Saddle Mountain Service Corporation Board Meeting Minutes

December 16, 2024

Via Zoom

Attendees:

Tom Hillesland, President

Mike Johnson, Vice President

Linda Kindrick, Treasurer

Keith Stark, Director

Amy Teegarden, Director

Matt Weber, Backup Operator

______________, Guest

Meeting called to order at 6:35 PM

Minutes from last month's meeting: The meeting minutes are attached and become part of the minutes. Keith S. moved the minutes be approved. Linda K. provided the second. Motion passed unanimously.

Operator's report: Report dated 12/15/24 is attached and becomes part of the meeting minutes. Amy T. moved the minutes be approved. Linda K. provided the second. Motion passed unanimously.

Treasurer's report: Treasurer's report dated 12/13/24 is attached and becomes part of the meeting minutes. The various reports were reviewed by the board. Linda highlighted that water bill statements were mailed on 12/5/24. The SMS financial goal is to have $200K in reserves. Currently there is $142,000 in cash; 4 CD's ~$40,000. This results in approximately $182,000 available in reserves.

Keith S. moved the report be approved. Mike J. provided the second. Motion passed unanimously.

Keith Stark activities: Keith's report does not require board approval. Keith reported that there was not much happening this month to report on. 3-Brothers did not charge the additional $5K for road work for the connection on #2 Big Bear. He also reported that the mechanisms for well #5 are in the wellhouse. He contacted Marty Logan regarding individual grounds, still no contact. He will continue to follow up.

Old Business:

1. **Review, authorize and sign updated ATS contract for accounting services (Due Jan. 1 of each year)** Linda sent the contract out last week. Tom had no changes. Tom and Linda will coordinate the execution of the contract.

2. **Well #3 replacement pump/motor doesn't move adequate water.** This issue is on hold until the water hammer issue is resolved. Matt Mudd would like to see the report regarding the manganese level on well #3 (the high level may be residual from no activity of the well.)

3. **Draft Improvement List from Matt M at GWE-** Tom requested comments by the end of the week.

4. **Develop operations manual, maintenance manual, and maintenance schedule, maintenance records and system history** –Matt W. is almost finished reviewing procedures and maintenance tasks, then writing and adding sections that are needed. He is still fine-tuning and troubleshooting the meters. Mike is updating the equipment list. Tom will get a PDF from DEQ. Map has been updated. Matt/Mike/Keith should get together and discuss progress and hangups. Stated that we need Mark Z's involvement in this effort. Amy suggested recording an "interview" with Mark- ask him system questions and get his answers and institutional knowledge.

5. **The flowmeter at mid station indicates it pumps more water out than it gets**. **NEXT STEP** > Marty Logan to contact manufacturer after installing recommended supplemental ground at all 3 locations for the meters. Keith to get Marty to install dedicated ground rods.

   This still has not happened. Keith has had difficulty getting a response from Marty.

6. **Water System Walk-thru-** Kirk and Mark have scheduled a walkthrough. Mike does not need one but would like the keys to buildings so he can do his work. Get keys from Keith and Tom.

7. **Bylaws Review and Revision-** This effort is ON HOLD

8. **#2 Big Bear Connection**- remaining amount of bill to be submitted to Austin Witham. Still waiting on payment.

9. **Notes to the Pumphouse**- 3 items identified to be included in the January newsletter. 1) Updated Board contacts; 2) lead service line results; and 3) Website update and "Dial My Call". Amy will complete and have ready for the next billing.

10. **ARPA Funds**-waiting for final payment. Tom and Linda are monitoring and coordinating this effort.

11. **Power Panels for wells 1 & 3-** This effort is ON HOLD. Will wait until we determine we can use well #1 as a last resort.

12. **Well #1 Discharge piping**- No discussion

13. **Isolation Valve Locations**- Matt W. will update.

14. **Copies of original plans**-Have not received the originals back from Matt Mudd. Will ask him to digitize.

15. **Letter of response to Mr. McClusky**- this matter is considered closed. Tom H is working on a letter to notify this member.

