

RATE STUDY

SOPRIS VILLAGE HOMEOWNERS ASSOCIATION



September 16, 2016

Prepared by



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RATE STUDY

SOPRIS VILLAGE HOMEOWNERS ASSOCIATION

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SGM Project 2016-133.001

1.0 Introduction

The purpose of this report is to assess current Homeowners’ Association (HOA) service rates for the Sopris Village Homeowners’ Association (Sopris Village or HOA). This report includes a summary of current expenses and sources of revenue associated with Sopris Village HOA operations. SGM recommends rate increases to allow Sopris Village to fund capital improvement projects and replacement of infrastructure. The 2016 Capital Reserve Study (updated August 2016) recommended the HOA have \$ 2.96 million in capital reserve by 2027.

SGM presents four funding scenarios. Each presents a different structure of rate increases. SGM recommends that Sopris Village use the four scenarios presented to choose a 2027 target for its capital reserve account and raise rates accordingly. These scenarios are discussed further in the **Recommendations Section** of this report.

2.0 Summary of Results

If the HOA does not adjust rates, it will not be able to fund infrastructure replacement and improvement projects in the future without borrowing money.

Table 2-1 below summarizes the four scenarios. All scenarios eliminate the \$125 annual HOA dues assessment, and include a one-time HOA service rate increase in 2017 of some amount (shown in **Table 2-1**) to fund near term capital improvement projects. All scenarios raise HOA service rates to meet a minimum of 50% of the total \$2.96 M needed by 2027 (\$1.48 M), while maintaining a minimum service rate increase of 5% annually.

Table 2-1: Summary of Four Scenarios

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
2027 Saving Target (% of total \$2.96 M needed)		50%	50%	50%	58%
2027 Capital Reserve Balance (\$ million)		\$ 1.48M	\$ 1.48 M	\$ 1.48 M	\$ 1.71 M
Increase for Monthly HOA Service Rates (% per year, after 2017)		11.5 %	9.4 %	6.8 %	5.0 %
Monthly HOA Service Rates (per household)	2016	\$ 100	\$ 100	\$ 100	\$ 100
	2017 (one time increase)	\$ 125	\$ 140	\$ 150	\$ 175
	2027	\$ 373	\$ 345	\$ 288	\$ 285
Annual HOA dues		Eliminate Annual HOA dues			

3.0 Background

Sopris Village is made up of 130 households, which together own a public water system which is regulated by the Colorado Department of Public Health and Environment (CDPHE) and managed by the HOA.

Sopris Village owns and maintains a water system that consists of wells, waterlines and a storage tank. In addition to the water system, the HOA manages the trash service and maintains the park at the entrance to the subdivision. The HOA would like charge the 130 homeowners adequate rates to cover operation costs and fund reserves to replace infrastructure in the future.

This analysis is a follow-up to the Capital Reserve Study completed in June 2016 and updated in August 2016 (included as an attachment to this report). The Capital Reserve Study recommended that the HOA have \$2.96 million in capital reserve by the year 2027. This is the 2027 future cost to replace all of Sopris Village's infrastructure except for the wells and tank projects. SGM recommended this option because the tank and wells have both been serviced recently, are in good shape, and can be replaced at a later date. The study also provided a replacement schedule with costs for Sopris Village's water infrastructure.

Based on our discussions with the HOA, SGM assumed that the reserve account can earn 1% interest, compounded annually.

4.0 Capital Reserve Study Update

The August 2016 update to the June 2016 Capital Reserve Study includes revised cost estimates for replacement of the following existing infrastructure:

- Cost to replace fire hydrants

It also includes two new capital improvement projects:

1. **Chlorine line:** The as-built drawings of the line between the well and the tank indicate that there is inadequate chlorine contact time. This means that at times customers can receive water that is not adequately treated. A chlorine contact line would add pipeline length from the well (likely under the park) in order to allow for enough chlorine contact time to treat the water before reaching customers. SGM recommends completing this project ASAP to be in compliance the CDPHE regulations on the water system and for potential health risks.
2. **Second well:** Sopris Village currently relies on one well, Well No. 1. The second well is not used because of poor water quality. It is safe to predict that Well No. 2 will need to be rehabilitated or replaced in the future to provide redundancy in the event of a pump failure at Well No. 1. SGM recommends abandoning the second well and drilling an additional well. Costs in the Capital Reserve Study include legal fees associated with moving the water right for the abandoned well, and adding an alternate point of diversion for the functional well.

The updated Capital Reserve Study report is provided as **Appendix A**.

5.0 Expenses

Expense and revenue calculations were based on the 2016 budget, provided by Sopris Village. That data is provided as **Appendix B**, including an itemized list of budgeted and actual expenses from January through May of 2016.

These budgeted expenses include loans and long-term purchases, administrative and operations and maintenance costs, and capital projects. A summary of those expenses is provided in **Table 5-1** below.

Projected future expenses were increased by 3% per year to account for inflation, as per the 2016 consumer price index (CPI). The CPI for Western Colorado averages 3%¹.

Table 5-1: 2016 Budgeted Expenses

Expenses	\$ Annually	\$ Monthly
Operating Costs		
Supplies, Office Supplies, Postage, Miscellaneous, Licenses and Permits, Insurance, Bank Service Charges	\$ 7,182	\$ 599
Services		
Trash Service, Mid Valley Metro District Sewer Fees	\$ 81,059	\$ 6,755
Professional		
Capital Improvement Study, Web Site Development, Tax Return Preparation, Property Manager , Legal Fees, Office Contract, Audit	\$ 42,854	\$ 3,571
Park		
Thistle Control, Park Maintenance/Irrigation, Park Contract, Park Improvement Expense	\$ 10,049	\$ 837
Repairs & Maintenance		
Misc. R&M, Pump House #2 Repairs, Wireless Transmitter	\$ 9,972	\$ 831
Water		
Robinson Ditch Assess, Telephone Line, Utilities, Monitor Well, Back Up Pump, Wells#2 Online, Water Tank Repairs, Water MtclRepairs, Water Management, Lab Tests	\$ 28,864	\$ 2,405
TOTAL EXPENSES	\$ 179,981	\$ 14,998

¹ Unites States Department of Labor, Consumer Price Index: average 2001-2010, CWUR0300SA0

6.0 Revenues

Revenue calculations were based on the 2016 budget, provided by Sopris Village. **Appendix B** shows itemized budgeted and actual revenues from January through May of 2016. **Table 6-1** shows budgeted revenues included in the analysis. These revenues are primarily monthly water and sewer service fees and annual HOA dues assessments. Other revenues such as violations and late fees are not budgeted because they are unpredictable and should not be counted on.

Sopris Village currently charges each household a flat monthly HOA service fee of \$100 for water and sewer, and an annual HOA dues assessment of \$125. Sopris Village does not currently have meters installed for each household, so there is no tiered rate structure in place for water usage.

Table 6-1: 2016 Budgeted Revenues

Revenues	\$ Annually	\$ Monthly
Violation Fine	-	-
Late Fees	-	-
Monthly HOA Service Rates	156,000	13,000
Dues Assessment (Annual HOA fee)	16,250	1,354
Finance Charge Income	1,500	125
Interest Income	156	13
TOTAL REVENUE	173,906	14,492

7.0 Reserve Account: Current Conditions

Table 7-1 below shows the annual revenue, expenses, and net revenue based on the 2016 budget.

Table 7-1: Comparison of Revenue and Expenses under Current Conditions

2016 REVENUE	\$ 173,906
2016 EXPENSES	\$ 179,981
2016 EXPECTED NET REVENUE	(\$ 6,075)

Based on the Sopris Village 2016 budget, the HOA will not be able to build its capital reserve account without raising rates. **Figure 7-1** shows a comparison of annual expenses to annual revenues from 2016 - 2027. Expenses increase with inflation (3% as described above) and revenue remains constant because HOA rates are not increased.

