Technical Memorandum

Sunnyslope County Water District

Subject:	**2017 Annual Salt Management Report**
Prepared For:	Regional Water Quality Control Board
Prepared by:	Donald G. Ridenhour, District Engineer, PE 51790 (Expires 6/30/2018) (SSCWD)
Reviewed by:	James Filice (SSCWD), Rob Hillebrecht (SSCWD)
Date:	January 16, 2018

The purpose of this Technical Memorandum (TM) is to meet the Annual Salt Management Report requirements of the Regional Water Quality Control Board (RWQCB) Waste Discharge Requirement (WDR) Order No. R3-2004-0065 (December 3, 2004). Annual Salt Management Reports must be submitted by January 30th every year commencing in 2006. The report shall include, at a minimum:

a. Calculations of annual salt mass discharged to the wastewater treatment system and disposal ponds with an accompanying analysis of contributing sources;

b. Analysis of wastewater evaporation/salt concentration effects;

c. Analysis of groundwater monitoring results related to salt constituents;

d. Analysis of potential impacts of salt loading on the groundwater basin;

e. A summary of existing salt reduction measures; and,

f. Recommendations and time schedules for implementation of any additional salt reduction measures.

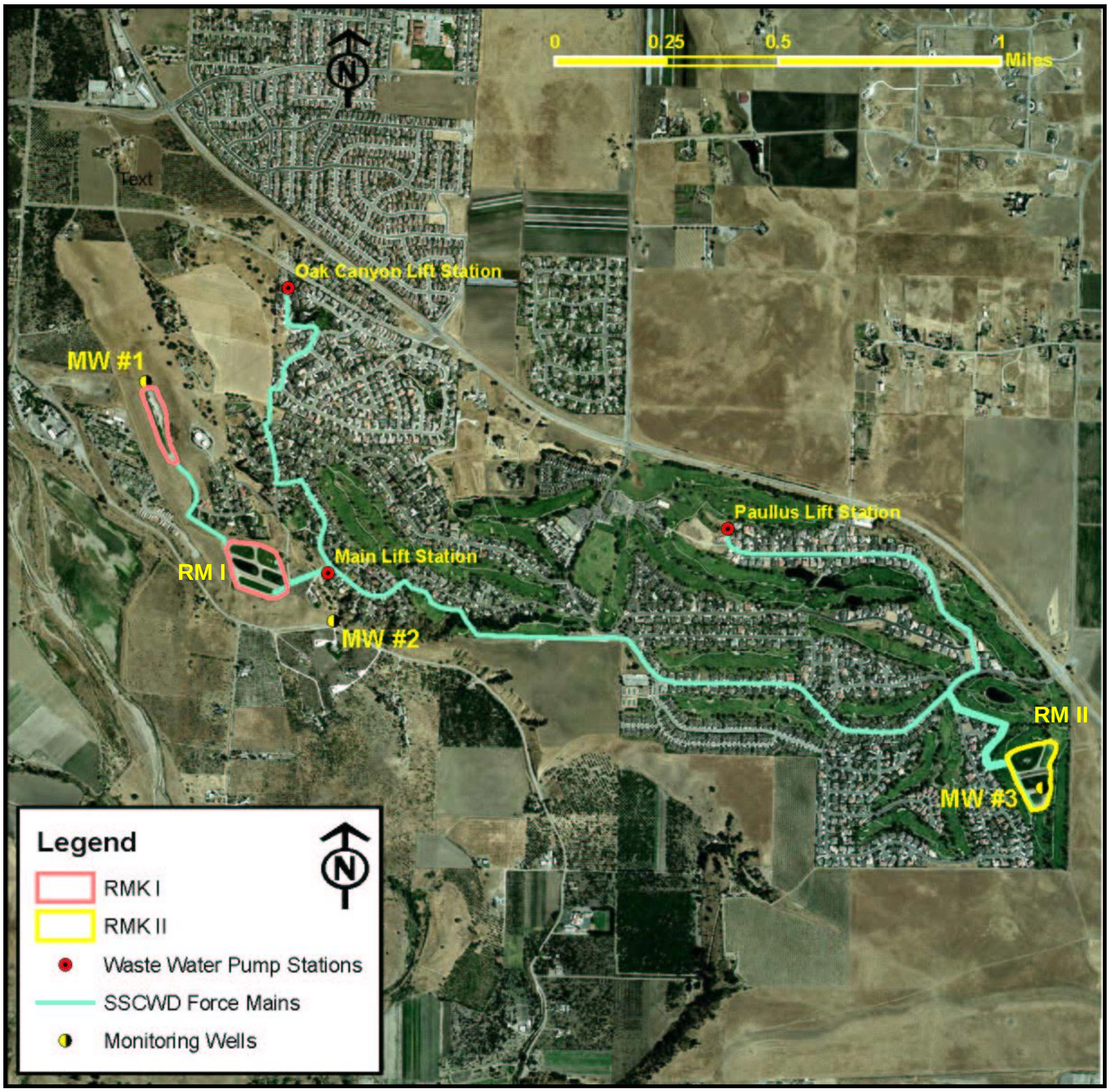
The TM is organized as follows:

1 Background

The Sunnyslope County Water District (SSCWD) in Hollister, California, operates one wastewater treatment plant (WWTP) (See Figure 1-1) that serve the residences and a few commercial businesses near the Ridgemark Golf Course. The facility is known as Ridgemark I WWTP (RM I). In prior years SSCWD operated a second facility known as Ridgemark II WWTP (RM II). The RM II facility was decommissioned in the third quarter of 2013 after completion of the new wastewater treatment facilities at RM I and was not in use in 2014 or following years.