New Business: No new business.

With no further business noted, Keith S. moved to adjourn. Linda K. provided a second. With no further conversation, Tom asked that all in favor say aye; opposed same sign. Motion passed unanimously. Meeting adjourned at7:30 PM.

Submitted by: Amy Teegarden, Secretary

Next meeting – January 20, 2025, via Zoom at 6:30 p.m.

Presented by:

GreatWest ENGINEERING

Preliminary Engineering Report

SADDLE MOUNTAIN SERVICE CORPORATION

Water System Improvements

June 2024

Client Commitment *Empowered Employees* *Quality Solutions*

SADDLE MOUNTAIN SERVICE

DRAFT

Water System

Evaluation

June 2024

Prepared By:
Matthew Mudd, PE

QA/QC By:
Robert Church, PE

GreatWest ENGINEERING

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1.0 EXECUTIVE SUMMARY

1.1 Introduction and Background

Saddle Mountain Service Corporation (SMSC), located in Jefferson County, is a non-profit corporation that manages a public water system that serves 123 service connections for the Saddle Mountain Estates First and Second Editions. The system includes three active wells from two well house locations, high pressure transmission main piping, a booster pump station, a chlorination treatment system, fire suppression (hydrants), three partially buried concrete storage tanks, a telemetry control system, and services multiple distribution pressure zones delivered via booster pumping and a pressure reducing valve (PRV) station. The system also has two inactive wells. Compared to other Montana communities of similar size, the SMSC system is a fairly complex water system.

SMSC understands that its water system is a vital asset for the community and knows the importance of maintaining a high level of service by providing adequate, reliable, and safe drinking water. As such, SMSC has completed a water system evaluation to effectively plan and manage system upgrades over the next 20 years of service. In addition to providing a comprehensive review of the entire system, this evaluation also includes well flow testing and condition assessments, followed by improvements to two water supply wells (Well 1 and Well 3) at the lower well house.

Most of the water system components and equipment are over 40 to 50 years old with some more recent upgrades. Well 5 was added to the system with improvements completed in 1999. In 2021, SMSC installed flow measurement devices at both well houses and at the Mid Station booster station. This flow meter retrofit work was completed to monitor water production flows and track potential unaccounted-for water or leaks in the system. It is noted that individual water meters in the system are aging and SMSC has reported having some troubles in obtaining replacement meter parts. A residential meter upgrade project is also being considered at some time in the future.

The lower well house manifolds the plumbing from three wells, two outside the well house (Well 2 and Well 3) and one inside the pump house (Well 1). However, Well 2 is currently disconnected and inactive. Prior to this study, little was known about the historical water production of these wells. While SMSC has relied on the larger well from this location (Well 3), the interior well (Well 1) was also designed to be a part of the operation cycling. Prior to this study, the yield and production capacity were unknown. SMSC replaced the 50 HP pump in Well 3 with a smaller (15 HP) pump several years ago due to noted sand intrusion issues. At such time, the installation of the 15 HP to replace the 50 HP pump in Well 3 was not based on pump testing data from the well or an engineering analysis but with the goal of reducing pump flow rates was to limit sand intrusion.

The newer southern well (Well 5) is a high-production well that is capable of pumping +/- 250 gpm. Throughout the period of the study period and the well assessments, Well 1 and Well 3 were taken completely offline for an extended duration. A copy of the Well 1 and Well 3 rehabilitation and testing technical memorandum, and well pump change memorandum to DEQ is included in Appendix A.

The existing telemetry system is outdated, so SMSC has been considering either partial or full telemetry and control upgrades to the system. An updated control system quote was solicited from a reputable local integration service provider to support this study. Copies of the existing control system information and upgrade quotes are included in Appendix B.

This study has been completed in close coordination with the SMSC board and operations staff. SMSC has provided copies of the latest record drawings and maps (Appendix C), a copy of the draft operations manual, which is in progress (Appendix D), input from work sessions (Appendix E), and SMSC financial and budget information (Appendix F).

