2-56: Well 9 WTP Booster Pump Mechanical Layout

Photo 2-57: Well 9 WTP Booster Pump Uncoated Sections of Ductile Iron Pipe

2.4.8. Well 10A WTP Booster Pump Station

The Well 10A WTP Booster Pump Station is located at the Well 10A WTP site. This pump station conveys water from the treatment plant clear well to the Camp Evers pressure zone. This pump station is located within a CMU building that sits atop a buried concrete clear well. The pump station has three vertical turbine pumps with a capacity of approximately 180 gallons per minute each. Mechanical equipment at the pump station includes above ground 4-inch painted galvanized steel and PVC piping equipped with various appurtenances including plug valves with pneumatic actuators, isolation valves and a propeller flow meter.

The electrical equipment is located beneath a canopy shade structure located along the eastern fence line. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to this facility during a power outage to operate the water treatment plant.

The building, mechanical and electrical equipment is in good condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion observed at areas of piping and valves where coating has been damaged.	Repair coating as required
Pump mechanical seals show signs of leakage which has led to corrosion of the pump discharge head.	Replace mechanical seals and repair coating on pump discharge heads.
District O&M staff request the following improvements.	High voltage is difficult to access. Relocate main electrical control panels.

Photo 2-58: Well 10A WTP Pump Station Building Exterior

Photo 2-59: Well 10A WTP Pump Station Mechanical Layout

Photo 2-60: Well 10A WTP Pump Station Discharge Configuration

Photo 2-61: Well 10A WTP Pump Station Mechanical Seal Leakage and Corrosion

2.4.9. El Pueblo WTP Booster Pump Station

The El Pueblo WTP Booster Pump Station is located at the El Pueblo WTP site. This pump station conveys water from the El Pueblo Tank (clear well) to the Macdorsa pressure zone. This pump station is located outdoors on a concrete pad. The pump station has three vertical turbine pumps with a capacity of approximately 475 gallons per minute each. Mechanical equipment at the pump station includes above ground 8-inch and 12-inch painted welded steel and ductile iron piping equipped with various appurtenances including hydraulically actuated pump control valves, isolation valves and a propeller flow meter. The pump station is also equipped with a 4-inch hydraulically actuated pressure relief valve that relieves the discharge to the suction line.

The electrical equipment is located beneath a canopy shade structure. A permanent diesel generator at the site provides power during a disruption in electrical service but power must be manually transferred from the electrical service to the diesel generator.

The concrete pad, mechanical and electrical equipment is in fair condition. District staff indicated that this pump station is slated for an upgrade in the near term and that District staff prefers vertically mounted centrifugal pumps in lieu of the current vertical turbine pump arrangement to facilitate maintenance operations. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion observed at areas of piping and valves where coating has been damaged.	Repair damaged coating as required.
Pump mechanical seals show signs of leakage which has led to corrosion of pump discharge head.	Evaluate replacement of vertical turbine pumps and motors with premium efficiency units (recent efficiency test results indicate low efficiency). Possibly replace with vertically mounted centrifugal pumps.
District O&M staff recommend the following improvements.	Upgrade booster station. New station in construction.

Photo 2-62: El Pueblo WTP Pump Station Mechanical Layout

Photo 2-63: El Pueblo WTP Pump Station Leaking Mechanical Seal and Corrosion

2.4.10. Orchard Run WTP Booster Pump Station

The Orchard Run WTP Booster Pump Station is located at the Orchard Run WTP site. This pump station conveys water from the on-site clear well to the Southwood pressure zone. This pump station is located outdoors and sits atop an above ground concrete clear well. The pump station has three vertical turbine pumps with a capacity of approximately 425 gallons per minute each. Mechanical equipment at the pump station includes above ground 4-inch, 6-inch and 8-inch painted welded ductile iron piping equipped with various appurtenances including swing check valves, plug valves, isolation valves and a globe valve.

The electrical equipment is located beneath a canopy shade structure. A permanent diesel generator at the site provides power during a disruption in electrical service which is transferred via an automatic transfer switch.

The concrete clear well, mechanical and electrical equipment is in fair condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion observed at areas of piping and valves where coating has been damaged.	Repair coating on piping and valves as required.
Mechanical seals show signs of leakage which has led to corrosion of the discharge heads.	Consider replacement of pumps and motors. Replace with more efficient units (efficiency testing indicated low efficiency).
Metal struts supporting pump discharge pipes and valves are severely corroded and showing signs of failure. Discharge pipe is showing signs of movement (rubber flex couplings accommodating movement).	Inspect and replace failing metal struts. Inspect discharge pipes and valves to ensure no strain is occurring after replacement of struts.
Concrete clear well has signs of past leakage. Cracks observed on exterior of clear well.	Test clear well for leakage and seal/grout cracks as needed.

Photo 2-64: Orchard Run WTP Pump Station Mechanical Layout

Photo 2-65: Orchard Run WTP Pump Station Discharge Pipe Arrangement

Photo 2-66: Orchard Run WTP Pump Station Leaking Mechanical Seal and Corrosion

Photo 2-67: Orchard Run WTP Pump Station Deflection of Coupling and Corrosion on Piping

Photo 2-68: Orchard Run WTP Pump Station Corroded Pipe Support Strut

Photo 2-69: Orchard Run WTP Pump Station Cracks in Concrete Clear Well

2.5. Storage Tanks

The following potable water storage tanks were assessed as a part of this study:

- Bethany
- El Pueblo
- Glenwood
- Macdorsa
- Mt. Roberta
- Sequoia
- Southwood
- Villa Fonteney

The District owns, operates and maintains eight (8) potable water storage tanks, all of which are located above ground. The storage tanks are located on separate sites and range in capacity from 0.03 million gallons (MG) to 1.25 MG providing a total nominal storage capacity of 4.5 MG. The tanks provide storage to meet peak demands and emergency storage for fire protection.

2.5.1. Bethany Tank

The Bethany Tank, which is located at the end of Tabor Drive, is fed by the Bethany Pump Station and provides storage for the Bethany pressure zone. This 0.40 MG above ground welded steel tank cannot be removed from service as it is the only facility providing storage for this pressure zone. This storage tank has a common inlet/outlet pipe which penetrates the storage tank floor. Other storage tank features include a spiral staircase to provide roof access, a manway located at the base of the tank shell, and a cathodic protection system. The roof structure consists of galvanized metal and plywood.

The electrical equipment and telemetry equipment for the site is located within a wooden outbuilding adjacent to the storage tank.

The site is protected by a 10 foot tall chain link fence with three strands of barbed wire and is accessed by two separate double swing gates. The entire site has asphalt paving, which was observed to be in poor condition.

The storage tank and site are in fair condition. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Galvanized roof has had repairs/patches made and also shows evidence of low points and possible points of intrusion during wet weather events. Plywood used in hatch areas and showing signs of deterioration.	Evaluate roof rehabilitation project similar in nature to the Macdorsa Tank.
Significant corrosion observed in roof gutter/drip ring at top shell course. Exterior coating in fair condition with some chalkiness observed. Some areas of point corrosion observed at tank base flange.	Evaluate the repair of exterior corrosion and re-coating project for tank exterior.
Site paving in fair condition with some vegetation present.	Evaluate pavement rehabilitation and vegetation abatement.
Spiral staircase has door however there is no protective fencing to prevent intruders from gaining access to roof.	Install protective fencing around stairway entrance.
District O&M staff request the following improvements.	Install secondary tank for storage, allowing existing tank to be taken out of service for rehabilitation.

Photo 2-70: Bethany Tank and Site Overview

Photo 2-71: Bethany Tank – Galvanized Roof (Low Points in Background)

Photo 2-72: Bethany Tank – Corrosion at Gutter/Top Shell Course

Photo 2-73: Bethany Tank – Corrosion at Base Flange

Photo 2-74: Bethany Tank – Spot Corrosion on Tank at Damaged Area (Note Chalkiness of Coating)

Photo 2-75: Bethany Tank – Site Paving and Vegetation

Photo 2-76: Bethany Tank – Spiral Staircase and Lack of Security Fencing Near Handrail

2.5.2. El Pueblo Tank

The El Pueblo Tank, which is located at the El Pueblo Water Treatment Plant, is fed by the treatment plant and serves as the clear well for the El Pueblo Pump Station. This 0.40 MG above ground welded steel tank also provides storage for the treatment plant backwash pump. This storage tank has a 10-inch ductile iron inlet pipe and 12-inch ductile iron outlet pipe, both of which penetrate the tank sidewall. The outlet pipe is equipped with a flexible rubber coupling. Other storage tank features include a ladder with safety cage to provide roof access, two manways located at the base of the tank shell, two water quality sample ports, an operable level board and a cathodic protection system. The electrical equipment and telemetry equipment for the site is co-located with the treatment plant equipment.

The site is protected by a 6 foot tall chain link fence with privacy slats and is accessed by the automatic gate which provides access to the El Pueblo Treatment plant. While the treatment plant site has asphalt paving the area immediately surrounding the storage tank is un-improved.

Overall the storage tank is in good condition. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
In some areas where ring wall footing abuts native soil the soil is nearly flush with footing which may allow water to pond and accelerate corrosion at interface of tank base and ring wall footing.	Ensure positive drainage away from ring wall footing maintained, adjust site grading as needed.
Outlet pipe has flexible coupling installed but inlet does not.	Consider installation of flexible coupling on 10-inch inlet pipe.

Photo 2-77: El Pueblo Tank Overall View

Photo 2-78: El Pueblo Tank – 10-inch Inlet (Possible Installation of Flexible Coupling)

Photo 2-79: El Pueblo Tank – Area of Potential Ponding (Ground Flush with Ring Wall Footing)

2.5.3. Glenwood Tank

The Glenwood Tank, which is located off of Glenwood Drive, is fed by the El Pueblo Treatment Plant and provides storage for the Macdorsa pressure zone. This 1.09 MG above ground bolted steel storage tank can be removed from service as it is one of two reservoirs providing storage for the Macdorsa pressure zone. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. An above ground piping arrangement just outside the storage tank includes an altitude valve, however District staff indicated this valve is currently by-passed. Other storage tank features include a ladder with safety cage to provide roof access, one manway located at the base of the tank shell, three water quality sample ports, an operable level board and a cathodic protection system. The site is equipped with a solar panel and the telemetry equipment is mounted on the tank sidewall.

The site is protected by a 10 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing gate. The entire site has asphalt paving which was observed to be in excellent condition.

The overall site and storage tank are in good condition. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Evidence of previous leakage at top of second shell course. No leakage observed during site inspection.	Determine cause for leakage and make repairs as needed.

Photo 2-80: Glenwood Tank – Altitude Valve, Ladder and Telemetry System

Photo 2-81: Glenwood Tank – Evidence of Past Leakage at Top of Second Shell Course

2.5.4. Macdorsa Tank

The Macdorsa Tank, which is located off of Ridgecrest Drive, is fed by the El Pueblo Treatment Plant and provides storage for the Macdorsa pressure zone. This 0.75 MG above ground welded steel storage tank can be removed from service as it is one of two reservoirs providing storage for the Macdorsa pressure zone. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. A check valve for this storage tank is located within a concrete vault on-site. Other storage tank features include a spiral staircase to provide roof access, one manway located at the base of the tank shell, one water quality sample port, an inoperable level board and a cathodic protection system. The site has a single phase power supply and the telemetry equipment is mounted on the tank sidewall.

The site is protected by a 6 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing gate. The entire site has asphalt paving which was observed to be in poor condition. The site is constrained which may make certain maintenance and operations activities more difficult. The site also contains a radio communications building/system for the Public Safety departments in the Scotts Valley area.

The overall site and storage tank are in fair condition. District staff noted that a tank re-lining and re-coating project for the 2015/16 FY was under consideration. During the condition assessment the tank was out of service to allow for an inspection by the State Water Resources Control Board Division of Drinking Water. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Galvanized roof has numerous low spots and is being evaluated for replacement by District.	Consider roof replacement project.
Exterior coating in good condition with exception of quadrant that receives full sun which is chalky and discolored.	District currently evaluating a tank re-lining and re-coating project.
Signs of large tree root intrusion near tank ring wall.	Remove larger tree roots to prevent damage to ring wall footing and monitor root intrusion.