Wastewater effluent from these WWTP contains high salinity levels. Salinity concentrations in the potable water supply for the service area are already relatively high and are increased through normal municipal use. Salinity is further increased by the widespread use of residential water softeners in the service area which are used to reduce hardness. Salt buildup in the groundwater basin is a concern and salinity management measures are necessary to preserve the long-term beneficial use of groundwater.

Figure 1-1: Ridgemark WWTP and Facilities



The new WDR permit, adopted in December 2004, includes a phased regulatory schedule to meet salinity water quality regulations. Beginning in January 2008, TDS, sodium, and chloride concentrations in the WWTP effluent were subject to WDR limits shown in Table 1-1. Stricter limits were phased in two years later to achieve the final concentration limits by January 30, 2010.

Table 1-1: Salinity Waste Discharge Requirements in 2008 and 2010

	30-Day Average Limitations (mg/L)		
Effective Date	Interim	January 30, 2008	January 30, 2010
TDS	No Limit	1,500	1,200
Sodium	No Limit	300	200
Chloride	No Limit	300	200

The 2017 average influent and effluent wastewater quality (See Table 1-2) meets the TDS limit but exceeds the January 2010 sodium and chloride limits. Therefore, salinity management measures will need to be implemented to meet WDR limits. This report will summarize the salt sources contributing to salinity in the wastewater effluent and will present salt management and reduction measures to address high salinity concentrations.

Table 1-2: Existing 2017 Average Wastewater Quality

Parameter	RM I SBR Influent	RM I SBR Effluent
TDS (mg/L)	860	792
Sodium (mg/L)	229	228
Chloride (mg/L)	326	325

Notes:

1) Data consists of 12 monthly sampling events from January 2017 through December 2017.

2 Salinity

The effluent from RM I has high concentrations of TDS, sodium, and chloride relative to the local potable water supply. This section highlights the sources of these salt constituents and summarizes the results of a mass balance analysis that was performed on the system.

2.1 Sources of Salt

High effluent salinity concentrations stem from three factors including 1) concentrations of salinity in the potable supply, 2) normal municipal and industrial (M&I) contributions, and 3) operation of residential water softeners. Finally, effluent salinity concentrations are increased further by evaporation that occurs in the WWTP percolation ponds during warm weather periods. Evaporation does not increase salt load in the wastewater effluent in the percolation ponds. The contributions of each of these sources to concentrations observed in RM I effluent are documented below.

2.1.1 Water Supply

Groundwater from wells and surface water from the Lessalt surface water treatment plant is the source of potable water supply for the sanitary sewer service area served by RM I. Groundwater contains relatively high concentrations of salts and hardness, while treated surface water has lower concentrations of salts and hardness as shown in Table 2.1. Since Treated wastewater ultimately percolates to the basin, the groundwater salinity mass load pass through the water and wastewater systems and returns to the basin.

Table 2-1: Existing 2017 Potable Water Quality

Constituent	Groundwater Concentration (mg/L)	Lessalt Surface Water Concentration (mg/L)
TDS	780	235
Total Hardness, $CaCO_3$	406	128
Sodium	130	52
Chloride	130	80

Source: SSCWD 2017 Well 5 Water Quality Data for Groundwater & 2017 LESSALT WTP for Surface Water

2.1.2 Municipal Use and Water Softeners

A large amount of salt is added through customer use. Normal municipal use can add from 150-300 mg/l of TDS. Additionally, because of the high hardness of the groundwater supply, there is widespread utilization of residential water softeners, which act as a significant source of salt. Water softeners remove the calcium and magnesium ions that are responsible for hardness. The water softener resin must be regenerated periodically through washing with a concentrate brine solution of sodium chloride or potassium chloride. This brine water is sent to the sewer system during regeneration cycles and adds a significant amount of salinity to the wastewater stream. Estimates of the amount of salinity added by water softener use can vary based on the hardness of the water, water use, the extent of water softener use in the area, and the type and efficiency of the water softeners that are used. Water softener operational settings can also impact the regeneration frequency and result in higher salt loads to the WWTP.

In 2017, the total TDS contribution from municipal use was approximately 594 mg/l based on the difference between source water quality data (264 mg/l from calculated Proportional Flow) and the influent water quality entering the WWTP (860 mg/l). To determine an estimate for the water softener component, an analysis was performed using assumed values for the parameters listed in Table 2-2.