Figure 7-2 shows what the Sopris Village reserve account balance would look like in ten years if HOA rates are not increased (remain \$100 per month per household). This assumes **the reserve account earns 1% interest**, compounded annually. The balance is shown compared to the 2027 target of **\$2.96 million** identified in the Capital Reserve Study. The current (starting) reserve account balance is \$200,000.

Figure 7-1: Comparison of Revenue and Expenses under Current Conditions

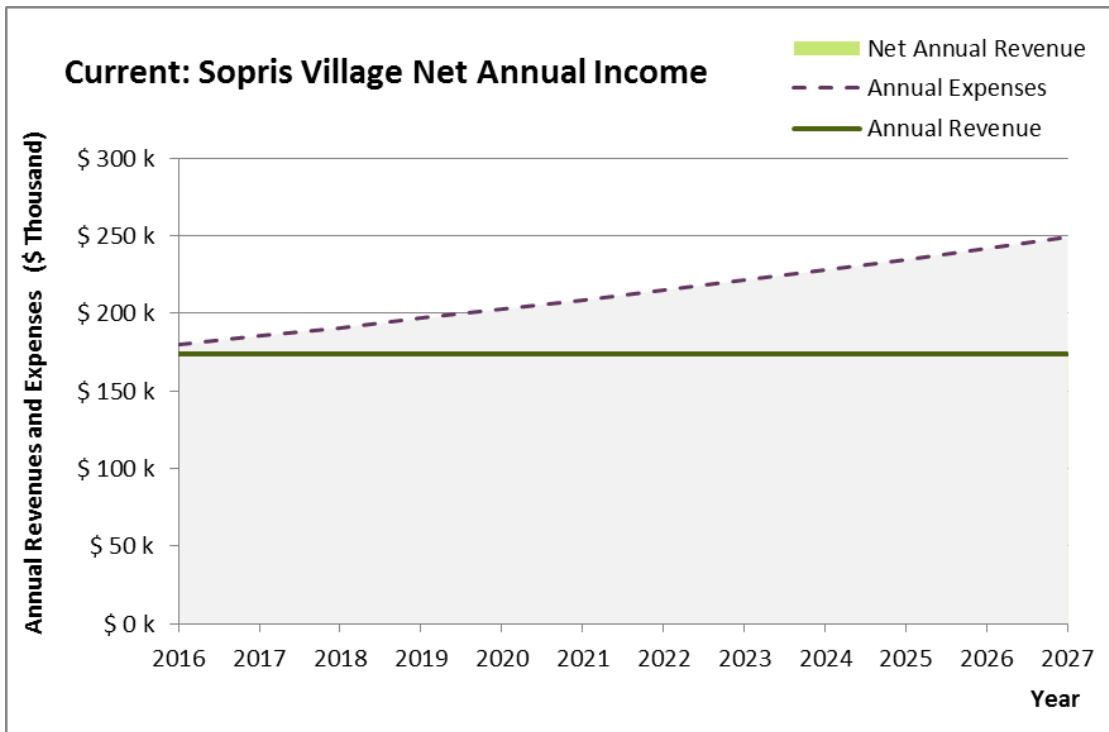
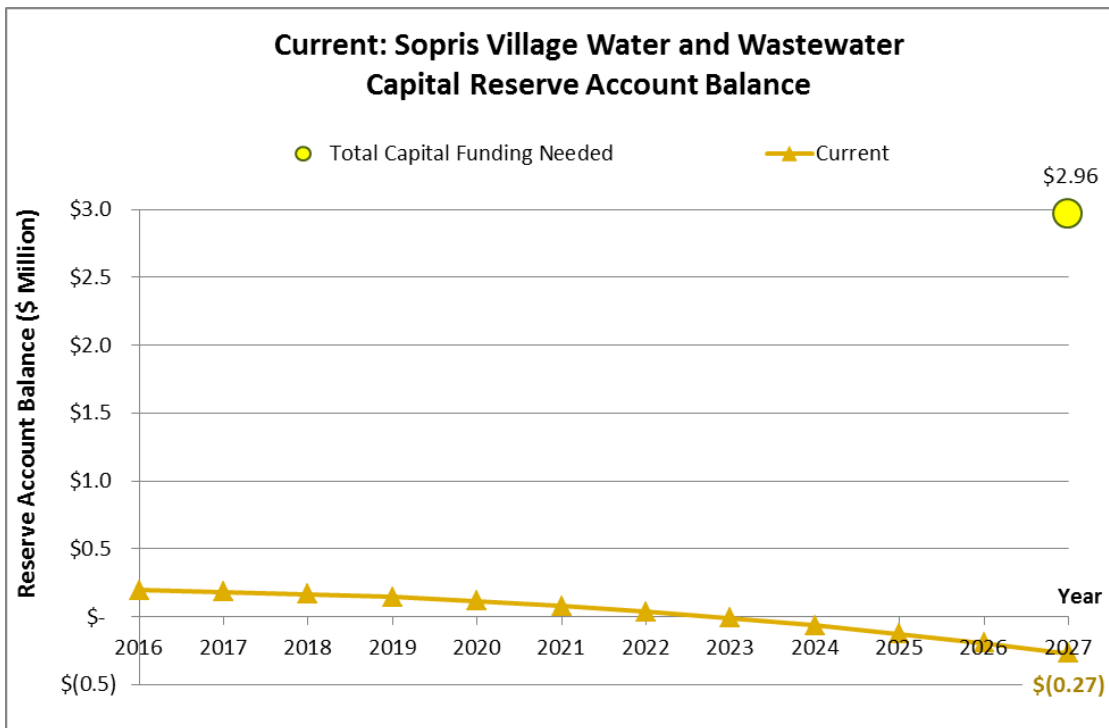


Figure 7-2: Capital Reserve Account Balance under Current Conditions



Figures 7-1 and 7-2 show that if the HOA does not increase rates, it will not be able to fund replacement and improvement projects in the future without borrowing money.

8.0 Recommendations

In our conversations with the HOA, we identified criteria for all rate increase scenarios:

- Eliminate the \$125 annual HOA dues assessment.
- Include a one-time rate increase in 2017 of some amount for four scenarios to provide funding for near term capital improvement projects (such as the chlorine line).
- Raise service rates to meet a **minimum of 50%** of the total \$2.96 M needed by 2027 (\$1.48 M), while maintaining a **minimum service rate increase of 5% annually**. A minimum of 5% growth allows the HOA to keep up with 3% inflation (described above), plus have 2% growth to build the capital reserve account.

The four Scenarios are:

Scenario 1: One time service rate increase from **\$100 to \$125** monthly in 2017.

Raise service rates by **11.5%** annually after 2017 to meet a minimum of 50% of the total \$2.96 M needed by 2027 (**\$1.48 M**).

Scenario 2: One time service rate increase from **\$100 to \$140** monthly in 2017.

Raise service rates by **9.4%** annually after 2017 to meet a minimum of 50% of the total \$2.96 M needed by 2027 (**\$1.48 M**).

Scenario 3: One time service rate increase from **\$100 to \$150** monthly in 2017.

Raise service rates by **6.8%** annually after 2017 to meet a minimum of 50% of the total \$2.96 M needed by 2027 (**\$1.48 M**).

Scenario 4: One time service rate increase from **\$100 to \$175** monthly in 2017.

Raise service rates by **5.0%** annually after 2017 to meet a *minimum* of 50% of the total \$2.96 M needed by 2027. Under this scenario, to keep the minimum service rate increase of 5% annually as described above, **58%** of the total \$2.96 M needed can be met (**\$1.71 M**).

For each of these 4 scenarios, an additional expense category was created for emergency repairs or maintenance, with an annual value of \$20,000. The purpose of this expense is to include any unplanned repairs such as failing infrastructure.