This study has been funded by SMSC local funds and matched with funding provided by an American Rescue Plan Act (ARPA) minimum allocation grant (MAG) sponsored by Jefferson County. In total, $59,325 in ARPA grant funding was secured to contribute to this study (and other eligible project upgrades) for a total project cost of $118,650. The project elements that were eligible for ARPA funding reimbursement include the following tasks:

- $30,000 Water system evaluation/study
- $16,000 Hydrogeologic well assessment
- $25,000 Well rehabilitation and well yield pump testing completed by a certified driller.
- $47,650 in upgrades and retrofits completed on the water system (between September 13, 2021, and March 13, 2022) that were eligible for ARPA reimbursements through Jefferson County. These specific system eligible upgrades included:
    - Replacing faulty motor saver relay
    - Asbestos roof Inspection
    - Removing and disposing of two roofs with asbestos

  - Replacing the actuator and updating electrical at the tank site
  - Pump house and well house new flow meters and Mid Station centrifugal pump.
  - Lower pump house valve and replacement of the blow offline.
  - Rebuilding the existing Mid Station vertical turbine (VT) pump and new soft start
- An additional $11,000 was amended into the ARPA budget in 2022 to be included in the increased MAG scope of work, including:
  - $9,000 for air blast rehabilitation driller services of Well 3 and Well 1.
  - $2,000 for additional hydrogeologist support time during well rehabilitation.

Overall, this study is intended to provide a comprehensive analysis of the entire water system, supply, storage, treatment, distribution, and pumping systems. This study also serves as a planning document for the SMSC board of directors with a list of project alternatives and budgetary costs for consideration. The information can be amended as needed to suit the needs of the system.

1.2 Problem Definition

Saddle Mountain Service Corporation needs several upgrades in order to serve the community for the foreseeable future. Below is a summary of the known deficiencies and recommended upgrades. The problems are noted in consideration of the latest Montana Public Works Standards (MPWS) and the Department of Environmental Quality Circular-1 (DEQ-1) requirements for public water systems.

Source Issues

- A redundant water supply is needed for the system to meet peak demands. In accordance with the recent well testing and assessment, this can be done by setting Well 1 (70 gpm) and Well 3 (150 gpm) back online to be part of the operating sequence along with Well 5 (260 gpm)

- A backup well may be needed in an emergency event that the lower well houses (Wells 1, 3, or 5) are not available or out of service. Well 4 near the Upper East Reservoir (UER) could be considered for upgrades that comply with DEQ-1 standards and brought online with the system as an approved backup source.

Pump Houses and Treatment Issues

- Unused chemical system equipment. Per the recommendations of the latest sanitary survey, SMSC should consider removing the unused zinc orthophosphate chemical system and equipment. See Sanitary Survey in Appendix G.

- The eyewash station should be made operational at the treatment site according to the latest DEQ Sanitary Survey.

- According to a site visit by an electrician (Eagle Electric) in 2023, the existing step-down transformers (2 each) at the lower pump station and Mid Station building are outdated and operating beyond their useful service life. It is noted that the heaters operate from the stepped-down 120V power, so it is critical to keep the transformers operational to prevent freezing at these sites. (Appendix H)

- Inefficiencies in the lower well housing piping from Well 1. The lower well house piping from Well 1 is undersized and corroded. The improvements to install a new well pump in Well 1 resulted in the installation of a 3-inch riser pipe. The existing discharge piping from Well 1 is currently 2-inch and has several unnecessary fittings. A proposal was received from a contractor to upgrade this piping. (Appendix I)

<u>Distribution System Issues</u>

- Undersized mains. Much of the distribution system is comprised of 4-inch diameter or smaller mains. These mains are connected to fire hydrants. Circular DEQ-1 states, “the minimum size of the water main for providing fire protection and servicing fire hydrants must be six-inch diameter.” While the distribution was completed prior to these standards, SMSC may consider upsizing to at least 6-inch water mains when distribution systems are planned in the future. This would be a significant capital project and may only need to be done if/when distribution system replacements are needed.