Table 2-2: Assumptions in the Water Softener Analysis

Parameter	Value
Potable Water Hardness	146 mg/l as $CaCO_3$
Assumed Average Water Softener Efficiency of SSCWD Area	2066 grains hardness removed per lb of salt
% of households using water softeners [a]	77%
% of households using NaCl water softeners	65%
% of household using KCl water softeners	8%
% of households using off site regeneration	4%
Household Indoor Use [b]	127 gpd

Footnotes:

a) Based on previous Annual Salt Management Report estimates and number of water softener rebates granted.

b) Based upon average 2017 wastewater flows of 155,854 gallons per day divided by 1230 accounts = 127 gallons per day per account

Potable water hardness was based on the *SSCWD 2016 Annual Drinking Water Quality Report*. Average water softener efficiency was estimated based on an assumed distribution of water softener types and settings throughout the service area. Older water softeners are typically timer-based which means that they regenerate periodically regardless of the actual water use. Timer-based softeners can have efficiencies as low as 1,500 grains of hardness removed per pound of salt (1 grain = 17.1 mg/l hardness).

Demand Initiated Regeneration (DIR) softeners are tied to actual water use and have efficiencies ranging from 2,000-3,350 grains of hardness removed per pound of salt.

Based on the analysis, the estimated contribution to TDS from water softeners for the RM I service area is approximately 364 mg/l for 2017. Table 2-3 reflects the relative contributions of sodium and chloride to the overall TDS addition with the proportional groundwater and surface water supply, while Table 2-4 summarizes the relative contributions of sodium and chloride to the overall TDS addition using a 100% surface water supply.

Table 2-3 and 2-4 show a comparison between actual TDS concentrations for 2017 and the minimum achievable TDS from a 100% surface water supply and no water softeners. Table 2-3 shows the estimated constituent values based on the water softener analysis. TDS, sodium, and chloride addition through normal M&I use is estimated to be 232 mg/L, 43 mg/L, and 29 mg/L respectively to resolve the salt balance. Adding these estimates to the initial concentrations, a reasonable agreement with actual influent concentrations at the WWTPs is achieved.

Table 2-3: Estimated Municipal Use Contributions for Salt Constituents and Comparison to Actual WWTP Influent When Using Groundwater as the Potable Water Supply

Parameter	Potable Water Concentrations (1) Footnote (a)	Est. Water Softener Contribution (2) Footnote (d)	Est. Normal M&I Use Contribution (3) Footnote (b)	Est. Wastewater Concentrations (1)+(2)+(3)	Actual 2017 RM I Average Influent Footnote (c]
TDS (mg/L)	264	364	232	860	860
Sodium (mg/L)	56	130	43	229	229
Chloride (mg/L)	82	215	29	326	326

Notes:

a) Potable water quality data based on SSCWD biannual monitoring in 2017 of Well5 and Lessalt WTP.
b) Sodium and chloride addition from normal M&I use was estimated to be 43 mg/L and 29 mg/L respectively for Ridgemark I wastewater distribution area and TDS addition from normal M&I use was estimated to be 232 mg/L to resolve the salt balance. These are within the normal M&I use.
c) Actual 2017 WWTP weighted average influent quality based upon RM I influent.
d) Water softener contribution based upon assumptions in Table 2-2.

Table 2-4 shows projected sodium, chloride, and TDS values using a 100% surface water supply, and 0% water softeners. Table 2-4 shows the theoretical best wastewater effluent if 100% surface water is used and 100% of all customers eliminate the use of all water softeners. It is more than likely that it will take time for an exerted education campaign to have all customers discontinue the use of brine discharging water softeners. However, by using a substantial surface water supply, combined with the significant reduction in the use of brine discharging water softeners has drastically improved wastewater effluent salinity to be in compliance for TDS. These continued efforts should also result in eventual compliance with the RWQCB requirements for sodium and chloride.

Table 2-4: Estimated Municipal Use Contributions for Salt Constituents and Comparison to Actual WWTP Influent When Using Lessalt Surface Water as the Potable Water Supply

Parameter	Potable Water Concentrations (1) Footnote (a)	Est. Water Softener Contribution Using Surface Water (2) Footnote (d)	Est. Normal M&I Use Contribution (3) Footnote (b)	Est. Wastewater Concentrations Using Surface Water (1)+(2)+(3)	Actual 2017 RM I Average Influent Footnote (c]
TDS (mg/L)	235	0	232	467	860
Sodium (mg/L)	52	0	43	95	229
Chloride (mg/L)	80	0	29	109	326