Photo 2-82: Macdorsa Tank Overview

Photo 2-83: Macdorsa Tank Roof

Photo 2-84: Macdorsa Tank – Exterior Coating Condition (Not Exposed to Full Sun)

Photo 2-85: Macdorsa Tank – Exterior Coating Condition (Exposed to Full Sun)

Photo 2-86: Macdorsa Tank – Root Intrusion

Photo 2-87: Macdorsa Tank – Root Intrusion

2.5.5. Mt. Roberta Tank

The Mt. Roberta Tank, which is remotely located off of Sand Hill Road, is fed by the Sand Hill Pump Station and provides storage for the Northridge, Sand Hill and Green Acres pressure zones. This 0.050 MG above ground redwood storage tank cannot be removed from service as it is the sole source of supply providing storage for the above pressure zones. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. Other storage tank features include a ladder with safety cage to provide roof access and an inoperable level board. The site telemetry equipment is mounted on the tank sidewall and power is provided by a battery as solar is not feasible at this site due to the thick tree canopy.

The site is protected by a 6 foot tall chain link fence with three strands of barbed wire and is accessed by a single man gate. The site surface is un-improved. The site is very constrained which may make certain maintenance and operations activities more difficult.

The overall site and storage tank are in good condition. District staff did not note any operational issues or anomalies during the site assessment but did indicate that maintaining water quality at this location can be an issue requiring the manual addition of chlorine. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Evidence of continual weeping at tank base in several areas.	Evaluate continual leakage at tank base and repair/retrofit tank as required.
Large trees in close proximity to tank with potential for root intrusion and damage to tank foundation.	Clear vegetation from tank area and consider removal of large trees in close proximity to the tank.

Photo 2-88: Mt. Roberta Tank Overview

Photo 2-89: Mt. Roberta Tank – Leakage at Tank Base

Photo 2-90: Mt. Roberta Tank - Leakage at Tank Base and Heavy Vegetation

Photo 2-91: Mt. Roberta Tank – Large Trees in Close Proximity to Tank

2.5.6. Sequoia Tank

The Sequoia Tank, which is located off of Green Hills Road, is fed by the Well 10A and Well 9 Treatment Plants and provides storage for the Camp Evers pressure zone. This 1.25 MG above ground welded steel storage tank cannot be removed from service as it is the sole source of supply providing storage for the pressure zone. This storage tank has a common inlet/outlet pipeline that penetrates the tank side wall. Other storage tank features include a ladder with safety cage to provide roof access, three water quality sample ports, two manways located at the base of the tank shell and an inoperable level board. The site telemetry equipment is mounted on the tank sidewall and power is provided by a meter pedestal located off-site.

The site is protected by a 6 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing gate. The entire site has asphalt paving. The site has adequate room around the storage tank providing satisfactory clearance for maintenance and operation activities.

The overall site and storage tank are in good condition. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Exterior coating in relatively good condition with exception of locations where paintball/vandalism has occurred at the top three shell courses.	Repair exterior coating as required.
Coating at base of tank at flange/ring wall interface in poor condition with significant delamination and corrosion occurring.	Repair exterior coating as required.

Photo 2-92: Sequoia Tank Overview

Photo 2-93: Sequoia Tank - Paintball Marring & Corrosion on Exterior of Tank

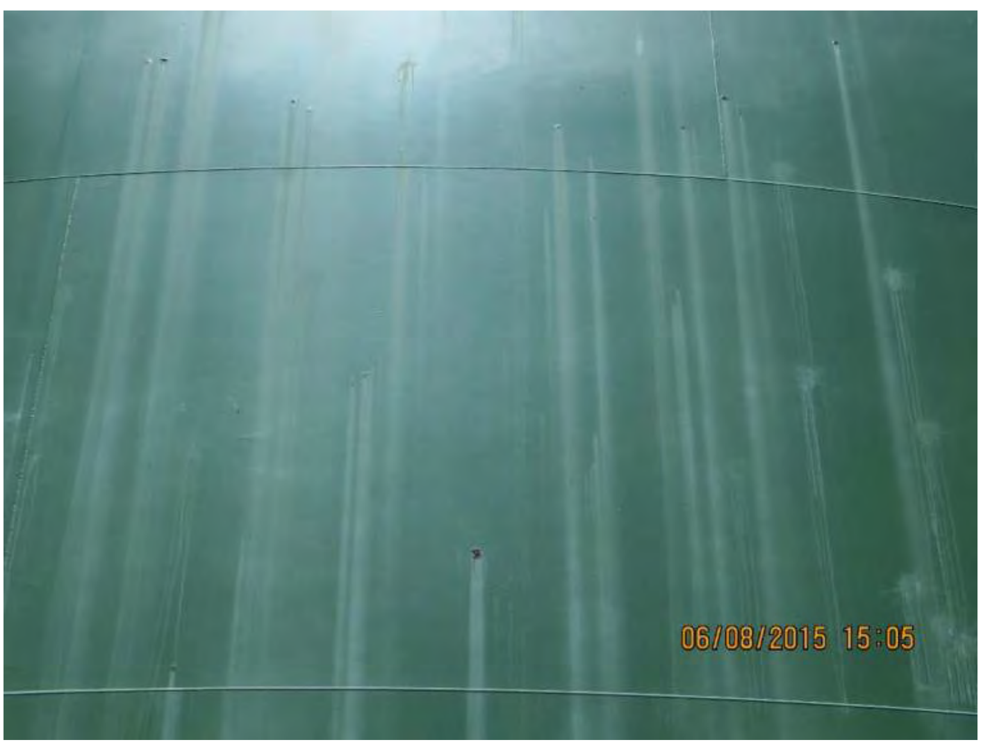


Photo 2-94: Sequoia Tank –

Corrosion at Tank Base Flange

Photo 2-95: Sequoia Tank – Corrosion at Tank Base Flange

2.5.7. Southwood Tank

The Southwood Tank, which is located off of CA-17, is fed by the Orchard Run Treatment Plant and provides storage for the Southwood pressure zone. This 0.52 MG above ground bolted steel storage tank cannot be removed from service as it is the only tank providing storage for the Southwood pressure zone. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. Other storage tank features include a ladder with safety cage to provide roof access, one manway located at the base of the tank shell, an operable level board and a cathodic protection system. The site is equipped with a solar panel and the telemetry equipment is mounted on the tank sidewall.

The site is protected by a 10 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing gate. The entire site has asphalt paving which was observed to be in excellent condition.

The overall site and storage tank are in good condition. The access road to the storage tank site did have substantial cracking at the location of a retaining wall which should be closely monitored as the transmission pipeline is also located within this access road. District staff did not note any operational issues or anomalies during the site assessment and indicated that maintaining water quality at this location is not an issue. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Evidence of possible slope failure at access road entrance. Could impact water transmission pipeline.	Closely monitor cracks within access road to determine if existing retaining wall/slope is failing.
Evidence of significant root intrusion from on-site redwood tree located by ladder access.	Consider removal of large on-site tree to mitigate potential root intrusion at tank ring wall.
Moisture/precipitation dripping from roofline has exposed aggregate of ring wall footing (minor in nature at this point).	Monitor dripping and potential for long term impacts to ring wall.
No cathodic protection system installed at tank.	Consider performing interior tank inspection to verify lining condition.

Photo 2-96: Southwood Tank Overview

Photo 2-97: Southwood Tank – Potential Slope Failure at Access Road

Photo 2-98: Southwood Tank – Root Intrusion Near Tank

Photo 2-99: Southwood Tank - Erosion of Concrete Ring Wall Surface from Precipitation

2.5.8. Villa Fonteney Tank

The Villa Fonteney Tank, which is located off of Charles Hill Court, is fed by the Crescent Pump Station and provides storage for the Villa Fonteney pressure zone. This 0.03 MG above ground redwood storage tank cannot be removed from service as it is the sole source of supply providing storage for the above pressure zone. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. Other storage tank features include a ladder with safety cage to provide roof access and an inoperable level board. The site telemetry equipment is mounted on the tank sidewall and power is provided by a pole mounted single phase electrical service.

The site is protected by a 6 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing and man gate. The site surface is un-improved. The site is very constrained which may make certain maintenance and operations activities more difficult.

The overall site and storage tank are in good condition. District staff indicated that when an overflow condition occurs water is discharged through the roof soffit vents. Staff believes that the internal overflow may be blocked. District staff also indicated that maintaining water quality at this location can be an issue requiring the manual addition of chlorine. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Evidence of continual weeping at tank base in several areas.	Evaluate continual leakage at tank base and repair/retrofit tank as required. Consider performing interior tank video inspection to identify source of tank leakage.
Overflow condition results in water discharging through roof soffit vents.	Consider performing interior tank video inspection to verify that roof has not been damaged by overflow events.
Outlet drain which daylights outside of fenced site appears to be blocked with debris and rocks.	Clear debris from outlet drain.
District O&M staff request the following improvements.	Construct a new tank.

Photo 2-100: Villa Fonteney Tank Overview

Photo 2-101: Villa Fonteney Tank – External Tank Leakage at Tank Base

2.6. Recycled Water System

The following recycled water facilities were assessed as part of this work:

- Siltanen Pump Station
- Recycled Water Storage Tank
- The City of Scotts Valley (City) operates the Water Reclamation Facility (WRF) which includes a tertiary water treatment plant with a design treatment capacity of 1.0 MGD. The facility is used to treat secondary effluent to a tertiary level using chemical coagulation and flocculation, filtration, denitrification, and ultraviolet (UV) disinfection. The effluent meets the California State Water Resources Control Board (SWRCB) Division of Drinking Water Title 22 recycled water standards for disinfected tertiary recycled water. Revisions to Title 22 lists 40 specific uses for disinfected tertiary recycled water including irrigation of food crops, parks, playgrounds, school yards, residential landscaping and any other use allowed under Title 22 and not restricted by other sections of the California Code of Regulations.

While the City is responsible for producing recycled water, the District is responsible for the distribution of the recycled water to irrigation customers within its service area.

To serve the irrigation customers within the its service area, the District owns, operates and maintains a recycled water storage tank, a recycled water pump station, pressure reducing station and nearly 6 miles of recycled water distribution mains to supply recycled water to its irrigation customers.

2.6.1. Siltanen Pump Station

The Siltanen Pump Station is located off of Scotts Valley Drive. This pump conveys recycled water from the lower pressure zone 1 to the highest recycled water pressure zone which is also a closed zone. This pump station is located outdoors within a small fenced site. The pump station has two vertically-mounted centrifugal pumps with a capacity of approximately 350 gallons per minute each. Mechanical equipment at the pump station includes above ground 4-inch and 6-inch painted ductile iron piping equipped with various appurtenances including hydraulically actuated valves, isolation valves and a magnetic flow meter. This pump station is also equipped with a small bladder tank with integral pressure relief valve.

The electrical equipment is located within a NEMA 3R cabinet on housekeeping pad. The electrical equipment is equipped with a generator plug with a manual transfer switch. A portable diesel generator set would be brought to the site and would provide power to this facility during a disruption in electrical service.

The overall site, mechanical and electrical equipment is in good condition. Below are observations and recommendations for this facility. District staff indicated that a sound attenuating enclosure will be installed over the pumps in the near term. District staff did not note any operational issues or anomalies during the site assessment. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Corrosion observed on pipes and valves where coating is damaged.	Repair coating as required.
Pre-fabricated enclosure is to be installed over pumps.	Ensure enclosure provides sufficient ventilation for cooling of vertical motors. (Enclosure recently complete)

Photo 2-102: Siltanen Pump Station Site Overview

Photo 2-103: Siltanen Pump Station Mechanical Layout

Photo 2-104: Siltanen Pump Station – Corrosion on Pipe Fitting

Photo 2-105: Siltanen Pump Station – Corrosion on Pipe Valves and Fittings

2.6.2. Recycled Water Tank

The Recycled Water Tank, which is located off of Cupcake Hill, is fed by the City of Scotts Valley WRF and provides storage for the Recycled Water pressure zone 1. This 0.63 MG above ground bolted steel tank cannot be removed from service as it is the only tank providing storage for the recycled water system. This storage tank has a common inlet/outlet pipeline that penetrates the tank floor. Other tank features include a ladder with safety cage to provide roof access, one manway located at the base of the tank shell, an inoperable level board and a cathodic protection system. There is also a potable water pipeline on the exterior of the tank that can provide make-up water in the event the recycled water system is out of service. The site is equipped with a solar panel and the telemetry equipment is mounted on the tank sidewall.

The site is protected by a 10 foot tall chain link fence with three strands of barbed wire and is accessed by a double swing gate. The entire site has asphalt paving which was observed to be in excellent condition.