Table 8-1 summarizes reserve account targets and HOA service rate increase methods for each of the four scenarios. **Figure 8-1** shows the difference in annual expenses and annual revenue under each scenario. **Figure 8-2** shows the balance in the Sopris Village reserve account under each scenario. **Figure 8-3** compares the monthly HOA service rates that each household experiences each year under each scenario.

Table 8-1: Summary of Four Scenarios

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
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2027 Capital Reserve Balance (\$ million)		\$ 1.48M	\$ 1.48 M	\$ 1.48 M	\$ 1.71 M
Increase for Monthly HOA Service Rates (% per year, after 2017)		11.5 %	9.4 %	6.8 %	5.0 %
Monthly HOA Service Rates (per household)	2016	\$ 100	\$ 100	\$ 100	\$ 100
	2017 (one time increase)	\$ 125	\$ 140	\$ 150	\$ 175
	2027	\$ 373	\$ 345	\$ 288	\$ 285
Annual HOA dues		Eliminate Annual HOA dues			

Figure 8-1: Comparison of Annual Revenue, Annual Expenses, and Annual Net Revenue under the 4 Scenarios

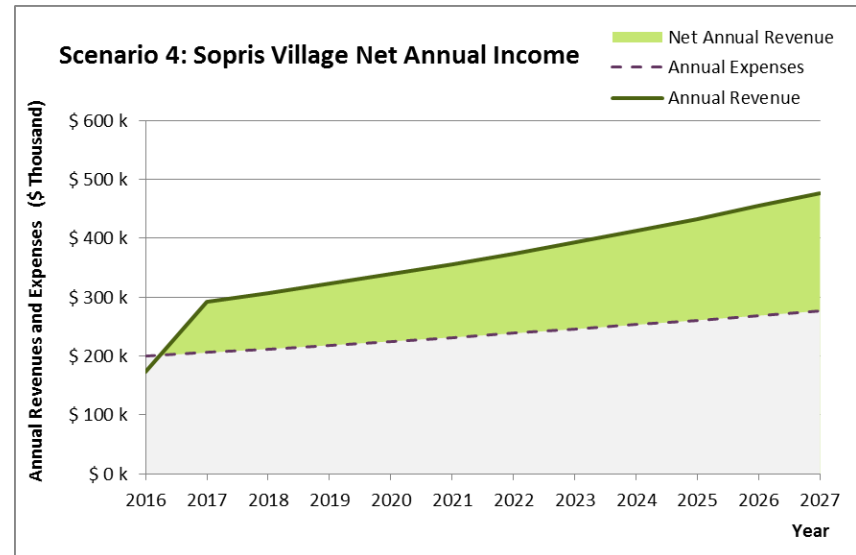
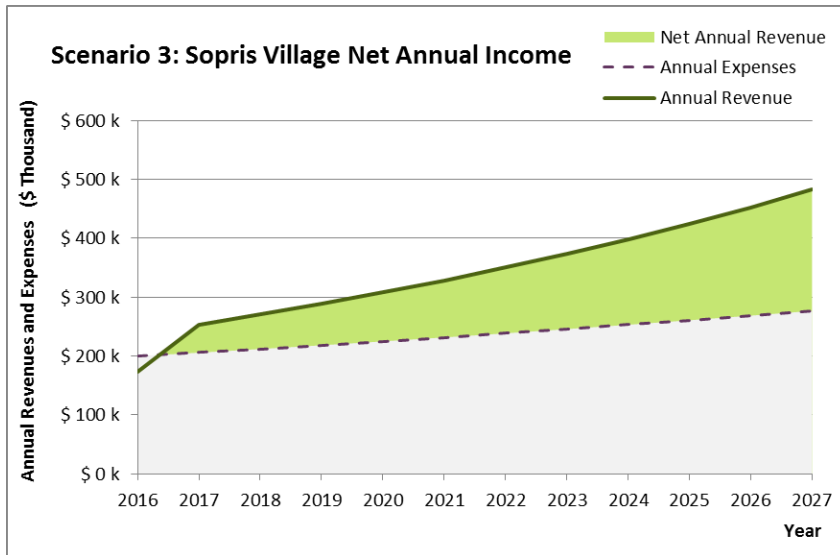
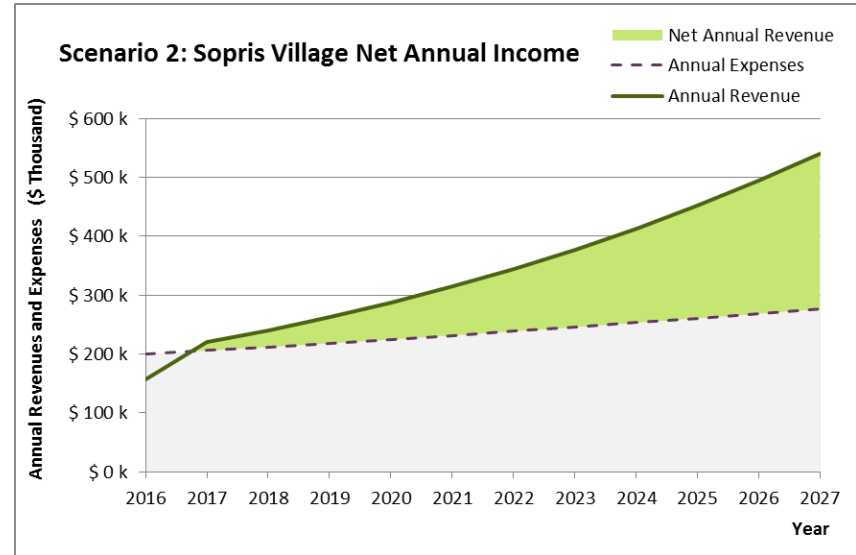
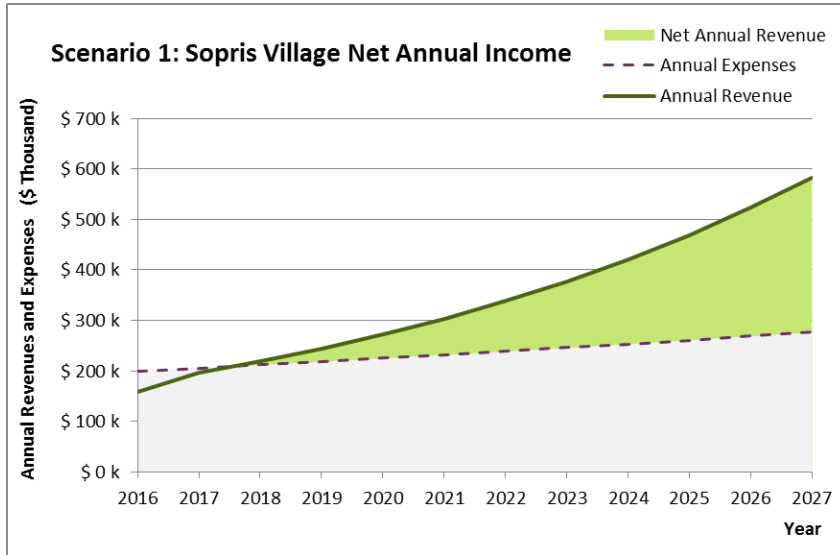


Figure 8-2: Annual Capital Reserve Account Balance under the 4 Scenarios, Compared to Current Conditions