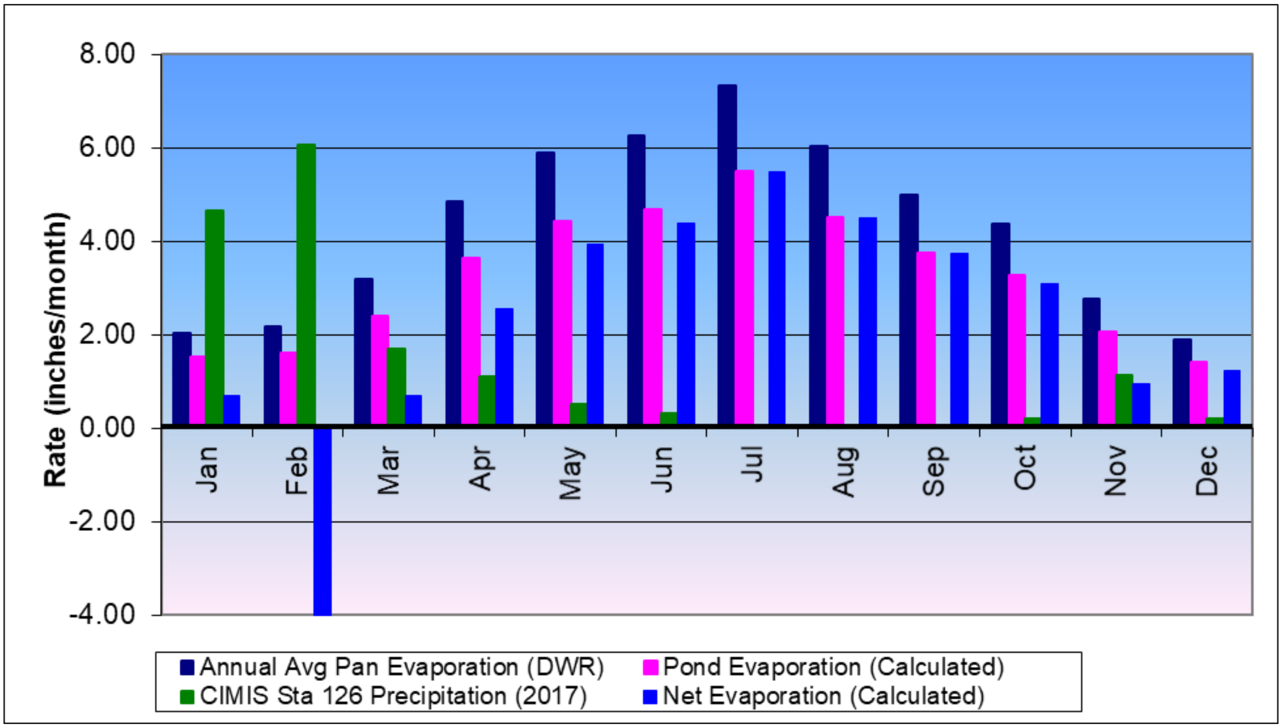
Notes:

a) Potable water quality data based on SSCWD annual monitoring in 2017 of LESSALT WTP.
b) Sodium and chloride addition from normal M&I use was estimated to be 43 mg/L and 29 mg/L respectively for Ridgemark I wastewater distribution area and TDS addition from normal M&I use was estimated to be 232 mg/L to resolve the salt balance. These are within the normal M&I use.
c) Actual 2017 WWTP weighted average influent quality based upon RM I influent.
d) Water softener contribution based upon 0% of households using softeners.

2.1.3 Evaporation Effects through Wastewater Treatment

Evaporation is a process that increases salt concentrations of the wastewater effluent but it does not impact the salt load. The wastewater disposal system for RM I is a series of ponds that are open to the atmosphere allowing evaporation to occur and raising salinity levels through a concentrating effect. The effect of evaporation is dependent on climate. Historic pan evaporation rates, estimated pond evaporation rates, precipitation rates, and net evaporation are shown in Figure 2-1. Pond evaporation is assumed at 75% if the pan evaporation rates.

Figure 2-1: Evaporation and Precipitation Data



Sources: Pan Evaporation Data from DWR Bulletin 73-79 for the Hollister Costa Station 1962-1966
2017 Precipitation Data from CIMIS Station #126 at SBCWD Office in Hollister, CA

Table 2-3 summarizes the monthly TDS concentrations for the influent to and effluent from the wastewater treatment plant at RM I. Correlating influent and effluent TDS concentrations measured for a given month does not provide a meaningful comparison due to the variations in influent wastewater TDS and the hydraulic detention times of the treatment ponds.

Historically, evaporation was mistakenly thought to be a major contributor to the high salinity concentrations of the wastewater effluent. Since February 2005, RM I influent TDS has been measured using a composite sampler. TDS was generally measured in 880 to 1,100 mg/l range for 2017. The variation in historic influent TDS levels compared to 2017 measurements by composite sampling is representative of the understanding that water softener regeneration occurs at night (grab samples during the day did not capture water softener discharges).