The overall site and tank are in good condition. District staff did not note any operational issues or anomalies during the site assessment. Below are observations and recommendations for this facility. Appendix A contains the detailed condition assessment log.

Observation	Recommendation
Minor sloughing and erosion observed on cut slope with soil deposited on asphalt paving.	Stabilize cut slope to prevent further erosion and reduce maintenance.
One roof drain has detached from gutter system and was observed resting on ground.	Re-attach roof drain.
Marring of paint finish from paint balls on side of tank facing main access road.	Repair coating as required.
Hardness staining on exterior of tank where make-up water connection is located.	Inspect exterior coating and repair if required.
Vegetation growing at interface of ring wall footing and asphalt paving at several locations.	Remove vegetation from areas at ring wall footing.
Moisture/precipitation dripping from roofline has exposed aggregate of ring wall footing (minor in nature at this point).	Monitor dripping and potential for long term impacts to ring wall.

Photo 2-106: Recycled Water Tank Overview

Photo 2-107: Recycled Water Tank – Minor Sloughing/Erosion of Cut Slope

Photo 2-108: Recycled Water Tank – Roof Drain Detached from Gutter System

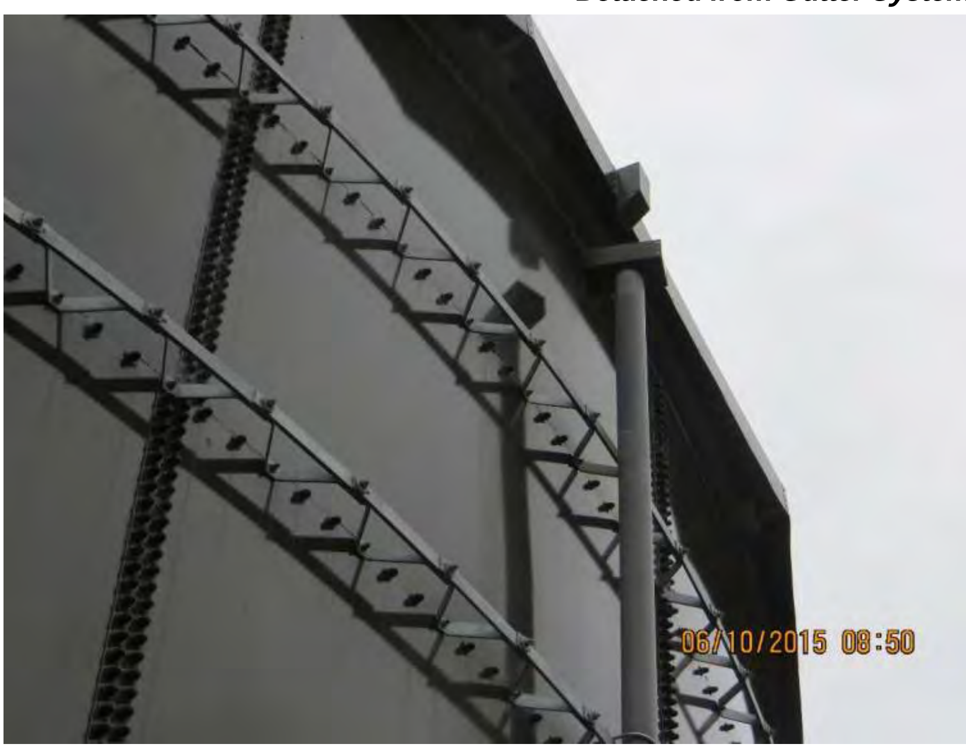


Photo 2-109: Recycled Water Tank – Marring of Tank Exterior Coating from Paintballs

Photo 2-110: Recycled Water Tank – Make-Up Water Staining on Tank Exterior

Photo 2-111: Recycled Water Tank - Vegetation Growing at Tank Ring Wall Footing

Photo 2-112: Recycled Water Tank – Minor Erosion of Concrete Ring Wall Footing

SECTION 3

PIPELINE REPLACEMENT PLAN

3. PIPELINE REPLACEMENT PLAN

3.1 INTRODUCTION

The infrastructure that stores, pumps and conveys water to customers, referred to as the Distribution System, must be properly maintained to ensure that the Scotts Valley Water District (SVWD) can continue providing its customers with a safe, continuous and reliable supply of water. The District was formed in 1962 and serves most of the area within the City of Scotts Valley.

The District serves a population of approximately 10,500 including single and multi-family residents, commercial and industrial operations. Following a pipeline replacement plan will help the District to budget and plan for the eventual replacement of this infrastructure and mitigate unscheduled water outages that are caused by water main breaks.

3.2 ASSUMPTIONS AND EXCEPTIONS

While it is understood that pipeline was installed in the 1960's when the District was formed, records of those pipe installations are non-existent. Much of the age data could not be found, however an atlas map from 1982 was located. Since that is the only date the existence of a pipeline can be verified, an assumption was made that the install date was 1982. The ramification of this assumption is that the age of some sections of pipe may be understated. The need to replace may actually be up to 20 years earlier than identified in this report and some sections of pipeline may currently need to be replaced or will need replacement in the near future.

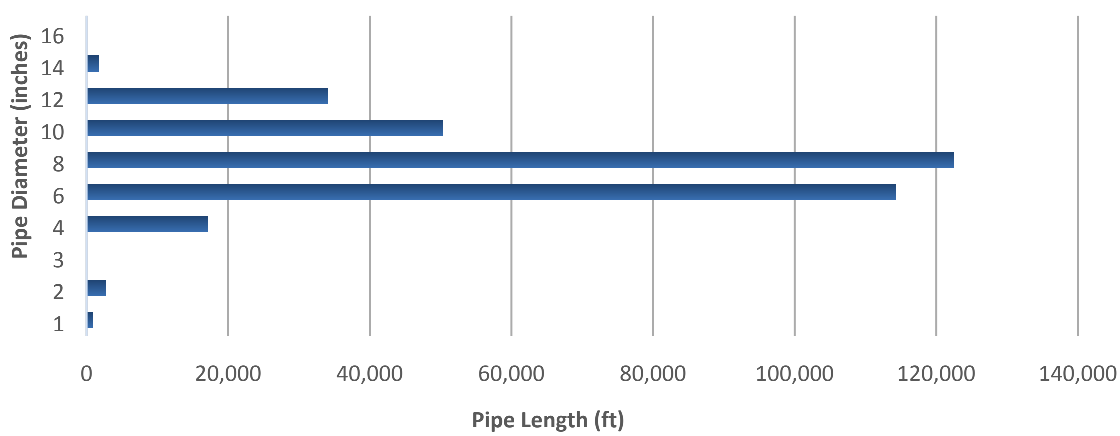
3.3 PIPELINE DISTRIBUTION SYSTEM

3.3.1 Pipeline Diameters

Within the District's service boundary there are approximately 65 miles of potable water pipeline. Pipeline diameters range in size from 1-inch to 16-inches. Table 3-1 – *Pipeline Diameters in Distribution System* lists each pipe diameter within the system with its corresponding length and total percentage of the system. Approximately 69 percent of the system is comprised of 6 and 8 inch diameter pipes which equates to a total length of over 44 miles. Figure 3-1 depicts the distribution of pipeline diameters by the lengths installed in the distribution system. Additionally see Exhibit 3-1 – Pipeline Diameters.

Table 3-1 – Pipeline Diameters in Distribution System			
Diameter (inch)	Total Length (ft)	Total Length (miles)	% of System
1	826	0.2	0.2%
2	2,731	0.5	0.8%
3	80	0.0	0.0%
4	17,093	3.2	5.0%
6	114,253	21.6	33.3%
8	122,466	23.2	35.6%
10	50,288	9.5	14.6%
12	34,065	6.5	9.9%
14	1,722	0.3	0.5%
16	60	0.0	0.0%
Total	**343,584**	65.1	100.0%

Figure 3-1
The Total Length of Pipe Summarized by Diameter



3.3.2 Pipeline Materials

Approximately 10 different pipe materials are used throughout the District's potable water pipeline system. Of the 10 materials, the majority (85%) is either asbestos cement or ductile iron. Of that 85%, asbestos cement pipes (AC) are the more prominent accounting for over 68% of the system. Table 3-2 – Pipeline Material Life Expectancy, provides the materials used in potable water systems, their common abbreviations and their estimated useful service life based on industry guidelines. The actual life expectancy of each pipe material may vary due to soil conditions, water quality, and other site specific factors. Table 3-3 – Pipeline Material Total Lengths in System, as well as Figure 3-2, depict the distribution of pipe material installed throughout the system. Additionally see Exhibit 3-2 - Material Type.

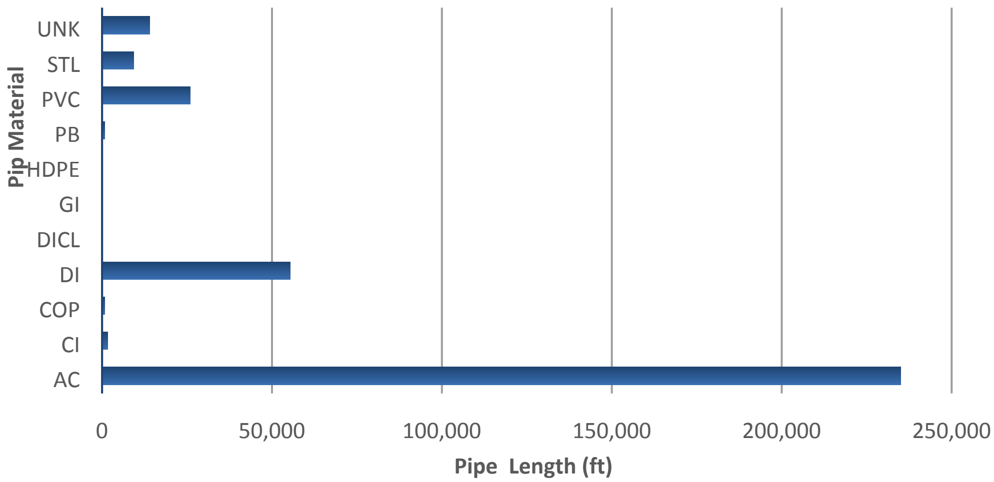
Table 3-2 – Pipeline Material Life Expectancy

Material Description	Pipe Material	Estimated Life Expectancy (yrs)
Asbestos Cement	AC	90
Cast Iron	CI	75
Copper	COP	50
Ductile Iron	DI	80
Ductile Iron Cement Lined	DICL	80
Galvanized Steel	GI	75
High Density Polyethylene	HDPE	100
Polybutylene	PB	25
Polyvinyl Chloride	PVC	90
Steel	STL	75
Unknown	UNK	70

Table 3-3 – Pipeline Material Total Lengths in System

Material	Length Total (ft)	Total Length (miles)	% of System
AC	234,933	44.5	68.4%
CI	1,639	0.3	0.5%
COP	792	0.2	0.2%
DI	55,461	10.5	16.1%
DICL	210	0.0	0.1%
GI	193	0.0	0.1%
HDPE	178	0.0	0.1%
PB	769	0.1	0.2%
PVC	25,888	4.9	7.5%
STL	9,304	1.8	2.7%
UNK	14,217	2.7	4.1%
TOTAL	**343,584**	**65.1**	100.0%

Figure 3-2
Total Pipe Length Summarized by Material



3.3.3 Pipeline Age

The single principal cause of pipeline failure in water pipelines is age. Buried pipelines deteriorate over time, leading to pipeline failure, loss of water, lost revenue and the possibility of property damage. In addition, older pipelines increase operational costs due to diminished hydraulic performance from tuberculation and encrustation, leading to increased pumping costs during periods of high demand. Table 3-4 – Pipeline Installation Year in Distribution System provides a breakdown of installation years and the percentage of total each decade represents. Additionally see Exhibit 3-3 – Pipeline Install Date