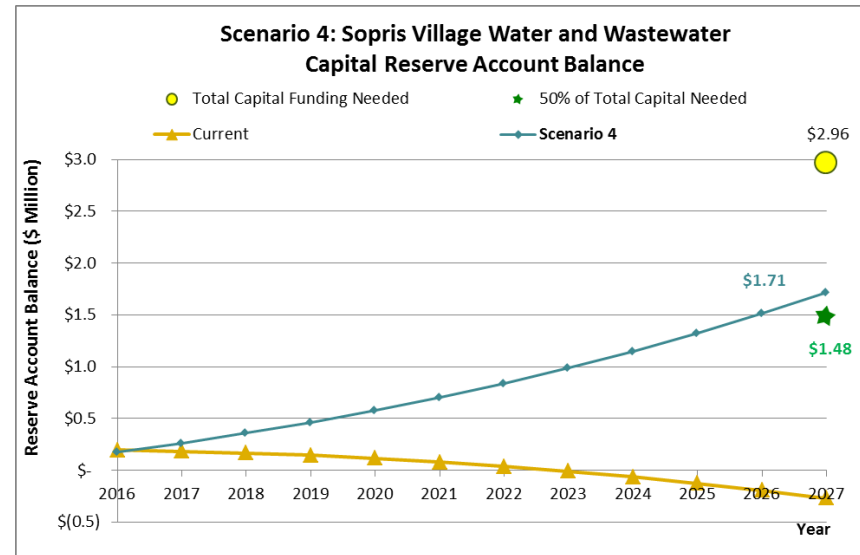
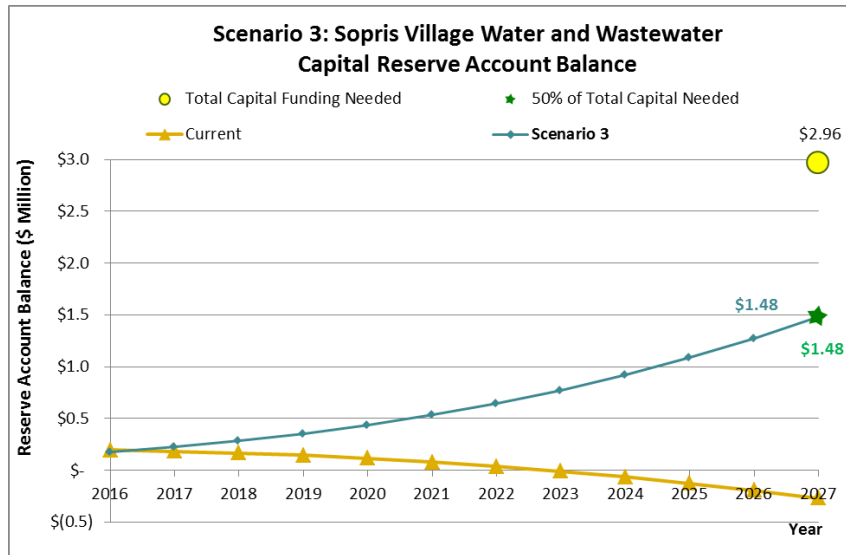
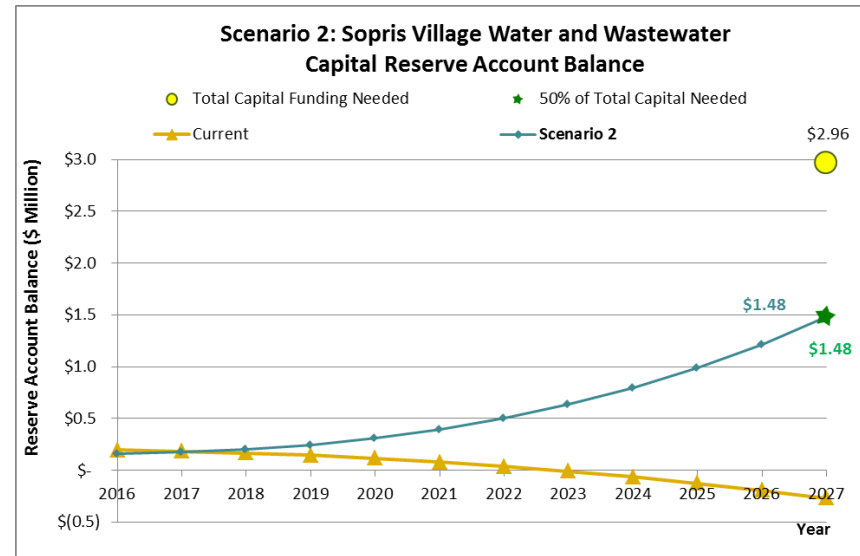
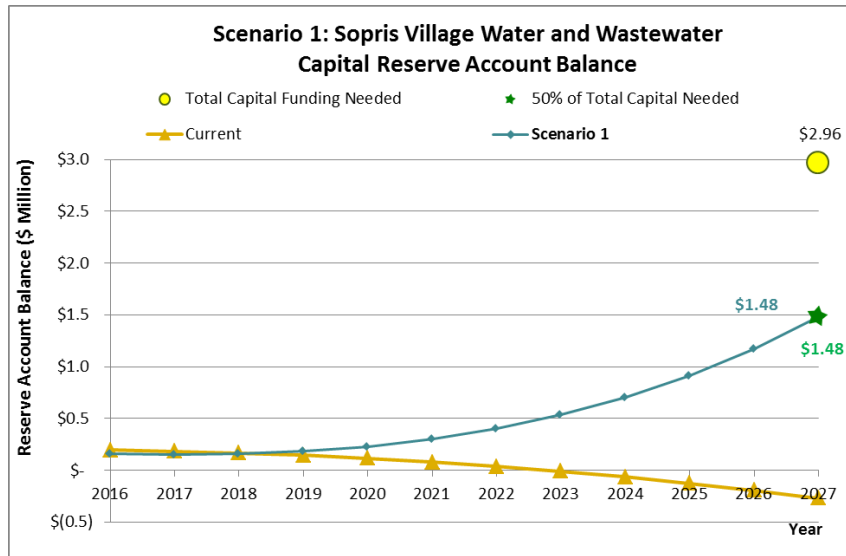
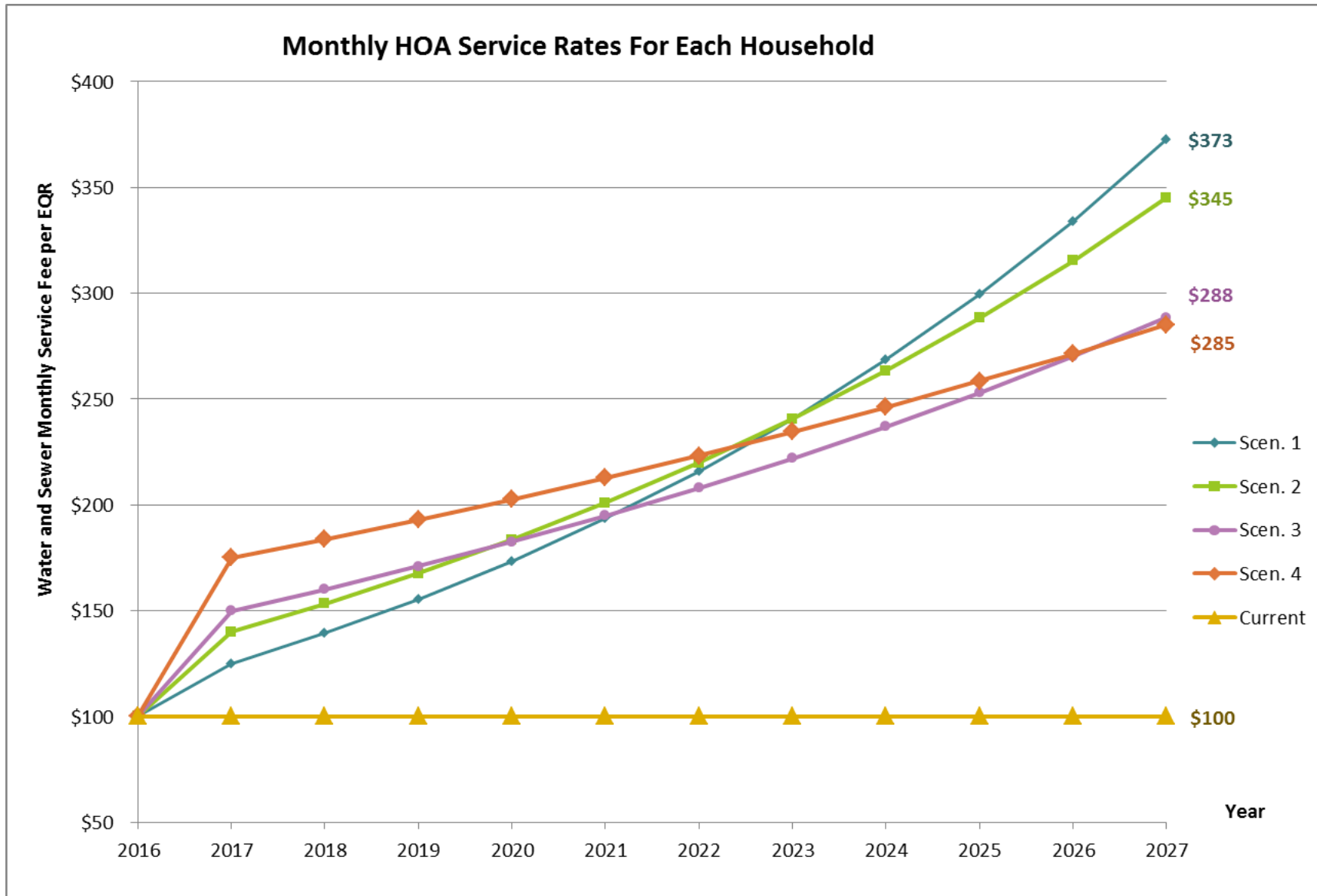