The 2017 influent and effluent TDS data in Table 2-3 shows that with the new treatment plant, evaporation is not a contributor to the effluent TDS. From an annual perspective, net evaporation from the percolation ponds was estimated to be 4.31 AF at RM I (*2015 Annual Engineering Technical Report*). The 2017 influent flow was 174 AF to RM I. Thus, the net evaporation is approximately 2.5% of total influent flow. The 2017 average influent TDS was 860 mg/liter, as shown in Table 2-3, for a final disposal salinity of approximately 792 mg/liter. This is a 68 mg/liter decrease of from the Ridgemark influent to the pond disposal effluent, whereas if evaporation played a significant role the TDS concentration should increase.

Table 2-3: 2017 Average Influent and Effluent TDS Concentrations

Month	RM I SBR Influent TDS (mg/L)	RM I SBR Effluent TDS (mg/L)
Jan-17	900	880
Feb-17	780	790
Mar-17	790	720
Apr-17	860	780
May-17	920	780
Jun-17	970	850
Jul-17	910	840
Aug-17	940	780
Sep-17	850	780
Oct-17	720	770
Nov-17	800	780
Dec-17	880	760
Average	**860**	**793**

2.1.4 Summary of Salinity Contributions to RM I Final Effluent

TDS concentrations are high in the potable ground water supply for the service area at approximately 780 mg/l. Lessalt Surface water TDS concentration is approximately 235 mg/l. The 2017 influent flow was 5.3% groundwater and 94.7% surface water. As this water is utilized in the service area, salinity concentrations increase through normal use and through the regeneration of water softeners. After use, the water is discharged to the sewer collection system. Influent wastewater to RM I has TDS concentrations between 720-970 mg/l. Evaporation is a relatively small element of the salinity concentration issue and is out weighted by other treatment processes which reduce salinity concentration. It also does not increase salt mass load percolated into the basin.

2.2 Salt Mass Balance

Salt concentrations from Table 1-2 in conjunction with 2017 average flows from RM I (5.3% groundwater and 94.75% surface water) were used to estimate salinity mass loads. The existing groundwater salinity contributes to a baseline salt load in the wastewater effluent of about 10 tons per year which represents salt that passes through from potable water extraction, use and percolation. Approximately 53 tons of salt were added to the basin as a result of the surface water salinity. In 2017, assumed typical M&I use added 55 tons of salt to the basin, while water softeners, added an additional 86 tons of salt to the basin. Through the wastewater treatment process, 16 tons of salt were removed between the influent and effluent water, and thus not percolated into the basin. The total salt added to the basin from groundwater salinity, surface water salinity, municipal and industrial use, and water softeners is 188 tons of salt in 2017. Evaporation at the treatment ponds did not show an increase to the final TDS concentration and does not increase the mass salt load to the basin.

Table 2-4: 2017 Annual Salt Mass Loads

	RM I
Annual Average Influent Flow Total (gpd)	155,854
Average Effluent TDS Concentration (mg/L)	792.5
Total Annual Salt to Disposal Ponds (tons)	188
Annual Salt from Potable Groundwater [a] (tons)	10
Annual Salt Load from Surface Water (tons)	53
Annual Salt Load from Normal M&I Use (tons)	55
Annual Salt Load from Water Softeners (tons)	86
Annual Salt Load Removed by Treatment (tons)	-16

Footnotes:

a) Salt associated with the groundwater supply is a pass through. Salt in groundwater is returned to groundwater basin.

Notes:

1) Mass Load = Daily Flow * TDS Concentration * (days/year) * (L/gal) * (ton/mg)
2) 365 days/year, 3.79 L/gal, 1.102 x 10^{-9} ton/mg
3) Groundwater Daily Flow = 155,854gpd * 0.053 as groundwater was only 5.3% of total supply water. Groundwater TDS Concentration = 780mg/L based on biannual testing at Well #5
4) Surface Water Daily Flow = 155,854gpd * 0.947 as surface water was 94.7% of total supply water. Surface water TDS Concentration = 235mg/L based on biannual testing at Lessalt WTP.
5) Normal M&I Use TDS Concentration = 232mg/L based on Water Softener Analysis assumptions and salt balance.
6) Water Softener TDS Concentration = 364mg/L based on Water Softener Analysis.
7) Salt Removed by Treatment TDS Concentration = 792.5mg/L effluent concentration – 860mg/L influent concentration. This results in a negative annual salt load reflecting that this amount of salt is removed by the treatment process.

2.3 Groundwater Impacts

SSCWD has six monitoring wells located around the disposal ponds to monitor groundwater conditions. Details on groundwater monitoring well installation and evaluation of groundwater conditions are described in the *Groundwater Monitoring Well Installation Report* by Todd Engineers. A summary of the data collected from these wells in 2017 is included in Table 2-5. Groundwater wells 1, 3, 4, and 5 were dry and were not able to be sampled. Monitoring wells 2 and 6 appear to be monitoring mostly background groundwater.