Table 3-4 – Pipeline Installation Year in Distribution System

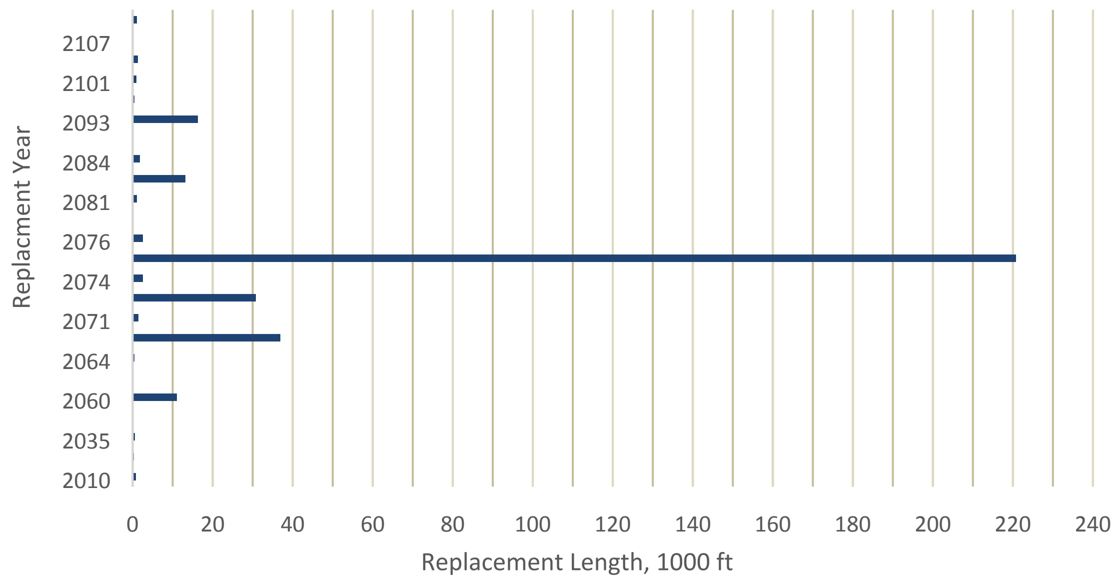
Installation Decade	Install Year	Pipe Length (ft)	Pipe Length (ft)	Percentage
1980-1989	1981	1,504	304,284	89%
	1983	27,253		
	1984	2,964		
	1985	270,016		
	1986	2,546		
1990-1999	1991	1,017	5,851	2%
	1993	4,834		
2000-2009	2003	28,762	30,718	9%
	2004	1,799		
	2007	158		
2010-2019	2010	496	2,736	1%
	2011	967		
	2012	1,274		
TOTAL			**343,589**	100%

As the infrastructure continues to age, many of these facilities will approach the end of their useful service life and require either significant upgrades or replacement.

One key factor in determining a pipeline replacement program is the year the pipe was installed. As discussed above, all infrastructure has a useful life expectancy and in order to determine when a pipeline should be replaced it is imperative to know when it was installed. The information provided by the District does not, for the most part, have an installation year associated with the majority of the pipe in the system. Roughly 2% of the entire system had installation year information. In order to provide a defensible recommendation for the pipeline replacement plan, Michael Baker reviewed an archived version of the District's atlas map to identify installation year. If the installation year was not clearly identified on the atlas map and could not be inferred from other available information, an installation year of 1985 was assumed. Using the data from the atlas maps and this assumption approximately 90% of the water distribution system pipe either was installed or is assumed to have been installed in the 1980's.

Based on the assumed install year and the material life expectancy, pipeline replacement years can be calculated. Asbestos cement pipe, representing approximately 68% of the distribution system has a life expectancy of approximately 90 years, while some pipe materials such as polybutylene or copper have a much shorter life expectancy. Since most of the pipelines are assumed or verified to have been installed in 1985, the majority of the distribution system will need replacement in Year 2075. The length of pipeline requiring replacement in a specific year, based on the pipe material life expectancy and the year it was installed, is provided in Figure 3-3. The majority of the pipeline (more than 220,000 linear feet) is due for replacement in Year 2075, as a function of assuming all pipeline without information was installed in 1985.

Figure 3-3
Replacement Length (1000 ft)
Per Replacement Year



3.3.4 Estimated Replacement Costs

Based on an assumed Unit Construction Cost of $20 per inch diameter per linear foot of pipe replaced, the cost of replacement by year (from the data above) has been calculated and summarized in Table 3-5 – Pipeline Replacement Costs by Year and Figure 3-4. As shown, Years 2030, 2065, 2075, 2083, and 2093 may have replacement costs well over 1 million dollars.

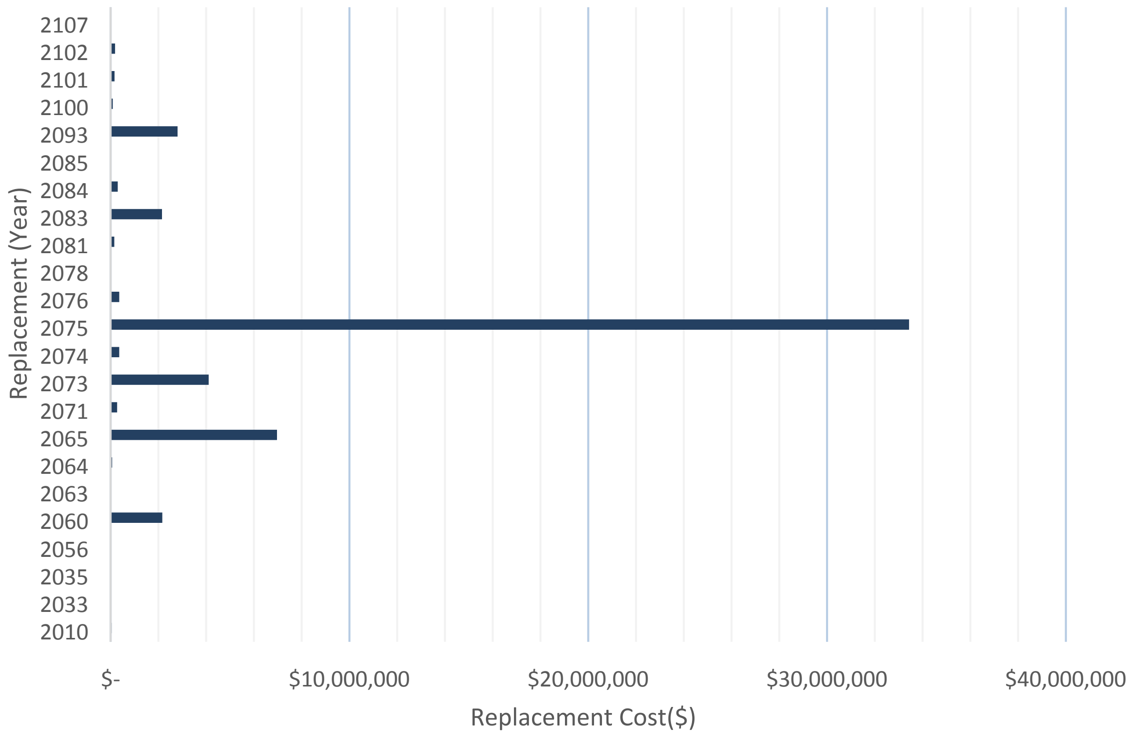
The single largest year, Year 2075, in which 65% of the distribution system should be replaced, has a total replacement cost totaling $33 Million for the replacement of 41 miles of various sized pipelines. The estimated cost to replace all the pipelines for the entire distribution system is approximately $53 million. In order to distribute costs for pipeline replacement, it is crucial to start replacing pipes before their required replacement year. By front loading the replacement of pipes, the District improves it probability of replacement prior to catastrophic pipeline failures.

The construction cost estimates prepared for this report are planning-level estimates. Detailed cost estimates for specific pipeline replacement projects should be prepared at the preliminary and final design stages for each project. All cost estimates have been prepared using present-day dollars for the year 2016.

Table 3-5 – Pipeline Replacement Costs by Year

Replacement Year	Sum of Replacement Cost ($)	Sum of Length (ft)
2107	$ 18,935	158
2102	$ 175,982	1,274
2101	$ 153,705	967
2100	$ 79,309	496
2093	$ 2,793,218	6,253
2085	$ 3,200	20
2084	$ 287,784	1,799
2083	$ 2,138,762	13,185
2081	$ 143,236	1,017
2078	$ 17,533	134
2076	$ 350,980	2,546
2075	$ 33,423,739	220,849
2074	$ 350,368	2,586
2073	$ 4,096,517	30,802
2071	$ 262,168	1,496
2065	$ 6,952,535	36,854
2064	$ 53,215	379
2063	$ 25,744	215
2060	$ 2,153,943	10,994
2056	$ 1,985	8
2035	$ 10,620	531
2033	$ 5,222	261
2010	$ 30,755	769
TOTAL	**$ 53,529,455**	**343,589**

Figure 3-4
Replacement Cost Per Year



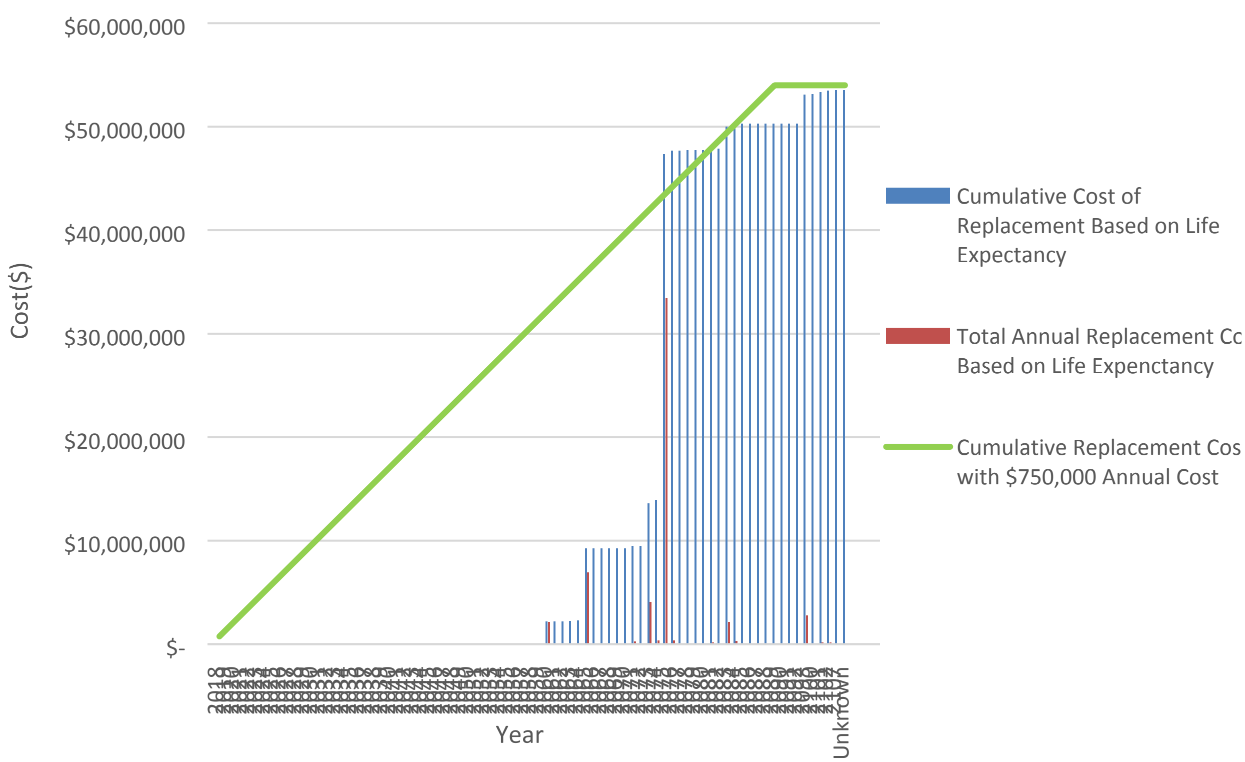
3.3.5 Pipeline Replacement Plan

With a significant capital replacement cost for pipelines occurring at once (i.e. Year 2075), the District will need to plan and budget for the replacement of these pipelines in advance of the end of their useful service life to normalize the costs associated with this infrastructure replacement. Additionally, replacement of a large portion of the District's infrastructure at one time would present challenges related to maintaining distribution system functionality as well as creating a significant disturbance to the community during construction of these replacement pipelines. Additionally, as identified in Section 3.2, an assumption of the install date of some pipeline was made which may have understated the age of certain section of pipeline resulting in regions of pipeline requiring replacement earlier than predicted above.