Figure 8-3: Monthly HOA Service Rates per Household – Compare All Four Scenarios to Current Conditions



9.0 Summary

SGM recommends that the HOA adjust rates to save for the eventual need to repair and improve its infrastructure. SGM has presented four rate increase scenarios for the HOA's consideration, based on input from the HOA. SGM recommends that the HOA use these four scenarios to choose a 2027 saving target for its capital reserve account and a rate increase strategy.

APPENDIX A



CAPITAL RESERVE STUDY UPDATE

SOPRIS VILLAGE HOMEOWNERS ASSOCIATION

August 19, 2016

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CAPITAL RESERVE STUDY

SOPRIS VILLAGE HOA

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SGM Project # 2016-133.002

CONTENTS

1.0 Purpose	1
2.0 Results Summary	1
3.0 Background	1
4.0 Methodology	1
5.0 Inventory of Existing Water Infrastructure	2
6.0 Summary of Existing Infrastructure	4
6.1 Water Mains	4
6.2 Water Main Valves	4
6.3 Residential Water Services	4
6.4 Fire Hydrants	4
6.5 Wells	5
6.6 Tank	5
6.7 Tank Capacity Analysis	5
7.0 Present Day Cost	6
7.1 Present Day Cost	6
7.2 Water Main Replacement	6
7.3 Water Main Valves	7
7.4 Residential Water Services	7
7.5 Wells	7
7.6 Water Tank	8
7.7 Fire Hydrants	8
7.8 Water Chlorine line	8
7.9 Present Cost Summary	9
8.0 Future Cost	10
9.0 Recommendations	11
9.1 Replacement Schedule Considerations	11
10.0 Conclusion	11

LIST OF TABLES

Table 1 Capital Reserve Account Target

Table 2 Present Water Main Cost

Table 3 Present Asphalt and Backfill Cost

Table 4 Present Valve Costs

Table 5 Present Water Service Cost

Table 6 Present Well Cost

Table 7 Present Cost of Maintaining Current Tank

Table 8 Present Cost of New Water Tank

Table 9 Present Cost of New Fire Hydrants

Table 10 Present Cost of New Chlorine Line

LIST OF FIGURES

Figure 1 Projected Capital Reserve Needs

LIST OF ACRONYMS

AWWA	American Water Works Association
CPI	Consumer Price Index
DIP	Ductile Iron Pipe
GPM	Gallons per Minute
HP	Horse Power
In	Inches
K-Gal	Thousands of Gallons
LF	Linear foot
Lb	Pound
SGM	Schmueser Gordon Meyer, Inc.

1.0 Purpose

This report estimates present and future costs of replacing Sopris Village's water system infrastructure in order to help Sopris Village set saving goals for its capital reserve account. This report also recommends an infrastructure replacement schedule, which is both cost effective and ensures that existing infrastructure does not begin to experience failures.

2.0 Results Summary

Table 1 presents three saving options for Sopris Village's capital reserve account. SGM recommends Sopris Village plan to have **\$2.9 million** in capital reserve by the year 2027. We believe this is a reasonable saving goal because it accounts for the shorter term infrastructure needs. This amount does not include wells or tanks because they have both been serviced recently, are in good shape, and can be replaced at a later date. The specific infrastructure and associated costs included in each of these options are described in more detail in later sections.

Table 1 Capital Reserve Account Target

Capital Reserve Options	Present Cost (2016)	Future Cost (2027)
Option 1: Replace Entire System and Maintain Tank to Full Life Expectancy	\$ 2,349,381	\$3,252,092
Option 2: Replace Entire System and Construct New Steel Tank	\$2,451,131	\$3,392,938
Option 3: Replace Entire System Minus Wells and Tanks	\$2,141,131	\$2,963,826

3.0 Background

Sopris Village is comprised of 130 households which own a private water system managed by the HOA. The water system was constructed in the late 1970's.

In March 2016, SGM presented Sopris Village HOA with an inventory of its water infrastructure. The inventory was derived from historic paper construction documents which were digitized into GIS mapping software. A copy of the inventory can be found in **Section 5.0**.

4.0 Methodology

To estimate life expectancy of infrastructure, SGM referred to a 2010 American Water Works Association (AWWA) report entitled "BURIED NO LONGER: Confronting America's Water Infrastructure Challenge." The AWWA report gives a time frame for materials based on geographic location and climate conditions.

Present costs in this capital reserve study are based on similar projects in the Roaring Fork Valley over the last 5 years. Future costs were calculated using consumer price index (CPI) projections applied annually to present cost values. Historically in Western Colorado the CPI average is 3%¹ per year.

The replacement infrastructure uses Mid Valley Metropolitan District (MVMD) standards so that Sopris Village has the flexibility to join the district if they ever wanted or needed to in the future.

¹Unites States Department of Labor, Consumer Price Index: average 2001-2010, CWUR0300SA0

5.0 Inventory of Existing Water Infrastructure

Sopris Village HOA – Inventory of Water Infrastructure

March 2016

Main Water Lines						
Size	Material	Length	Installed	Age	Estimated Service Life	Replacement Schedule
<i>inches</i>	<i>type</i>	<i>feet</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
6	Asbestos Concrete	9,125	March 1977	39	65	Within 26 Years
8	Asbestos Concrete	615	March 1977	39	65	Within 26 Years
10	Ductile Iron	1,316	January 2007	9	60	Within 51 Years

Main Water Valves						
Size	Valve	Quantity	Installed	Age	Estimated Service Life	Replacement Schedule
<i>inches</i>	<i>type</i>	<i>#</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
6	Gate Valve	24	March 1977	39	60	Replace Concurrent w/ Water Lines
10	Gate Valve	6	January 2007	9	60	Within 51 Years

Service Water Lines						
Size	Material	Length	Installed	Age	Estimated Service Life	Replacement Schedule
<i>inches</i>	<i>type</i>	<i>feet</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
1	Copper	3,350	March 1977	39	50	Within 11 Years

Service Water Valves						
Size	Valve	Quantity	Installed	Age	Estimated Service Life	Replacement Schedule
<i>inches</i>	<i>type</i>	<i>#</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
1	Curb Stop	130	March 1977	39	70	Replace Concurrent w/ Service Lines

Water Wells				
Quantity	Installed	Age	Estimated Service Life	Replacement Schedule
<i>#</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
2	March 1977	39	30	Replacing Now

Water Tank				
Quantity	Installed	Age	Estimated Service Life	Replacement Schedule
<i>#</i>	<i>Approx. Date</i>	<i>years</i>	<i>years</i>	<i>time-frame</i>
1	March 1977	39	100	Within 61 Years

* Note: Service life values are from American Water Works Association (AWWA) 2010 Report: "Buried No Longer – Confronting America's Water Infrastructure Challenge".