Table 2-5: 2017 Wastewater Monitoring Well (MW) Average Water Quality

	MW 1 (Pond 6)	MW 2 (RM I)	MW 3 (RM II)	MW 4 (Pond 6)	MW 5 (RM I)	MW 6 (RM II)
TDS (mg/L)	ND	703	ND	ND	ND	1300
Chloride (mg/L)	ND	113	ND	ND	ND	545
Sodium (mg/L)	ND	85	ND	ND	ND	223
pH	ND	7.23	ND	ND	ND	7.55
Total Nitrogen (mg/L)	ND	2.5	ND	ND	ND	2.9
Notes	Dry for all 4 sampling rounds	-	Dry for all 4 sampling rounds	Dry for all 4 sampling rounds	Dry for all 4 sampling rounds	-

Notes: Average for 2017 quarterly data.

3 Salinity Reduction Measures

SSCWD is involved in a variety of programs and evaluations to reduce salt loading to the groundwater basin. These programs include water softening education activities, a water softening rebate program, and implementation of additional water supply alternatives such as groundwater desalination or increased Central Valley Project (CVP) water treatment. Additionally, there are many regional efforts being conducted by the SSCWD, SBCWD, City of Hollister, and San Benito County that have a goal of reducing salinity throughout the entire groundwater basin. These cooperative efforts are critical towards developing efficient salt management solutions for all water purveyors and users in the region.

3.1 Water Softeners

A major component of SSCWD's program is to reduce the amount of salts added through the use of water softeners in its service area. Sunnyslope, San Benito County Water District, and the City of Hollister have cooperated, through the Water Resources Association, to develop programs to enhance customer knowledge, and change customer behavior regarding water softeners. The program consists of a water softener rebate program, an education program, and local ordinances banning the installation or replacement of all salt discharging water softeners.

<u>Water Softener Rebate Program</u>

Residential customers of SSCWD can participate in a water softener rebate program that is administered by the Water Resources Association of San Benito County (WRA). This program was modified in 2014 to provide rebates for replacing a water softener that discharges to the sewer system with one that requires a replaceable cartridge that utilizes offsite regeneration. The program offers a $250 rebate for replacement of self-regenerating water softeners with offsite regeneration water softeners and requires a minimum one year contract with an offsite regeneration service. Customers who demolished their water softeners entirely were given a $300 rebate. There were 51 SSCWD sewer customers who participated in the water softener rebate program in 2017 and at least 186 water softeners have been removed from the SSCWD sewer service area through the program since the Lessalt Upgrade in December 2014. It is currently unknown how many SSCWD customers have replaced their water softeners to replaceable cartridge systems or have quit using their water softeners completely without applying for the rebates offered.

Water Softener Education Programs

SSCWD is conducting an educational campaign to inform its customers on the impact of water softeners on water quality through website posts, distributing door hanger, and in the annual Drinking Water Quality Report. Educational literature also provides information on how to operate and adjust water softeners to minimize salt loading. The WRA also promotes public education, distributes informational literature, and take surveys on water softener use at local events such as the San Benito County Fair.

Water Softener Requirements

In 2015 SSCWD adopted a new District Code that prohibits the installation or replacement of salt discharging water softeners by wastewater customers.

Water Softener Ordinance

The Regional Water Quality Control Board recently took action to allow Sunnyslope County Water District and other local agencies to restrict the salinity discharge to the wastewater system from brine discharging water softeners. In February, 2015, SSCWD adopted a new District Code prohibiting the replacement of salt discharging water softeners or the installation of new salt discharging water softeners and participates in a coordinated program with the City of Hollister and San Benito County Water District to limit the salinity discharge from water softeners. This water softener program is being coordinated with the introduction of higher quality potable water to water/wastewater customers both within the City of Hollister and SSCWD sewer service areas.

3.2 LESSALT Water Treatment Plant & West Hills Water Treatment Plant

SSCWD, in a joint effort with the City of Hollister, and San Bento County Water District treats and delivers Central Valley Project (CVP) water from the San Felipe Project to customers to lower the hardness in the potable drinking water. CVP water has lower salinity levels than local groundwater and has considerably lower hardness as shown in Table 3-1. The higher quality supply reduces the need for water softening, which results in a reduction of salt to the groundwater basin. Historically, less than one third of SSCWD's customers received an intermittent supply of CVP water and none of the customers in the area served by RM I receive this treated surface water.

Table 3-1: LESSALT WTP vs. Groundwater Water Quality

	Average TDS (mg/l)	Sodium (mg/L)	Chloride (mg/L)	Average Hardness, $CaCO_3$ (mg/l)
Surface Water Quality	235	52	79	132
Groundwater Quality	780	130	130	405

As part of the Hollister Urban Area Coordinated Water Supply and Treatment Plan, the Lessalt Water Treatment Plant has been upgraded and went into operation in December, 2014. This upgrade included a pump station and associated pipeline from the Lessalt WTP to the Ridgemark area and is now supplying SSCWD's Ridgemark area and wastewater customers with approximately 95% surface water. As part of the Hollister Urban Area Coordinated Water Supply and Treatment Plan, a second treatment plant called the West Hills Water Treatment Plant has been constructed with a capacity of 4.5 million gallons per day. The West Hills Water Treatment Plant began operation in the September of 2017. The combination of these two surface water treatment plants will increase the delivery of high quality drinking water to

SSCWD and City of Hollister water customers and will result in reduced chlorides and sodium being discharged from the two agencies' wastewater treatment plants.