Therefore, it is recommended that pipelines be replaced before they reach the end of their useful service life as determined in this report. For this study, a 75-year replacement plan has been selected. Replacing pipelines with the expectation that the pipelines will reach the end of their useful service life within 75 years would allow the District to replace approximately 5,000 LF of pipeline per year with an estimated construction cost of nearly $750,000 per year. Using this 75-year plan replaces all of the current existing infrastructure by the year 2092, which as can be seen from Figure 3-4 above, and replaces the majority of the District's pipelines just as they near the end of their projected useful service life .

The use of this "normalized" plan allows the District to construct more projects with a lower per year funding amount ($750,000) rather than experiencing single years with extreme funding amounts ($2M – $33M). Additionally, an annual program will allow the system to maintain system operational integrity during construction. Figure 3-5 below shows the estimated cost of the pipeline replacement, by year based on life expectancy, the total cost of replacement and the "normalized" cumulative $750,000 annual capital investment program to the year 2092.It is recommended that the District implement an annual pipeline replacement program and research potential funding sources as soon as possible. Extending the implementation of this program increases the capital investment needed each year in order to meet the same service life goals.

Figure 3-5
Cumulative Replacement Cost Based on Life Expectancy



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SECTION 4

ASSET REPLACEMENT AND IMPROVEMENT RECOMMENDATIONS

4. ASSET REPLACEMENT AND IMPROVEMENT RECOMMENDATIONS

4.1 USEFUL LIFE ANALYSIS

As a part of the Water System Condition Assessment, a useful service life analysis was prepared to evaluate the remaining useful life of the storage tanks, pump stations, groundwater wells and water treatment plants in the water Distribution System. The useful life analysis is based on the estimated life expectancy of major facility components and periods of major update or rehabilitation as commonly required by manufacturers. The construction dates, materials, and replacement dates of the reservoirs, pumps, motors, and electrical and telemetry systems were identified for each facility using information provided by the District. For instances where facility information was not available, the age of the facilities was estimated the known dates of other facilities and sound engineering judgement.

Based on life expectancy and routine maintenance schedules, the useful life was calculated for each facility. See Tables 4-1 through 4-4 for the useful life criteria employed for each facility type.

Table 4-1 – Useful Service Life Criteria (Groundwater Wells)

Well Component	Replace (Yrs)
Pump and Motor	10
Electrical / Telemetry	20

Table 4-2 – Useful Service Life Criteria (Water Treatment Plants)

Treatment Facility Component	Rehabilitate (Yrs)	Replace (Yrs)
Filter Vessel Coating / Lining	10	N/A
Filter Media	N/A	10
Electrical / Telemetry	N/A	20
Entire System Replacement	N/A	60

Table 4-3 – Useful Service Life Criteria (Pump Stations)

Pump Station Component	Rehabilitate (Yrs)	Replace (Yrs)
Pump and Motor	10	20
Electrical / Telemetry	N/A	20
Entire Pump Station	N/A	60

Table 4-4 – Useful Service Life Criteria (Storage Tanks)			
Tank Type	**Re-Line (Yrs)**	**Re-Coat (Yrs)**	**Replace (Yrs)**
Welded Steel	15	15	75
Bolted Steel	N/A (Glass Fused)	N/A (Glass Fused)	75
Redwood	N/A	N/A	50

4.2 COST ESTIMATING CRITERIA

The cost estimates presented are opinions developed from bid tabulations, cost curves, information obtained from previous studies and Michael Baker's experience on other projects. The tables and costs provided are intended to be used primarily as a planning tool to determine timing and rate of a capital improvement plan.

4.2.1 Cost Estimating Accuracy

The cost estimates presented herein have been prepared for general planning purposes and for guidance in project evaluation and implementation. The actual costs of a project will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule, and other variable factors such as; preliminary alignment, detailed utility surveys, and environmental and local considerations.

The Associate for the Advancement of Cost Engineering (AACE) defines an order of magnitude estimate (Class 5) for master plan studies as an approximate estimate made without detailed engineering data. It is normally expected that an estimate of this type would be accurate to within +50% to -30.

The cost estimates are based on current perceptions of conditions at the project locations. These estimates reflect Michael Baker's professional opinion of costs at this time and are subject to change as project details are refined. Michael Baker has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding, or market conditions, practices, or bidding strategies. Michael Baker does not, warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

4.2.2 Unit Construction Cost

The construction cost estimates presented herein are based on unit construction costs. The unit costs shown below were developed and used for the following proposed infrastructure improvement projects.

Table 4-5 – Unit Cost Criteria (Groundwater Wells)

Well Component	Replacement Cost ($/HP)
Pump and Motor	$475
Electrical / Telemetry	$1,000

Table 4-6 – Unit Cost Criteria (Water Treatment Plants)

Treatment Facility Component	Rehabilitation Cost ($/GPM)	Replacement Cost ($/Gal per day)
Filter Vessel Coating / Lining	$500	N/A
Treatment Filter Media	$144	N/A
GAC Media	$144	N/A
Instrumentation & Controls	N/A	1/3 of system type replacement
System Replacement (Chlor/Dual Media Filtration)	N/A	$0.60
System Replacement (Air Stripping)	N/A	$0.30
System Replacement (GAC)	N/A	$0.80

Table 4-7 – Unit Cost Criteria (Pump Stations)

Pump Station Component	Rehabilitation Cost ($/HP)	Replacement Cost ($/HP)
Pump and Motor	$225	$450
Electrical / Telemetry	N/A	$1,000
Entire Pump Station	N/A	$2,400

Table 4-8 – Unit Cost Criteria (Storage Tanks)

Tank Type	Re-Line Cost ($/Gal)	Re-Coat Cost ($/Gal)	Replacement Cost ($/Gal)
Welded Steel	$0.15	$0.10	$2.00
Bolted Steel	N/A (Glass Fused)	N/A (Glass Fused)	$1.75
Redwood	N/A	N/A	$1.50

4.3 FACILITY PROJECTS AND COST ESTIMATES

Proposed recommendations are based on the conditions found during the Condition Assessment completed with field inspections of the District's Distribution System facilities as presented in Section 2 with a detailed description and photographs. In addition to the Condition Assessment, the age of the facilities and the recommended rehabilitation or replacement as detailed above were considered in order to determine a 10-Year Planning Horizon and a Long Range Planning Horizon (defined as 2028 and later). Costs of existing projects are not included in the costs shown below. The dates shown in the Proposed Recommendations tables below, show the following:

- *Year Construc*ted – this is the date determined to be the construction date, however in some cases, this date is obtained by inference by evaluating other facilities up- or down-stream.
- *Replacement or Rehabilitation of Pumps, Motors, Electrical/Telemetry, Filter or Media and Replacement of Pump Station, Treatment Plant, or Tank* – These dates represent an estimated date for implementation of the specific heading based on the last known construction, replacement or rehabilitation dates plus the Useful Life Analysis criteria provided above.
- *10-yr Planning Horizon* – This provides the projects identified as being implemented within the next year or the 10 years following (2017 or 2018-2027). The estimated dates in the previous bullet are evaluated and adjusted as appropriate.
- *Long Range Planning Horizon* – This provides the projects identified as being implemented after the 10-Year Planning Horizon.

4.3.1 Assumptions and Exceptions

Due to a lack of data and information regarding the water distribution system, particularly the dates of installation, rehabilitation or replacement, required assumptions were made concerning the install or replacement dates Creating a master plan or asset replacement program depends heavily on dates in order to determine when a facility requires maintenance, rehabilitation or replacement. Please note that dates provided for improvements in the table, whether based on known or assumed start dates, are based on industry standards and engineering judgement. Knowing when a facility has been built or rehabilitated does not preclude the facility from malfunctioning at any time. There is not an implied or expressed warranty with respect to the current or future condition of any facility.

While a visual assessment of the condition of the Distribution System facilities was undertaken as part of this study, no testing or in-depth quantification of facility condition was completed. Noted observations may be more severe than gauged in the field and may, upon further in-depth inspection, require significantly more capital investment than estimated in this report or the facility may fail at any time and require immediate resolution.

Routine maintenance and upkeep of sites and facilities is necessary to a properly operating system. A regular budget for routine maintenance and upkeep should be allocated annually and is not included in this evaluation and report.

4.3.2 Groundwater Wells

Table 4-9 and Figure 4-1 provide the estimated capital outlay as provided in the table following. Capital outlay is shown for the next construction year (2017), the 10-year planning horizon (2018 – 2027) and the long range planning horizon (2028 and later). Recommendations and year of implementation are based on field inspection, condition assessment analysis, and the useful life criteria provided above. As detailed earlier in this report, there are 7 groundwater wells serving the Distribution System. Table 4-10 provides 10-year and long range planning horizon costs associated with the identified proposed recommendations. Not included in the analysis are lowering of groundwater table or the well casing itself requiring rehabilitation.

Table 4-9 - Capital Outlay Summary (Groundwater Wells)

Year	Capital Outlay
2017	$115,625
2018 - 2027	$475,000
2028>	$4,054,250

Figure 4-1
Capital Outlay for Wells

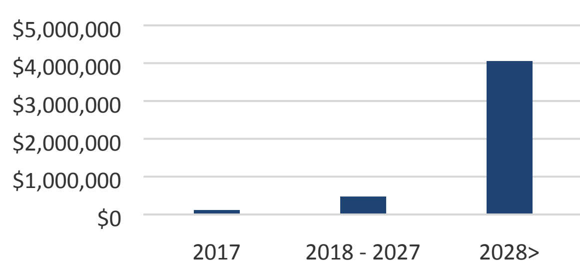


Table 4-10 - Proposed Recommendations and Planning Horizon Estimated Costs (Groundwater Wells)

Well Name	Year Well Built	Estimated by Last Known Construction/Rehabilitation PLUS Useful Life Analysis			Proposed Recommendation	10-Yr Planning Horizon		Long Range Planning Horizon: Replace Pumps, Motors and/or Electrical / Telemetry	
		Replace Pump	Replace Motor	Replace Electrical/ Telemetry		Estimated Costs	Year	Estimated Costs	Year
3B	1995	2017	2017	2015	Implement condition assessment recommendations in Year 2017. Replace pump, motor and electrical/telemetry in Year 2027.	$110,625	2017	$110,625	2037
						$35,625	2027	$35,625	2047
								$110,625	2057
7A	1991	2025	2025	2011	Implement condition assessment recommendations in Year 2025. Replace pump, motor and electrical/telemetry in Year 2025.	$295,000	2025	$95,000	2035
								$295,000	2045
								$95,000	2055
9	1980	2024	2024	2000	This well is only operated in an emergency. Implement condition assessment recommendations in Year 2016 and possibly defer replacement of pump, motor and electrical/telemetry to year 2030 depending on use.	$5,000	2017	$11,875	2030
								$2,920,500	2050
10A	2007	2022	2022	2027	Implement condition assessment recommendations immediately. Replace pump and motor in Year 2022.	$19,000	2022	$59,000	2032
								$19,000	2042
								$59,000	2052
11A	1997	2018	2018	2017	Implement condition assessment recommendations immediately. Replace pump, motor and electrical/telemetry in Year 2018.	$36,875	2018	$11,875	2028
								$36,875	2038
								$11,875	2048
								$36,875	2058
11B	1999	2023	2023	2019	Implement condition assessment recommendations immediately. Replace pump, motor and electrical/telemetry in Year 2023.	$88,500	2023	$28,500	2033
								$88,500	2043
								$28,500	2053

4.3.3 Water Treatment Plants

Table 4-11 and Figure 4-2 provide the estimated capital outlay as provided in the table following. Capital outlay is shown for the next construction year (2017), the 10-year planning horizon (2018 – 2027) and the long range planning horizon (2028 and later). Recommendations and year of implementation are based on field inspection, condition assessment analysis, and the useful life criteria provided above. As detailed earlier in this report, there are 4 water treatment plants serving the Distribution System. Table 4-12 provides 10-year and long range planning horizon costs associated with the identified proposed recommendations. Granular activated carbon (GAC) systems require the replacement of media annually or, if only operating on a periodic basis, then the equivalent of 365 operating days. Replacement of GAC media can be estimated at $144 per gpm of rated treatment capacity. GAC media replacement costs were not included in the planning horizon cost estimates provided below.