6.0 Summary of Existing Infrastructure

6.1 Water Mains

There are currently 9,125 linear feet of 6 inch asbestos concrete (AC) pipe and 615 linear feet of 8 inch AC pipe. These mains are believed to be constructed in the late 1970s and have an estimated service life of 65 years².

The water mains have 26 years of estimated service life left, although AC pipe is known for premature failure and therefore SGM recommends early replacement. In **Section 6.3** it is indicated the service lines have 11 years of remaining service life. SGM recommends the HOA consider constructing these two components simultaneously within the 11 year time frame.

Both AWWA and MVMD's standards require that water mains be sized 8 inches or greater for fire flow requirements. SGM recommends replacing all 6 and 8 inch AC lines with 8 inch ductile iron pipe (DIP). DIP is more resilient to cracking, has a 60 year service life and is generally used in every community in the Roaring Fork Valley. Constructing to MVMD standards also gives the HOA the option to connect to the MVMD system in the future if desired.

There is also 1,316 linear feet of 10 inch DIP running from the water tank which was constructed in January 2007. The 10 inch DIP pipe has an estimated service life of 60 years² and will need replacement within a 51 year time frame.

6.2 Water Main Valves

The existing system has twenty four 6 inch gate valves along water mains. Valves will be replaced concurrent with water main construction (within 26 years). These valves are suggested to follow MVMD standards and be upsized to 8 inch as mentioned in **Section 6.1** above.

There are six 10 inch gate valves on the 10 inch DIP tank line. These valves were constructed at the same time as the 10 inch line, 2007, and therefore will require replacement within a 51 year time frame.

6.3 Residential Water Services

Water service lines may be the determining factor for the water system replacement time frame. There are 130 copper services believed to be installed in 1977. The estimated service life of these lines is short relative to the rest of the water system. According the AWWA report the estimated service life is 50 years², which gives a replacement time frame of 11 years. SGM recommends replacing service lines as water mains are being constructed, or if failures start to become a concern. Water services include a curb stop and meter which have the same replacement time frame as the lines themselves.

6.4 Fire Hydrants

Sopris Village has 8 fire hydrants which were installed in the same time frame as the rest of the infrastructure, and have been maintained. They should be replaced at the same time as the rest of water lines, because it will be more cost effective.

² Per American Water Works Association (AWWA) 2010 Report: "BURIED NO LONGER: Confronting America's Water Infrastructure Challenge".

6.5 Wells

Sopris Village's two drinking water wells were originally constructed March 1977. Well No. 1 is 4" galvanized pipe and has a flowrate of 500 GPM with a 30 HP pump. The pump was replaced in September, 2006. Well No. 2 has a flowrate of 100 GPM and a 15 HP pump. The pump on Well No. 2 was replaced in October, 1991.

In the Inventory of Infrastructure Report, SGM used the AWWA report to derive the estimated service life as being 55 years². However, it is typically expected that wells need some sort of rehabilitation every 20 years. Sopris Village recently replaced the 4" drop pipe in Well No. 1 with Certa-Lok PVC drop pipe.

It is safe to predict Well No. 2 will need to be rehabilitated or replaced in the future. It is currently not being used due to poor water quality.

6.6 Tank

The 100 K-Gal tank was also installed in the late 1970's. If the tank is well maintained it has an estimated service life of 100 years. This would make the tank due for replacement in 61 years. Maintenance to reach its full potential life involves sand blasting and recoating the tank every 20 years. This tank was re-coated in 2014³.

Having been constructed in the 1970s, regulations were a lot more lenient than they are today. Colorado Department of Health and Environment (CDPHE) are constantly revising regulations, such as new rules for venting capacity and, hatch and ladder components. Many tanks from the 1970s were designed with undersized venting capacity. This is simply to keep in mind in the event CDPHE does an inspection and might require upgrades.

Another consideration for the HOA is the low pressure of the existing water system. Low pressure will directly affect fire flows in the community. Minimum water storage for fire flows alone is 1,500 gallons per minute (GPM) for 2 hours which is a volume of 180 K-Gal. The capacity of the existing tank is undersized based on the current fire code for required fire flow volume alone.

6.7 Tank Capacity Analysis

Tank capacity is typically calculated by adding water usage for two average days to the required fire flow storage volume. The proposed larger tank volume is shown in the calculation below.

$$\text{Capacity} = 180,000 \text{ gal} + (350 \text{ gpd per home} \times 130 \text{ homes}) \times 2 \text{ days} = 271,000 \text{ gal}$$

SGM recommends the HOA consider investing in a new 300 K-Gal tank because water tanks come in incremental sizes. Although Sopris Village HOA has stated in the event a new tank is constructed it would be the same size and location as the existing tank. The removal cost of the existing tank would be \$20,000 and the construction of a 100 K-Gal new tank would cost \$180,000.

³ Based on Tank Rehab Proposal from Mannix Painting

7.0 Present Day Cost

7.1 Present Day Cost

SGM's recommended expenditures were estimated based on SGM staff input, recent similar projects in the region, AWWA guidance documentation for typical maintenance, and recent material and installation costs.

SGM calculated a lump sum cost using material and installation pricing from recent projects in the area. Present day material pricing was applied to the inventory of Sopris Village's water infrastructure to calculate the present day cost of replacing the system.

7.2 Water Main Replacement

Water main replacement cost was calculated by applying current cost per length of pipe, trench material and paving costs to the quantity of length of pipe and necessary paving and trench material. A summary of those calculations can be seen in Tables 2 and 3 below.

SGM recommends the replacement water lines be placed in the street. This makes the system more accessible for future maintenance, and allows the existing system to stay online during construction. Constructing the system in the street also gives opportunity for the HOA to coordinate with Eagle County to have the streets repaved simultaneously. SGM recommends coordinating water line replacement projects with Eagle County's road replacement schedule. Replacing will lower the cost to the HOA.

Table 2 Present Water Main Cost

DIP Pipe	Length of Pipe	Unit Cost	Total Cost
<i>size</i>	<i>feet</i>	<i>\$ per foot</i>	<i>\$</i>
8 inch	9,740	\$85	\$827,900
10 inch	1,316	\$100	\$131,600

**Table 3 Present Asphalt and Backfill Cost
(3" of Asphalt & 8" Class 6 Base Course)**

Asphalt				
Area	Density	Weight	Unit Cost	Total Cost
<i>sy</i>	<i>lb per sy</i>	<i>ton</i>	<i>\$ per ton</i>	<i>\$</i>
12,284	330	2,027	\$100	\$202,694
Class 6 Base Course				
Volume	Density	Weight	Unit Cost	Total Cost
<i>cf</i>	<i>lb per cf</i>	<i>ton</i>	<i>\$ per ton</i>	<i>\$</i>
73,707	133	4,901	\$25	\$122,537

7.3 Water Main Valves

Water main valve replacement costs were computed by using the number of valves by size in the inventory phase and applying current costs. Below **Table 4** summarizes quantities and cost:

Table 4 Present Valve Costs

Valve size	Quantity #	Unit Cost \$ per each	Total Cost \$
8 inch	24	\$2,500	\$60,000
10 inch	6	\$3,900	\$23,400

7.4 Residential Water Services

Sopris Village has a population of 130 homes. The population was multiplied by the current cost of a water service line from the main to the residence including curb-stops. A majority of original services were constructed from the back of each residence where the water mains were constructed between lots with the exception of Arapahoe Road and part of Cheyenne Avenue. Although the services were primarily run to the center of the residence, for this replacement project the services would be run from the opposite side of the lot which may or may not present unforeseen complications. Therefore a conservative cost was used to calculate present cost of new service lines.