In the spring of 2015 Sunnyslope began an extensive education and outreach program for all the residents of Ridgemark area to diminish the salinity discharge from water softeners. SSCWD has continued these efforts in 2017 to significant affect. The reduction and/or elimination of the water softeners has resulted in significantly reduced salinity in the wastewater discharge levels. The District is now in compliance with TDS and has reduced sodium and chloride levels by 11.3% and 13.1% respectively compared to 2016. Moreover, the District has achieved a 51.0% reduction in TDS, a 43.8% reduction in Sodium, and a 44.1% reduction Chlorides over the three years since the Lessalt WTP Upgrade in December 2014. Sunnyslope County Water District will continue to make significant reductions in sodium, chloride and TDS concentrations in 2018 and expects to be in compliance with regulatory limits in 2019.

3.3 Groundwater Desalination & Lime Softening

Groundwater treatment is a potential salt management solution in the distant future after 2024. Sunnyslope may pursue groundwater treatment to lower both hardness and salinity depending on water demands and the costs of expanding surface water use. Groundwater treatment is appealing from a long-term point of view as salt can be removed permanently from the San Benito County groundwater basin.

3.4 Hollister Urban Area Water and Wastewater Master Plan

In 2004, the City of Hollister, SBCWD, and San Benito County signed a Memorandum of Understanding (MOU) to develop the Hollister Urban Area Water and Wastewater Master Plan (HUAWWMP). In December 2007 the Board of SSCWD formally adopted the MOU Amendment, and formally joined the Governance Committee in 2009. The HUAWWMP ensures that stringent standards for wastewater management will be maintained to protect groundwater resources in the basin. The HUAWWMP study encompasses the SSCWD service area and developed a comprehensive plan for water supply and wastewater treatment and disposal for the Hollister urban area. An update on HUAWWMP was completed in January 2010 with the publication of the implementation plan. The HUAWWMP master plan identifies programs and projects to achieve the stated objectives of having drinking water with less than 500 mg/l TDS and between 120 to 150 mg/l hardness. Targeted recycled water objectives would provide a reclaimed water supply with less than 500 mg/l TDS with a maximum of 700 TDS if such water quality objectives can be achieved at a reasonable cost. The development of the HUAWWMP commenced in November 2005 and is ongoing. In January 2010, the Hollister Urban Area Coordinated Water Supply and Treatment Plan were completed. In January 2012 the Programmatic EIR for the entire Hollister Urban Area Coordinated Water Supply and Treatment Plan was certified. The Hollister Urban Area Coordinated Water Supply and Treatment Plan was accepted by SSCWD, the City of Hollister, San Benito County Water District, and San Benito County. An update to the HUAWWMP was presented and accepted by these agencies in 2017.

Sunnyslope County Water District, the City of Hollister, and San Benito County Water District have executed a Water Supply and Treatment Agreement to implement the Hollister Urban Area Water and Wastewater Master Plan and Coordinated Water Supply and Treatment Plan. The three major water supply and treatment components for the Coordinated Water Supply and Treatment Plan are to upgrade the Lessalt Surface Water Treatment Plant to 2.5 mgd, construct of a new 4.5 mgd West Hills Surface Water Treatment Plant, and build a North (San Benito) County Groundwater Bank to supply these two surface water treatment plants in time of drought.

The City of Hollister and Sunnyslope County Water District have both adopted increases in water rates to fund the water supply projects identified in the Water Supply and Treatment Agreement and the projects are underway.

In September 2013, San Benito County Water District executed a contract for the construction of the upgrade to Lessalt Surface Water Treatment Plant. The Lessalt Water Treatment Plant is now complete and was put into service in December, 2014 including a pipeline and pump station to deliver treated surface water to the SSCWD wastewater customers. The construction of the West Hills Water Treatment Plant was completed in September of 2017 and is now in operation, delivering treated water primarily to the City of Hollister.

3.5 Water Resources Association Groundwater Management Plan

WRA has developed a comprehensive Groundwater Management Plan (GMP) Update that addresses a number of groundwater quality and quantity issues. The GMP Update integrates salinity management into the broader basin plan and identifies a number of recommended programs for addressing salinity on a region wide basis. These programs are summarized in Table 3-2.