Table 4-11 - Capital Outlay Summary (Water Treatment)

Year	Capital Outlay
2017	$860,800
2018 - 2027	$2,078,800
2028>	$8,394,400

Figure 4-2
Capital Outlay for Water Treatment

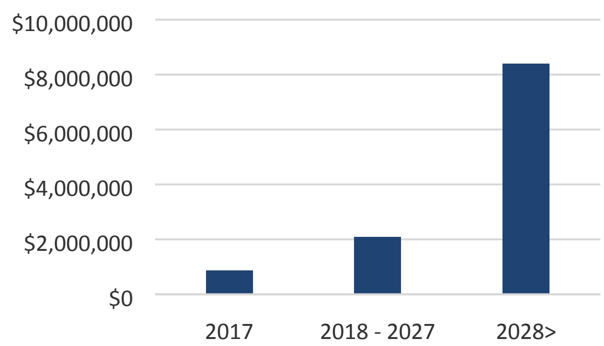


Table 4-12 - Proposed Recommendations and Planning Horizon Estimated Costs (Water Treatment Plants)

Treatment Facility Name	Year Built	Estimated by Last Known Construction/Rehabiliation PLUS Useful Life Analysis				Proposed Recommendation	10-Yr Planning Horizon		Long Range Planning Horizon Media - Electrical/ Telemetry - Replacement	
		Replace Media	Re-Coat Filter Interior	Replace Controls & Instrumentation	Replace Treatment Plant		Estimated Costs	Year	Estimated Costs	Year
Well 9 WTP	1980	2017	1990	2000	2040	Implement Condition Assessment Recommendations in 2026. Replace filter media and instrumentation/controls and re-line interior of filter vessel in 2026. Replace treatment facility in 2040. **Not shown is replacement of GAC media annually or the equivalent of 365 days of operation (estimated at $14,400).**	$146,000	2026	$201,600	2040
									$78,800	2050
									$146,000	2060
Well 10A WTP	2000	2023	2010	2020	2060	Implement Condition Assesment Recommendations in 2023. Replace filter media and instrumentation/controls and re-line interior of filter vessel in 2023. Replace treatment facilities in 2060 **Not shown is replacement of GAC media annually or the equivalent of 365 days of operation (estimated at $57,600).**	$641,600	2023	$315,200	2033
									$641,600	2043
									$979,200	2060
El Pueblo WTP	1970	2016	2016	1990	2030	Implement Condition Assessment Reccomendations in 2017. Replace filter media and instrumentation/controls and re-line interior of filter vessela in 2017. Replace treatment facilities in 2030.	$860,800	2017	$1,036,800	2030
									$515,200	2040
									$860,800	2050
Orchard Run WTP	1993	2013	2013	2013	2053	Implement Condition Assessment Reccomendations in 2020. Replace filter media and instrumentation/controls and re-line interior of filter vessel in 2020. Replace treatment facilities in 2053	$1,291,200	2020	$772,800	2030
									$1,291,200	2040
									$1,555,200	2053

4.3.4 Pump Stations

Table 4-13 and Figure 4-3 provide the estimated capital outlay as provided in the table following. Capital outlay is shown for maintenance and rehabilitation past due, the next construction year (2017), the 10-year planning horizon (2018 – 2027) and the long range planning horizon (2028 and later). Recommendations and year of implementation are based on field inspection, condition assessment analysis, and the useful life criteria provided above. As detailed earlier in this report, there are 12 booster pump stations serving the Distribution System. Table 4-14 provides 10-year and long range planning horizon costs associated with the identified proposed recommendations.

Table 4-13 - Capital Outlay Summary (Pump Stations)

Year	Capital Outlay
2017	$87,750
2018 - 2027	$931,375
2028>	$2,248,125

Figure 4-3
Capital Outlay for Pump Stations

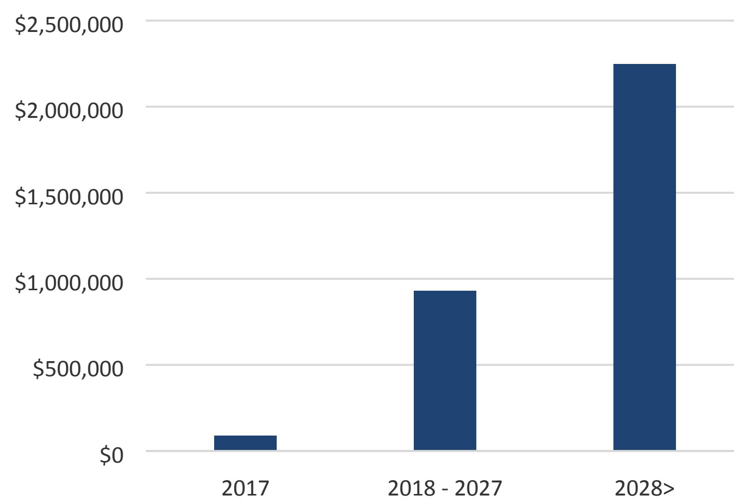


Table 4-14 - Proposed Recommendations and Planning Horizon Estimated Costs (Pump Stations)

Pump Station Name	Year Station Constructed	Estimated by Last Known Construction/Rehabilitation PLUS Useful Life Analysis				Proposed Recommendation	10-Yr Planning Horizon		Long Range Planning Horizon			
									Rehab/Replace Pumps, Motors or Electrical/Telemetry		Construct New Pump Station	
		Rehab Pump and Motor	Replace Pump and Motor	Replace Electrical / Telemetry	Replace Pump Station		Estimated Costs	Year	Estimated Costs	Year	Estimated Costs	Year
Cresent	2003	2019	2029	2029	2063	Implement condition assessment recommendations immediately. Provide protective coating repair where needed and rehab pump and motor in 2019. Program replacement of pumps, motors and electrical/telemetry equipment for Year 2029. Program construction of new pump station in Year 2069.	$6,750	2019	$43,500 $6,750 $43,500	2029 2039 2049	$72,000	2069
Bethany	1966	2019	2029	1986	2026	Program replacement of Pump Station for Year 2019. Program rehabilitation of pumps and motors every 10 years (2029, 2049). Program pump, motor and electrical/telemetry replacement every 20 years. (2039, 2059)	$72,000	2019	$6,750 $43,500 $6,750 $43,500	2029 2039 2049 2059	N/A (Schedule Replacement of Pump Station 2019)	
Sand Hill	2015	N/A	N/A	N/A	N/A	Sand Hill Pump Station undergoing capital improvements (2015/2016). Schedule pump and motor rehab every 10 years. Program pump, motor and electrical/telemetry replacment every 20 years.	$13,500	2026	$87,000 $13,500 $87,000	2036 2046 2056	N/A	
Southwood	1991	2001	2011	2011	2051	Implement condition assessment recommendations immediately. Repair vault, install safey equipment and replace all mechanical and electrical/telemetry equipment in Year 2017. Program construction of new pump station in Year 2057.	$72,000 $6,750	2017 2027	$43,500 $6,750	2037 2047	$72,000	2057
Monte Fiore	1996	2017	2027	2016	2056	Implement condition assessment recommendations immediately. Program rehab of all pumps and motors for Year 2020. Program repalcement of all pumps, motors and electrical/telemetry in Year 2030. Replace pump station in Year 2050	$29,250	2020	$188,500	2030	$312,000	2050
Monte Fiore (FIRE)	1996	2023	2033	2016	2056				$29,250	2040		
Hacienda	1966	2024	2034	1986	2026	Implement condition assessment recommendations immediately. Program construction of new pump station in Year 2024. Rehab pumps and motors in 2034. Program replacement of pumps, motors and electrical/telemetry equipment for Year 2044.	$24,000	2024	$2,250 $14,500 $2,250	2034 2044 2054	N/A (Schedule Replacement of Pump Station 2024	
Well 9 Booster	1980	1990	2000	2000	N/A	Implement condition assessment recommendations immediately. Emergency Facility with Intermittent Use - Program Replacement of Pump, Motor and Electrical / Telemetry in Year 2025.	$9,000 $58,000	2017 2025	$9,000 $58,000 $9,000	2035 2045 2055	N/A (Part of WTP)	
Well 10A Booster	1983	2012	2022	2003	N/A	Implement condition assessment recommendations immediately. Program replacement of pump, motor and electrical/telemetry in Year 2022. Program rehabilitation of pump and motor every 10 years. Program replacement of pump, motor and electrical/telemetry every 20 years.	$87,000	2022	$13,500 $87,000 $13,500	2032 2042 2052	N/A (Part of WTP)	

Table 4-14 - Proposed Recommendations and Planning Horizon Estimated Costs (Pump Stations)

Pump Station Name	Year Station Constructed	Estimated by Last Known Construction/Rehabilitation PLUS Useful Life Analysis				Proposed Recommendation	10-Yr Planning Horizon		Long Range Planning Horizon			
									Rehab/Replace Pumps, Motors or Electrical/Telemetry		Construct New Pump Station	
		Rehab Pump and Motor	Replace Pump and Motor	Replace Electrical / Telemetry	Replace Pump Station		Estimated Costs	Year	Estimated Costs	Year	Estimated Costs	Year
El Pueblo WTP Booster	1983	1993	2003	2003	N/A	Replace pump station as part of treatment plant in Year 2030. Rehab current pumps and motors in Year 2018. Rehab new pumps and motors every 10 years. Replace pumps and motors every 20 years.	$50,625	2018	$50,625	2040	N/A (Part of WTP)	
									$326,250	2050		
Orchard Run Booster	1993	2003	2013	2013	N/A	Implement condition assesment recommendations in Year 2018 and replace all pumps, motors and electrical/telemetry equipment along with all piping and valves. Replace along with treatment plant in Year 2053	$540,000	2018	$50,625	2028	N/A (Part of WTP)	
									$326,250	2038		
									$50,625	2048		
Siltanen	2003	2013	2023	2023	2063	Implement condition assessment recommedations immediately.	$6,750	2017	$6,750	2037	$72,000	2067
									$43,500	2047		
							$43,500	2027	$6,750	2057		

4.3.5 Water Tanks

Table 4-15 and Figure 4-4 provide the estimated capital outlay as provided in the table following. Capital outlay shown for the next construction year (2017), the 10-year planning horizon (2018 – 2027) and the long range planning horizon (2028 and later). Recommendations and year of implementation are based on field inspection, condition assessment analysis, and the useful life criteria provided above. As detailed earlier in this report, there are 9 water storage tanks serving the Distribution System including the Recycle Tank. Table 4-16 provides 10-year and long range planning horizon costs associated with the identified proposed recommendations.

Table 4-15 - Capital Outlay Summary (Tanks)

Year	Capital Outlay
2017	$392,500
2018 - 2027	$452,500
2028>	$10,397,000

Figure 4-4
Capital Outlay for Tanks

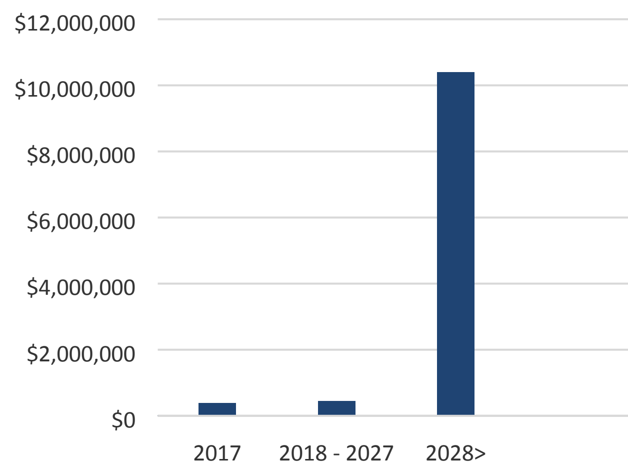


Table 4-16 - Proposed Recommendations and Planning Horizon Estimated Costs (Water Tanks)