Table 5 Present Water Service Cost

Service Line Quantity #	Unit Cost \$ per each	Total Cost \$
130	\$5,000	\$650,000

7.5 Wells

Sopris Village HOA replaced the 30 HP pump in Well No. 1 in 2006 and is in the process of replacing the piping. The cost of replacing the casing in Well No. 1 was provided by Rick Borkovec. Wells and pumps typically have a 20 year service life; **Table 6** shows the costs of replacing well casing, screens and pumps for Well No. 1.

Well No. 2's 15 HP pump was replaced in 1991 although it has only been used on rare occasion. Due to water quality issues, Sopris Village does not plan to use Well No. 2 in the future. To provide redundancy in the event of a well pump failure, we recommend abandoning the second well and drilling a new well. The costs for Well No. 2 in **Table 6** include construction costs for a new well, and legal fees associated with moving the water right for the abandoned well (or adding an alternate point of diversion for Well No. 1).

Table 6 Present Well Cost

Well #	Total Cost \$
No. 1	\$10,000
No. 2	\$100,000

7.6 Water Tank

As mentioned in **Section 6.5** there are many factors and options which influence maintaining or replacing the water tank. **Table 7** below summarizes costs associated with maintaining the current tank and **Table 8** summarizes costs of a full on replacement of 100 K-Gal a tank including the removal of the existing tank.

Table 7 Present Cost of Maintaining Current Tank

Remaining Service Life	Interior Rehab Cycle	Cost per Rehab	Total Cost
<i>years</i>	<i>years</i>	<i>\$ per</i>	<i>\$</i>
61	20	\$32,750 ⁴	\$98,250

Table 8 Present Cost of New Water Tank

Tank	Size	Total Cost
<i>material</i>	<i>gallon</i>	<i>\$</i>
Steel	100,000	\$200,000

7.7 Fire Hydrants

Table 9 below shows the cost of replacing Sopris Village's eight fire hydrants.

Table 9 Present Cost of New Fire Hydrants

Fire Hydrant Quantity	Unit Cost	Total Cost
<i>#</i>	<i>\$ per each</i>	<i>\$</i>
8	\$6,000	\$48,000

7.8 Water Chlorine Line

This project is top priority. Our as-built drawings show that there is only one line from the wells to the tank, and that the same line allows flow from the tank to the first customer. The line is designed to provide enough chlorine contact time as water flows from the well to the tank. Then treated water would be delivered to taps from the tank. However, if the first customer turns on the tap when water is flowing from the well up to the tank, that customer is receiving water from the well that has not had enough contact time (untreated water).

SGM recommends that Sopris Village construct a chlorine line immediately. This project would add enough additional pipeline length between Well No. 1 and the first tap connection to provide sufficient chlorine contact time before water reaches the first customer. The line would be a zig-zagging length of underground pipeline, most likely underneath the park. **Table 10** below shows the total estimated cost of constructing a new chlorine line.

Table 10 Present Cost of New Chlorine Line

Chlorine Line	Total Cost
<i>Item</i>	<i>\$</i>
Pipeline	\$75,000

⁴ Based on Tank Rehab Proposal from Mannix Painting

7.9 Present Cost Summary

There are two present cost options of replacing the Sopris Village water system, the deciding component is the water tank. The interior is not due to be rehabbed again until 2034. In order to maintain the tank for estimated life expectancy, 3 more rehabs would need to be completed. A third option is presented to show immediate needs only for Sopris Village's capital reserve account. Below is a list of the two options:

1. Replace Entire System and Maintain Tank to Full Life Expectancy = **\$ 2,349,381**

Option 1 is the sum of total costs from Tables 2 -7, 9, and 10, which includes all water system components and the present cost of the servicing the water tank three times. Which would be required to ensure the tank stays operational for the remainder of its service life.

2. Replace Entire System and Construct New Steel Tank = **\$2,451,131**

Option 2 is the sum of total costs from Tables 2-6 and 8-10. The total cost includes replacing the entire water system and the removal of the old water tank and construction of a new 100 K-Gal tank.

3. Replace Entire System Minus Wells and Tanks = **\$2,141,131**

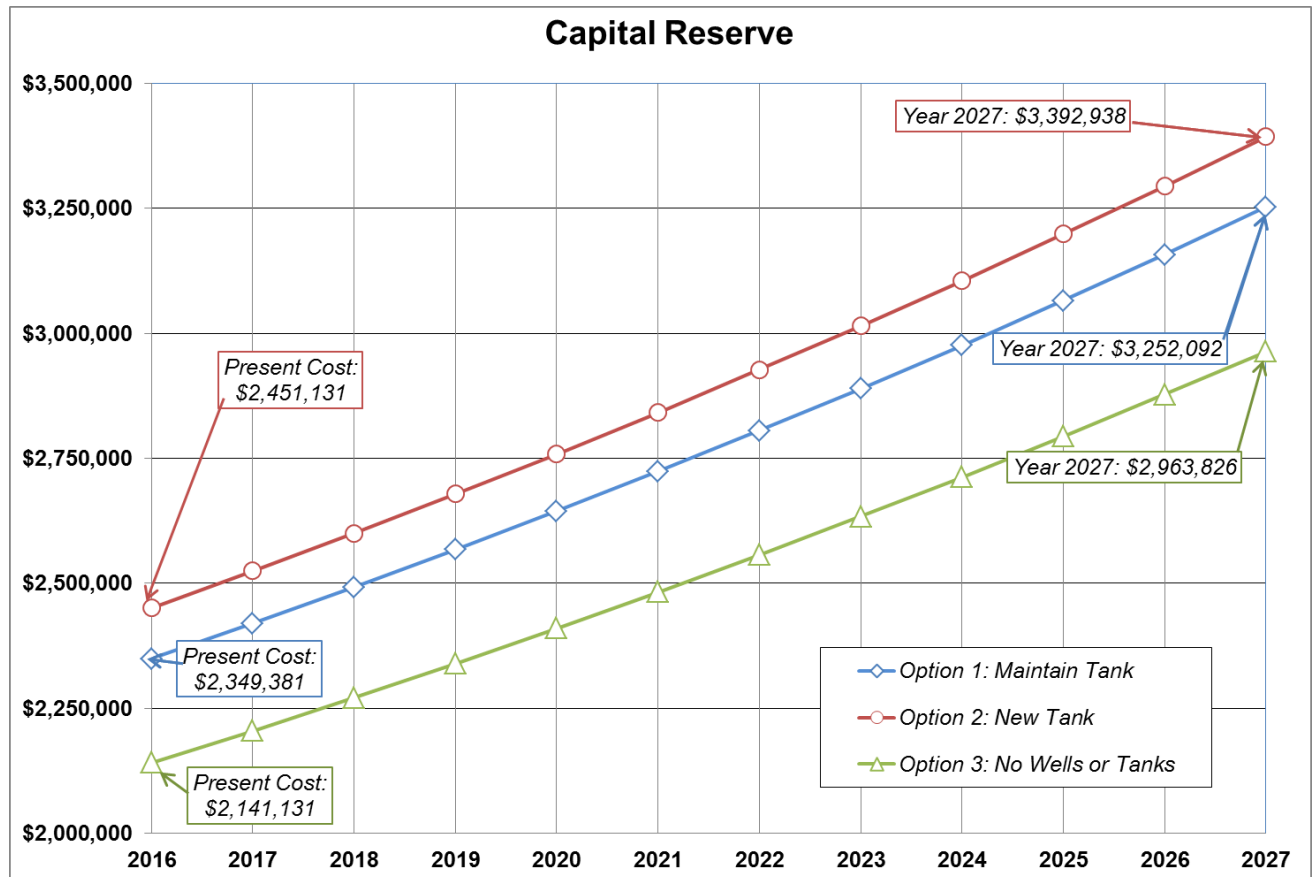
Option 3 does not account for replacing all of Sopris Village's infrastructure. However, it is useful for setting a reasonable saving goal for the capital reserve account. The purpose of this option is to project future costs in 2027 of Sopris Village's shorter term infrastructure needs, and does not include wells or tanks because they have both been serviced recently, are in good shape, and can be replaced at a later date.