Table 3-2: Salinity Management Programs in the Groundwater Management Plan

Program	Description
Salinity Education Program	Salinity education of both agricultural and M&I users.
Water Softener Ordinance	Public education on the impact of water softeners, retrofit ordinance and water softener conversion rebate programs.
Industrial Salt Control	Cooperative reduction efforts with food processors and other industrial dischargers whose operations contribute elevated salt levels
Surface Water Importation and Treatment	Construction of surface water treatment delivery and storage facilities to supply a total of 6 to 9 mgd in a phased program.
Groundwater Treatment and Concentrate Disposal	Construction of demineralization facilities could reduce salt loads up to 2,270 tons per year for the basin. Concentrate disposal options are considered

SSCWD, SBCWD, City of Hollister, and San Benito County are continuing to work toward implementation of these programs and projects. In 2010, the HUAWWMP described in Section 3.4 further evaluated reclaimed wastewater and interim locations for utilizing reclaimed wastewater from the City of Hollister's expanded wastewater treatment plant. A field demonstration project to utilize recycled wastewater on a variety of projects was performed in 2010. The field demonstration project was very successful. SBCWD has constructed a recycled water pipeline that delivers treated wastewater from the City of Hollister's wastewater treatment plant to farmers north of the City of Hollister. Additional recycled water projects are being contemplated and planned in future years.

The WRA also initiated development of a water softener ordinance that has been adopted by the City of Hollister and SSCWD. In 2012 the Regional Water Quality Control Board granted SSCWD and other local agencies the authority to regulate salinity discharge into its sewerage system. Continued implementation of these salinity control efforts is envisioned in 2017 and beyond.

3.6 Summary of Salt Reduction Options

The salt reduction options available to SSCWD include education programs, water softener ordinances and rebates, and potable water supply improvements. Currently, the most immediate method to reduce wastewater salinity is to promote the reduction and/or elimination of use of water softeners in the RM I service area. Elimination of all water softener use or replacement of all brine discharging water softeners with cartridge type softeners, which use off-site softener regeneration services, has the potential of removing 300-400 mg/L TDS.

As discussed in Section 3.4, The Lessalt Water Treatment Plant is now complete and was put into service in December, 2014 including a pipeline and pump station to deliver treated surface water to the Sunnyslope wastewater customers. This project eliminates the need for water softeners which discharge salinity into the SSCWD wastewater system. In 2017 the West Hills Water Treatment Plant was also completed, which increases the surface water delivered to the Hollister Urban Area further reducing the need for water softeners in the City of Hollister and Sunnyslope County Water District's service areas. In conjunction with the additional surface water treatment facilities, an expanded education program will be continue in order to convince Ridgemark customers to reduce and/or eliminate the use of salt discharging water softeners.

4 Next Steps

Sunnyslope County Water District intends to begin meeting the requirements for sodium and chloride in 2019 by continuing to educate its wastewater customers about the improved water quality and reducing and or eliminating the use of brine discharging water softener use. Beginning in early 2015 and continuing throughout 2017, SSCWD conducted targeted effort to inform its wastewater customers of the improved water quality they began receiving in December, 2014 and to convince customers to bypass or quit adding salt to their water softeners. Additional efforts to encourage and offer rebates for the permanent removal of softeners or replacement with cartridge type softeners that are regenerated off site also continued, successfully reducing wastewater TDS, sodium, and chloride concentrations. This emphasis on these salt reduction programs will continue in 2018 and is expected to bring wastewater effluent salinity into regulatory compliance in 2019.

SSCWD intends to continue efforts in partnership with the City of Hollister and San Benito County Water District to increase the use of surface water to reduce the need for salt discharging water softeners and to increase public outreach efforts to educate customers and reduce and/or eliminate the use of water softeners in the Hollister Urban Area.

References

Bookman-Edmonston Engineering, Inc. *Salinity Management Study.* Metropolitan Water District/United States Bureau of Reclamation. June 1999.

Bracewell Engineering, Inc. *Technological and Economic Feasibility Study of Alternatives to Limiting of Prohibiting Water Softeners per Section 116786 of the Health and Safety Code.* November 2006.

City of Hollister, San Benito County, and San Benito County Water District. *Memorandum of Understanding Hollister Urban Water and Wastewater Management Plan.* December 2004.

HDR and RMC Water and Environment. November 2009 & January 2010. *Hollister Urban Area Master Plan Implementation Program.* HUAWWMP Governance Committee. January 2010

Kennedy Jenks. *Groundwater Softening – Demineralization Feasibility Study*. Sunnyslope County Water District. 2003.

Kennedy Jenks. *Groundwater Management Plan Update for the San Benito County Portion of the Gilroy-Hollister Groundwater Basin.* Water Resources Association of San Benito County. 2004.

RMC Water and Environment. *Long-Term Wastewater Management Plan*. SSCWD. January 2006.

RMC Water and Environment. *2006 Annual Engineering Technical Report*. SSCWD. January 2007.

Sunnyslope County Water District. *2005 Annual Drinking Water Quality Report*. 2005.

Todd Engineers. *Groundwater Monitoring Well Installation Report.* SSCWD. January 2006.

Yates, Gus. *Annual Groundwater Report for Water Year 2004*. San Benito County Water District. 2004.

S:\A D M I N & E N G\RWQCB Annual Reports\Jan 2018 Annual Report\2017 SSCWD Salt Management Report JAN 2018.doc