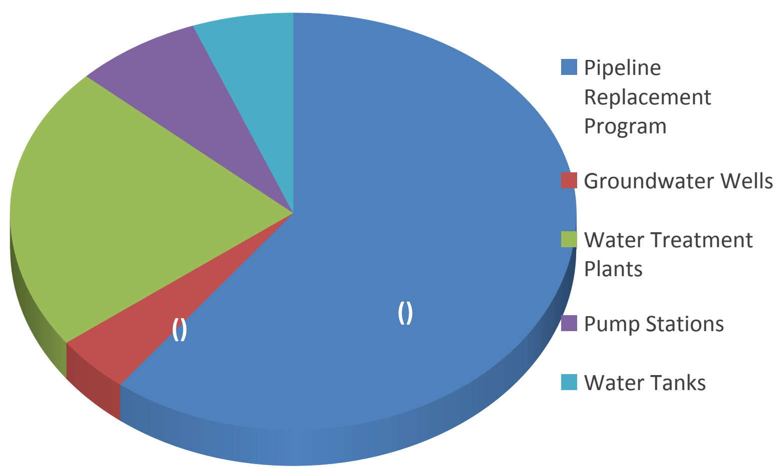
Tank Name	Type	Year Built	Year of Last Inspection / Cleaning	Estimated by Last Known Construction/Rehabilitation PLUS Useful Life Analysis			Proposed Recommendation(s)	10-Yr Planning Horizon		Long Range Planning Horizon			
										Re-Lining / Re-Coating		Replacement	
				Next Re-Line	Next Re-Coat	Replace		Estimated Costs	Year	Estimated Costs	Year	Estimated Costs	Year
Bethany Tank	Welded Steel	1965	2002	2000	2000	2040	Implement condition assessment recommendations immediately. Schedule re-coating and re-lining of tank in Year 2017 and Year 2032. Schedule replacement of tank in Year 2040.	$150,000	2017	$150,000	2032	$800,000	2040
El Pueblo Tank	Welded Steel	1970	2010	2024	2024	2045	Implement grading improvements immediately. Install flexible coupling during re-lining/re-coating of tank in Year 2024. Schedule replacement of Tank in Year 2045.	$110,000	2024	$100,000	2039	$800,000	2045
Glenwood Tank	Bolted Steel	2000	2012	N/A (Glass Fused)	N/A (Glass Fused)	2075	Implement condition assessment recommendations immediately. Evaluate leakage and repair in 2020. Schedule replacement of Tank in Year 2075.	$5,000	2020	N/A (Glass Fused)		$1,907,500	2075
Macdorsa Tank	Welded Steel	1965	2011	2016	2016	2040	Implement condition assessment recomendations immediately. Schedule re-coating and re-lining of tank in Year 2017 and Year 2032. Schedule replacement of Tank in Year 2040.	$237,500	2017	$187,500	2032	$1,500,000	2040
Mt. Roberta Tank	Redwood	2001	2015	N/A (Redwood)	N/A (Redwood)	2051	Implement condition assessment recommendations in Year 2021. Evaluate leakage and repair/retrofit tank in 2021. Schedule replacement of Tank in Year 2051.	$5,000	2021	N/A (Redwood)		$75,000	2051
Sequoia Tank	Welded Steel	1983	2002	1998	1998	2058	Perform re-lining/re-coating in Year 2025. Schedule re-lining/re-coating of tank in Year 2040. Schedule Replacement of Tank in Year 2058.	$312,500	2025	$312,500	2040	$2,500,000	2058
Southwood Tank	Bolted Steel	1999	2002	N/A (Glass Fused)	N/A (Glass Fused)	2074	Implement condition assessment recommendations immediately. Monitor cracks, perform site mitigations in 2018. Schedule replacement of Tank in Year 2074.	$10,000	2018	N/A (Glass Fused)		$913,500	2074
Villa Fonteney Tank	Redwood	2002	2002	N/A (Redwood)	N/A (Redwood)	2052	Implement condition assessment recommendations immediately. Evaluate leakage repair in 2017. Schedule replacement of Tank in Year 2052.	$5,000	2017	N/A (Redwood)		$45,000	2052
Recycled	Bolted Steel	2000	2013	N/A (Glass Fused)	N/A (Glass Fused)	2075	Implement condition assessment recommendations immediately. Perform site grading and repair roof drain and exterior coating in 2022. Schedule replacement of Tank in Year 2075.	$10,000	2022	N/A (Glass Fused)		$1,106,000	2075

4.4 RECOMMENDATIONS

Provided below are cost summaries associated with proposed recommendations in the tables above. The 10-Year Planning Horizon Cost Estimate (Table 4-17) and the Long Term Planning Horizon Cost Summary (Table 4-18) provide summaries of capital investment costs by year for the first 11 years and by decades in the Long Term estimate.

The Pipeline Replacement Plan, as described in Section 3 and included in the 10-Year and Long Term Cost Estimates, is proposed to be a normalized program of a $750,000 per year investment for the replacement of distribution pipeline. Prioritization of pipeline replacement should be based on a number of factors including age, material type, size and condition. Pipelines which are old, break often, are undersized for the demand or do not function in a way the system requires should be prioritized for early replacement. Given the assumption that pipeline for which there was no known installation date was assigned a date of 1982, and the assumed life expectancy of pipeline of differing material is 25 to 100 years there are years where the pipe replacement costs would exceed $1,000,000 per year, with one year (2075) reaching a high of more than $33,000,000 needed to keep up with the aging infrastructure. By "normalizing" the total investment and spreading it out over a longer period of time, the length of replaced pipeline "catches" the Life Expectancy based program by Year 2092 as shown previously in Figure 3-5. Figure 4-5 shows that the pipeline replacement costs, "normalized" to a $750,000 per year level of funding, represent 60% of the overall 10-Year Planning Horizon costs.

Figure 4-5
10-Year Planning Horizon Cost Summary



4.4.1 10-Year Planning Horizon

TABLE 4-17 - 10-YEAR PLANNING HORIZON PROJECT COST ESTIMATE

Facility	Project Description	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 10-Year Estimate
Pipeline Replacement Program		**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 8,250,000**
Groundwater Wells		**$ 115,625**	**$ 36,875**	**$ -**	**$ -**	**$ -**	**$ 19,000**	**$ 88,500**	**$ -**	**$ 295,000**	**$ -**	**$ 35,625**	**$ 590,625**
Well 3B	Replace pump, motor, electrical and telemetry	$ 110,625											
	Rehabilitate pump and motor											$ 35,625	
Well 7A	Replace pump, motor, electrical & telemetry									$ 295,000			
Well 9	Install check vale on "above-ground" well discharge pipe at well head.	$ 5,000											
Well 10A	Replace pump & motor						$ 19,000						
Well 11 A	Replace pump, motor, electrical & telemetry		$ 36,875										
Well 11B	Replace pump, motor, electrical & telemetry							$ 88,500					
Water Treatment Plants		**$ 860,800**	**$ -**	**$ -**	**$ 1,291,200**	**$ -**	**$ -**	**$ 641,600**	**$ -**	**$ -**	**$ 146,000**	**$ -**	**$ 2,939,600**
Well 9 WTP	Replace filter media, re-line interior										$ 146,000		
Well 10A WTP	Replace filter media, controls, re-line interior							$ 641,600					
El Pueblo WTP	Replace filter media, controls, and re-line interior	$ 860,800											
Orcharge Run WTP	Replace filter media, controls, and re-line interior				$ 1,291,200								
Pump Stations		**$ 87,750**	**$ 590,625**	**$ 78,750**	**$ 29,250**	**$ -**	**$ 87,000**	**$ -**	**$ 24,000**	**$ 58,000**	**$ 13,500**	**$ 50,250**	**$ 1,019,125**
Crescent	Repair protective coating, rehab pump and motor			$ 6,750									
Bethany	Replace pump station			$ 72,000									
Sand Hill	Rehabilitate pump and motor										$ 13,500		
Southwood	Repair vault, install safety equipment, replace mechanical and electrical equipment in 2017	$ 72,000											
	Rehabilitate pump and motor											$ 6,750	
Monte Fiore and Monte Fiore (FIRE)	Rehabilitate pumps and motors				$ 29,250								
Hacienda	Construct new pump station								$ 24,000				
Well 9 Booster	Repair damaged and exposed pipe, rehab pump & motor	$ 9,000											
	Replace pump, motor, and electrical telemetry in 2025									$ 58,000			
Well 10A Booster	Replace pump, motor, and electrical/telemetry						$ 87,000						
El Pueblo WTP	Rehab pumps & motors		$ 50,625										
Orchard Run Booster	Replace pumps, motors, electrical/telemetry equipment and all piping and valves		$ 540,000										
Siltanen	Rehabilitate pump and motor	$ 6,750											
	Replace pumps, motors, electrical and telemetry											$ 43,500	
Water Tanks		**$ 392,500**	**$ 10,000**	**$ -**	**$ 5,000**	**$ 5,000**	**$ 10,000**	**$ -**	**$ 110,000**	**$ 312,500**	**$ -**	**$ -**	**$ 845,000**
Bethany Tank	Re-coating and re-lining of tank	$ 150,000											
El Pueblo Tank	Install flexible coupling, site mitigations and re-lining/re-coating								$ 110,000				
Glenwood Tank	Evaluate leakage and repair				$ 5,000								
Macdorsa Tank	Re-coating and re-lining of tank	$ 237,500											
Mt. Roberta	Evaluate leakage and repair or retrofit tank					$ 5,000							
Sequoia Tank	Perform re-lining/re-coating									$ 312,500			
Southwood Tank	Monitor cracks, perform site mitigations		$ 10,000										
Villa Fonteney Tank	Evaluate leakage repair	$ 5,000											
Recycled	Perform site grading; repair roof drain and exterior coating						$ 10,000						
	PLANNING ESTIMATE PER YEAR	**$ 2,206,675**	**$ 1,387,500**	**$ 828,750**	**$ 2,075,450**	**$ 755,000**	**$ 866,000**	**$ 1,480,100**	**$ 884,000**	**$ 1,415,500**	**$ 909,500**	**$ 835,875**	**$ 13,644,350**

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4.4.2 Long Range Planning Horizon

TABLE 4-18 - LONG RANGE PLANNING HORIZON PROJECT COST ESTIMATE									
Facility	Project Description	2028 - 2032	2033 - 2037	2038 - 2042	2043 - 2047	2048 - 2052	2053 - 2057	2058 >	Total Long Range Estimate
Pipeline Replacement Program		**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 750,000**	**$ 5,250,000**
Groundwater Wells		**$ 82,750**	**$ 234,125**	**$ 55,875**	**$ 330,625**	**$ 2,991,375**	**$ 234,125**	**$ 36,875**	**$ 3,965,750**
Well 3B	Replace pump and motor				$ 35,625				
	Replace pump, motor, electrical and telemetry		$ 110,625				$ 110,625		
Well 7A	Replace pump and motor				$ 295,000				
	Replace pump, motor, electrical and telemetry		$ 95,000				$ 95,000		
Well 9	Replace pump and motor	$ 11,875							
	Replace pump, motor, electrical and telemetry					$ 2,920,500			
Well 10A	Replace pump and motor			$ 19,000					
	Replace pump, motor, electrical and telemetry	$ 59,000				$ 59,000			
Well 11 A	Replace pump and motor	$ 11,875				$ 11,875			
	Replace pump, motor, electrical and telemetry			$ 36,875				$ 36,875	
Well 11B	Replace pump, motor, electrical & telemetry		$ 28,500				$ 28,500		
	Replace pump & motor				$ 88,500				
Water Treatment Plants		**$ 1,809,600**	**$ 315,200**	**$ 716,800**	**$ 641,600**	**$ 939,600**	**$ -**	**$ 1,125,200**	**$ 5,548,000**
Well 9 WTP	Replace media and re-line interior and re-coat					$ 78,800			
	Replace media, re-line/re-coat, replace instrumentation and controls							$ 146,000	
	Replace treatment facility			$ 201,600					
Well 10A WTP	Replace media and re-line interior and re-coat		$ 315,200						
	Replace media, re-line/re-coat, replace instrumentation and controls				$ 641,600				
	Replace treatment facility							$ 979,200	
El Pueblo WTP	Replace media and re-line interior and re-coat			$ 515,200					
	Replace media, re-line/re-coat, replace instrumentation and controls					$ 860,800			
	Replace treatment facility	$ 1,036,800							
Orchard Run WTP	Replace media and re-line interior and re-coat	$ 772,800							
	Replace media, re-line/re-coat, replace instrumentation and controls			$ 1,291,200					
	Replace treatment facility						$ 1,555,200		
Pump Stations		**$ 302,875**	**$ 148,500**	**$ 543,375**	**$ 136,250**	**$ 752,625**	**$ 177,000**	**$ 115,500**	**$ 2,176,125**
Cresent	Rehabilitate pumps and motors			$ 6,750					
	Replace pumps, motors and electrical/telemetry	$ 43,500				$ 43,500			
	Replace pump station							$ 72,000	
Bethany	Rehabilitate pumps and motors	$ 6,750				$ 6,750			
	Replace pumps, motors and electrical/telemetry			$ 43,500				$ 43,500	