These values are associated with present day cost and do not count for inflation of materials and labor. Future cost projections can be found in **Section 8** on the following page.

8.0 Future Cost

To determine future cost of replacing the water system, the Consumer Price Index (CPI) was applied to the present cost. The local average CPI for Western Colorado tends to remain near (3%)⁵. Below **Figure 1** shows the increase in cost of replacing the water system by year due to inflation of labor and material costs.

Figure 1 Projected Capital Reserve Needs



5 United States Department of Labor, Consumer Price Index: average 2001-2010, CWUR0300SA0

9.0 Recommendations

We recommend that Sopris Village plan to have **\$ 2.96 million** in capital reserve by the year 2027, per Option 3 above. This is the 2027 future cost of all of the above projects except for the wells and tank projects. We recommend this option because the tank and wells are not included in this amount because they have both been serviced recently, are in good shape, and can be replaced at a later date.

The top priority project is the chlorine line, as this project is needed to make sure customers are receiving chlorinated water at all times. We recommend Sopris Village begin this project immediately.

9.1 Replacement Schedule Considerations

Sopris Village has many different options for funding the replacement of the infrastructure. In addition to funding options, Sopris Village can replace the infrastructure in phases. The phases can be determined by replacement of the most critical pieces of infrastructure along with the infrastructure that is costing the most in repairs. The perfect replacement plan would be to replace everything right before it fails. Determining the exact date of failure is very difficult so SGM recommends replacing infrastructure when either the liability cost or maintenance costs exceeds the replacement cost. SGM recommends developing a funding mechanism now to build up a reserve fund for replacement of the infrastructure when it begins to fail.

The key factor to determine life expectancy is to consider the infrastructure that has the shortest life and schedule full replacement around that. The water service lines have an additional life expectancy of 11 years (2027) based on AWWA literature which are the first pieces of infrastructure that will need replacement. SGM recommends planning for full replacement of the water system when the service lines begin to fail. In addition to planning around failing infrastructure it is important that the HOA plan any replacement projects around Eagle County's road maintenance schedule. Replacing the waterlines while the asphalt is already removed will lower road reconstruction and material costs for Sopris Village. Sopris Village should communicate with Eagle County the replacement schedule once it is developed so that a mutual schedule can be determined.

10.0 Conclusion

Overall, full infrastructure replacement can be an overwhelming project to consider but should definitely be planned for. The good news for Sopris Village is that very rarely ever does an entire water system fail at the same time and water operators can make pro-active steps to assure the water system will last as long as possible. While SGM does recommend the HOA determines how to fund the replacement of the water system, funding 100% in 11 years probably is not practical or necessary. Sopris Village should begin to raise rates as much as possible to build a reserve account so that when it is time to replace infrastructure it can be done correctly. SGM will assist the HOA with a rate study to help meet the HOA's expectations and goals for a capital reserve.

APPENDIX B



**Sopris Village Homeowners Assn.
 Profit & Loss Budget vs. Actual
 January through May 2016**

	Jan - May 16	Budget	\$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
Holy Cross	71.42	0.00	71.42	100.0%
Violation Fine	600.00			
Late Fees	200.00	0.00	200.00	100.0%
Water/Sewer Fees	65,100.00	65,000.00	100.00	100.2%
Dues Assessment	16,250.00	16,250.00	0.00	100.0%
Finance Charge Income	127.15	625.00	-497.85	20.3%
Interest Income	223.92	65.00	158.92	344.5%
Misc Income	0.00	0.00	0.00	0.0%
Total Income	82,572.49	81,940.00	632.49	100.8%
Expense				
OPERATING COSTS				
Supplies	0.00	350.00	-350.00	0.0%
Office Supplies	297.64	400.00	-102.36	74.4%
Postage	486.00	490.00	-4.00	99.2%
Miscellaneous	250.00	300.00	-50.00	83.3%
Licenses and Permits	0.00	237.50	-237.50	0.0%
Insurance	321.00	1,115.00	-794.00	28.8%
Bank Service Charges	100.00	100.00	0.00	100.0%
Total OPERATING COSTS	1,454.64	2,992.50	-1,537.86	48.6%
SERVICES				
Trash Service	12,844.55	13,722.25	-877.70	93.6%
MVMD Sewer Fees	20,052.50	20,052.50	0.00	100.0%
Total SERVICES	32,897.05	33,774.75	-877.70	97.4%
PROFESSIONAL				
Capital Improvement Study	1,096.00			
Web Site Development	0.00	400.00	-400.00	0.0%
Tax Return Preparation	375.00	400.00	-25.00	93.8%
Property Manager	6,746.19	9,600.00	-2,853.81	70.3%
Legal Fees	6,524.00	3,000.00	3,524.00	217.5%
Office Contract	3,000.00	3,000.00	0.00	100.0%
Audit	0.00	1,456.00	-1,456.00	0.0%
Total PROFESSIONAL	17,741.19	17,856.00	-114.81	99.4%
PARK				
Thistle Control	0.00	425.00	-425.00	0.0%
Park Maintenance/Irrigation	0.00	1,620.00	-1,620.00	0.0%
Park Contract	2,143.32	2,142.00	1.32	100.1%
Park Improvement Expense	0.00	0.00	0.00	0.0%
Total PARK	2,143.32	4,187.00	-2,043.68	51.2%
REPAIRS & MAINTENANCE				
Misc R & M	1,185.00	1,655.00	-470.00	71.6%
Pump House #2 Repairs	0.00	2,500.00	-2,500.00	0.0%
Wireless Transmitter	0.00	0.00	0.00	0.0%
Total REPAIRS & MAINTENANCE	1,185.00	4,155.00	-2,970.00	28.5%
WATER				
Robinson Ditch Assess	566.63	566.63	0.00	100.0%
Telephone Line	160.71	160.00	0.71	100.4%
Utilities	1,834.70	2,500.00	-665.30	73.4%
Monitor Well	0.00	0.00	0.00	0.0%
Back Up Pump	0.00	2,000.00	-2,000.00	0.0%
Wells#2 Online	0.00	2,000.00	-2,000.00	0.0%
Water Tank Repairs	0.00	0.00	0.00	0.0%
Water Mtc/Repairs	1,372.47	1,500.00	-127.53	91.5%
Water Management	2,500.00	2,500.00	0.00	100.0%
Lab Tests	159.00	800.00	-641.00	19.9%

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Accrual Basis

**Sopris Village Homeowners Assn.
Profit & Loss Budget vs. Actual
January through May 2016**

	<u>Jan - May 16</u>	<u>Budget</u>	<u>\$ Over Budget</u>	<u>% of Budget</u>
Total WATER	6,593.51	12,026.63	-5,433.12	54.8%
Total Expense	62,014.71	74,991.88	-12,977.17	82.7%
Net Ordinary Income	20,557.78	6,948.12	13,609.66	295.9%
Net Income	<u>20,557.78</u>	<u>6,948.12</u>	<u>13,609.66</u>	<u>295.9%</u>