TABLE 4-18 - LONG RANGE PLANNING HORIZON PROJECT COST ESTIMATE

Facility	Project Description	2028 - 2032	2033 - 2037	2038 - 2042	2043 - 2047	2048 - 2052	2053 - 2057	2058 >	Total Long Range Estimate
Sand Hill	Rehabilitate pumps and motors				$ 13,500				
	Replace pumps, motors and electrical/telemetry		$ 87,000				$ 87,000		
Southwood	Rehabilitate pumps and motors				$ 6,750				
	Replace pumps, motors and electrical/telemetry		$ 43,500						
	Replace pump station						$ 72,000		
Monte Fiore and Monte Fiore (FIRE)	Rehabilitate pumps and motors			$ 29,250					
	Replace pumps, motors and electrical/telemetry	$ 188,500							
	Replace pump station					$ 312,000			
Hacienda	Rehabilitate pumps and motors		$ 2,250				$ 2,250		
	Replace pumps, motors and electrical/telemetry				$ 14,500				
Well 9 Booster	Rehabilitate pumps and motors		$ 9,000				$ 9,000		
	Replace pumps, motors and electrical/telemetry				$ 58,000				
Well 10A Booster	Rehabilitate pumps and motors	$ 13,500				$ 13,500			
	Replace pumps, motors and electrical/telemetry			$ 87,000					
El Pueblo WTP Booster	Rehabilitate pumps and motors			$ 50,625					
	Replace pumps, motors and electrical/telemetry					$ 326,250			
Orchard Run Booster	Rehabilitate pumps and motors	$ 50,625				$ 50,625			
	Replace pumps, motors and electrical/telemetry			$ 326,250					
Siltanen	Rehabilitate pumps and motors		$ 6,750				$ 6,750		
	Replace pumps, motors and electrical/telemetry				$ 43,500				
	Replace pump station							$ 72,000	
Water Tanks		**$ 337,500**	**$ -**	**$ 2,712,500**	**$ 800,000**	**$ 120,000**	**$ -**	**$ 6,427,000**	**$ 10,397,000**
Bethany Tank	Re-coating and re-lining of tank	$ 150,000							
	Replacement of Tank			$ 800,000					
El Pueblo Tank	Re-coating and re-lining of tank			$ 100,000					
	Replacement of tank				$ 800,000				
Glenwood Tank	Replacement of tank							$ 1,907,500	
Macdorsa Tank	Re-coating and re-lining of tank	$ 187,500							
	Replacement of tank			$ 1,500,000					
Mt. Roberta	Replacement of tank					$ 75,000			
Sequoia Tank	Re-coating and re-lining of tank			$ 312,500					
	Replacement of tank							$ 2,500,000	
Southwood Tank	Replacement of tank							$ 913,500	
Villa Fonteney Tank	Replacement of tank					$ 45,000			
Recycled	Replacement of tank							$ 1,106,000	
	PLANNING ESTIMATE PER YEAR	**$ 3,282,725**	**$ 1,447,825**	**$ 4,778,550**	**$ 2,658,475**	**$ 5,553,600**	**$ 1,161,125**	**$ 8,454,575**	**$ 27,336,875**

APPENDIX F:

Capital Improvement Plan (10-Year Projection)

10-Year Planning Horizon

10-YEAR PLANNING HORIZON PROJECT COST ESTIMATE

Facility	Project Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total 10-Year Estimate
Pipeline Replacement Program		$ 550,000	$ 567,000	$ 583,000	$ 601,000	$ 619,000	$ 638,000	$ 657,000	$ 676,000	$ 697,000	$ 718,000	$ 739,000	$ 761,000	**$ 7,256,000**
Groundwater Wells		**$ 1,499,625**	**$ 112,000**	**$ 907,000**	**$ 87,000**	**$ 209,000**	**$ -**	**$ 197,000**	**$ -**	**$ 85,000**	**$ -**	**$ 48,000**	**$ -**	**$ 1,645,000**
Well 3B	Replace/ upgrade electrical systems.	$ 90,000						$ 107,000						
	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 75,000						$ 90,000						
	Site slurry seal and site improvements.	$ 5,000		$ 5,000										
	Well rehabiliation. Repair well casing.	$ 100,000		$ 106,000										
	Rehabilitate pump and motor.	$ 35,625										$ 48,000		
Well 9	Abandon well in accordance with California Well Standards and construct a new well to replace Well 9.	$ 850,000	$ 100,000	$ 796,000										
Well 10A	Replace pump and motor.	$ 32,000								$ 41,000				
	Site Improvements. Move fence to provide more clearance between MCC to reduce risk of arc flashing (1)	$ 35,000								$ 44,000				
Well 11 A	Replace pump and motor to improve pumping capacity. Add well transducer at the same time of replacement	$ 20,000			$ 22,000									
	Replace/ upgrade electrical systems.	$ 30,000			$ 33,000									
	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 25,000			$ 27,000									
	Site Improvements and security. Recoat ductile iron discharge piping and valves for corrosion protection. Replace 3 strand barbed wire along fence where damaged. Monitor fencing where it has soil and gravel piled against it or remove soil.	$ 5,000			$ 5,000									
Well 11B	Replace pump and motor.	$ 48,000				$ 54,000								
	Replace electrical systems. Major MCC overhaul and install a new electrical panel	$ 72,000				$ 81,000								
	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 60,000				$ 68,000								
	Well Inspection. Video well to inspect swage repairs.	$ 5,000				$ 6,000								
Orchard Run Well	Install local HOA panel for well.	$ 12,000	$ 12,000											
Water Treatment Plants			**$ 2,632,000**	**$ 609,000**	**$ 350,000**	**$ -**	**$ -**	**$ -**	**$ 634,000**	**$ -**	**$ -**	**$ -**	**$ 277,000**	**$ 4,502,000**
Well 9 WTP	Remove onsite GAC vessels and dissconnected apputenances. Sample GAC for remediation	$ 20,000	$ 21,000											
	Full WTP upgrade or replacement for new Well 9 replacement.	$ 500,000	$ 100,000	$ 424,000										
Well 10A WTP	Replace filter media. Perform bench testing with alternative filter media (i.e. Greensand) and use if there is better performance.	$ 115,200	$ 119,000											
	Remove onsite GAC vessels and dissconnected apputenances. Sample GAC for remediation	$ 20,001			$ 22,000									
	Replace electrical systems. Major MCC overhaul and install a new electrical panel	$ 200,000			$ 219,000									
	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 80,000			$ 87,000									
	Add an automatic backwash valve.	$ 20,000			$ 22,000									
	Install new backwash tank to pre-treat backwash water prior to discharge to the sewer.	$ 200,000											$ 277,000	
El Pueblo WTP	Replace filter media and re-line interior.	$ 515,200							$ 634,000					
	Construct hard piping and actuated valves for backwashing and filter rinses.	$ 120,000		$ 127,000										
	Chemical storage building improvments. Finish interior drywall or cover exposed area with FRP siding to protect from water or chemical damage.	$ 15,000		$ 16,000										
	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 80,000	$ 82,000											
	Site Improvements. Rehabiliatate pavement in the corp yard. Combine two smaller sedimentation basins into one basin and add ramp for ease of access and simpler cleaning.	$ 40,000		$ 42,000										
Orchard Run WTP	Replace filter media and re-line interior.	$ 772,800	$ 796,000											
	Chemical dosing improvements. Add automated chlorine control using a residual value. Replace the ammonia dosing system	$ 10,000	$ 10,000											
	Construct new GAC filter.	$ 650,000	$ 670,000											
	Replace ammonia based H2S Air Scrubbing system with a Bio Filtration Scrubber	$ 250,000	$ 258,000											
	Chemical storage building improvements. Repair corrosion.	$ 5,000	$ 5,000											
	Replace 40,000 gallon bolted steel sludge backwash tank in the near term.	$ 70,000	$ 72,000											
	Replace/ upgrade electrical components and telemtry with Allen Bradley PLC or equal	$ 480,000	$ 494,000											
	Filter booster pumps improvements. Test mechnical seals. Replace wall mounted supports.	$ 5,000	$ 5,000											
Pump Stations			**$ -**	**$ 7,000**	**$ 291,000**	**$ 61,000**	**$ 82,000**	**$ 8,000**	**$ 62,000**	**$ 53,000**	**$ -**	**$ 559,000**	**$ 9,000**	**$ 1,132,000**
Crescent	Repair protective coating on site piping and fittings.	$ 6,750		$ 7,000										
	Construct new building to house the pump station. This will extend the useful life of the pump station and improve site security (2)	$ 71,000					$ 82,000							
Bethany	Replace/ upgrade telemetry with Allen Bradley PLC or equal.	$ 30,000								$ 38,000				
	Site Improvements. Repair/seal weeping walls if moisture in building become problematic and contributes to increased corrosion and reduced lifespan.	$ 5,000								$ 6,000				
	Rehabilitate pump and motor.	$ 6,750								$ 9,000				
Sand Hill	Rehabilitate pump and motor.	$ 6,750						$ 8,000						
Polo Ranch	Rehabilitate pump and motor.	$ 6,750											$ 9,000	
Monte Fiore and Monte Fiore (FIRE)	Rehabilitate pump and motor.	$ 29,250			$ 32,000									
	Site Improvements: Add a shade structure to protect pumping elements and increase lifespan. Add rain resistant fitting to the end of the diesel tank vent. Monitor and repair leaks in generator cover to protect from rain water.	$ 45,000			$ 49,000									
Well 9 Booster	Replace with a new pump station for the new well to replace Well 9.	$ 192,000			$ 210,000									
Well 10A Booster	Replace pump and motor.	$ 54,000				$ 61,000								
El Pueblo WTP Booster	Rehab pumps & motors.	$ 50,625							$ 62,000					
Orchard Run Booster	Replace pumps and motors. Test mechanical seals.	$ 202,500										$ 272,000		
	Replace site piping and valves.	$ 213,750										$ 287,000		
Water Tanks			**$ 205,000**	**$ 383,000**	**$ 14,000**	**$ -**	**$ 6,000**	**$ 30,000**	**$ 12,000**	**$ -**	**$ 307,000**	**$ -**	**$ 104,000**	**$ 1,061,000**
Bethany Tank	Re-coating interior and exterioir walls and support columns and re-line tank. Repair roof structure. Reconfigure tank piping to have a separate inlet/ outlet while the tank is drained.	$ 200,000	$ 200,000											
	Structural evalaution of the tank.	$ 5,000	$ 5,000											
El Pueblo Tank	Install flexible coupling, site mitigations and re-lining/re-coating. Reconfigure tank piping to have a separate inlet/ outlet while the tank is drained.	$ 220,000									$ 287,000			
	Modify overflow line and remove connection to the storm drain.	$ 10,000									$ 13,000			
	Structural evalaution of the tank. Clean tank and remove sediment during evaluation.	$ 5,000									$ 7,000			
Glenwood Tank	Evaluate leakage and repair.	$ 5,000					$ 6,000							

Macdorsa Tank	Re-coating interior and exterioir walls and support columns and re-line tank. Reconfigure tank piping to have a separate inlet/ outlet while the tank is drained.	$ 341,250		$ 362,000											
	Modify overflow line and remove connection to the storm drain.	$ 10,000		$ 11,000											
	Structural evalaution of the tank.	$ 5,000		$ 5,000											
Mt. Roberta	Evaluate leakage and repair or retrofit tank.	$ 5,000						$ 6,000							
	Install a dedicated overflow line.	$ 20,000						$ 24,000							
Sequoia Tank	Reconfigure tank piping to have a separate inlet/ outlet while the tank is drained.	$ 75,000												$ 104,000	
Southwood Tank	Monitor cracks, perform site mitigations.	$ 10,000			$ 11,000										
	Clean tank and remove observed sediment at tank bottom.	$ 2,500			$ 3,000										
Villa Fonteney Tank	Evaluate leakage and repair or retrofit tank.	$ 5,000		$ 5,000											
Recycled	Perform site grading; repair roof drain and exterior coating.	$ 10,000							$ 12,000						
	PLANNING ESTIMATE PER YEAR	**$ 2,049,625**	**$ 3,516,000**	**$ 2,489,000**	**$ 1,343,000**	**$ 889,000**	**$ 726,000**	**$ 892,000**	**$ 1,384,000**	**$ 835,000**	**$ 1,025,000**	**$ 1,346,000**	**$ 1,151,000**	**$ 15,596,000**			

Notes:

Future costs include 3% escalation.

(1) Costs assume 30k to obtain new easment.

(2) Costs may be reduced with a prefabricated building or shade structure.