- Problematic and limited number Fire Hydrants. Existing functioning hydrants are spaced several blocks apart, which does not comply with DEQ-1 8.4.1, stating “Hydrants should be provided at each street intersection…”. While the subdivision was constructed before these standards were used, SMSC would benefit from improved fire suppression. A review of the distribution system related to hydrants determined the following:

    - A couple of the hydrants have been documented to be historically problematic (Ruby Mountain and Lone Mountain). As of the date of this study, both fire hydrants have been repaired and diminished flows have increased. However, for long-term operation, hydrant replacements may need to be considered.

    - Consideration should also be given to installing additional new fire hydrants w/ auxiliary valves in the system if and when future pipe improvements are completed.

- Unknown curb valve locations. It is reported that the location of up to 6-10 individual curb valve’s locations are not known. Efforts should be made to locate and document these valves.

- Individual service meter issues. It is noted that finding replacement parts for the current meters can be difficult. All meter reading is recorded on forms manually each month, then transferred to spreadsheets for billing. Upgrades to meters and recording software could result in saving time for both the operations and accounting personnel by using smart meter technology.

- Problematic and aging PRV station. The existing PRV station is operating beyond its useful design life and not constructed per the latest standards with the use of high flow and low flow operation. The PRV valve has not been rebuilt since it was originally constructed in the 1990's. Failure of the PRV system could result in a downstream pressure increase of over 30-40 psi above the current service line pressures.

- Inaccessible gate valve and/or lacking gate valves. Several gave valves shown on record drawings are not accessible from the surface due to being filled over by asphalt or dirt. The system lacks adequate valves to isolate individual streets or portions of long streets, additional valves should be considered.

Telemetry and Controls

- The current control system is outdated and no longer supported. The system is also not equipped with remote monitoring, alarm notification, or remote operating capabilities. This type of setup requires additional operator time and attention to check the status and respond to system functions and alarms.

- Motor starter condition in lower well house. The lower well house that operates Well 3 and Well 1 is not equipped with soft starters. Installing soft starters will result in power savings for SMSC and may limit the potential for pressure transients.

- Proprietary and outdated control panels in lower well house. The control panels in the lower well house that also operate the motor savers are outdated and are serviced by a single electrician/integrator service provider. It is recommended that the panels be updated and simplified for non-proprietary servicing.

1.3 Project Alternatives Cost and Improvement Program

Alternative solutions to the problems discussed above have been compiled into an overall improvement program summary for planning purposes. These priorities can be re-arranged and included in an overall Capital Improvement Program (CIP) by SMSC. The projects can be completed as needed and as funding allows. Table 1-1 presents a list of recommended improvements with their associated budgetary costs in 2023 dollars. The budgetary costs may need to be inflated to the desired year of installation. Note that alternatives D-2 and D-3 are either/or options.

Table 1-1 - Recommended Improvement Program

Description	Estimated Capital Cost (2023 Dollars)
Supply Alternatives	
S-1: Move Well #3 Pump to Well #1, Install New Well Pump #3	$26,000 (Work Completed in 2023)
S-2: Upgrade Well #4 to Serve as Backup	$77,000 (For 2-phase approach - Phase 1 evaluation at $12,000 would inform the need to do Phase 2)
S-3: Abandon Well #2	$3,500
Distribution Alternatives	
D:1 Replace Individual Meter Bases	$30,500
D-2: Upgrade to Radio Read Meter System	$69,700 (With Annual Fee of $822/yr.)
D-3: Upgrade to Cellular/Cloud Based Read System	$59,310 (With an Annual Fee of $1,520)
D-4: Locate Missing Curb Stops	Varies (depending on how many and if using a service provider)
D-5: GIS Mapping of System Assets	Varies (depending on assets need maps) Estimate $10,000 to $15,000 to hire a consultant for field work and mapping/exhibit work (valves, curb valves, piping alignments)
D-6: Replace Problematic Fire Hydrants	$8,000-$10,000/Each (Furnish and Install, if needed)
D-7: Install New Fire Hydrants	$8,000-$10,000/Each (Furnish and Install, if needed)
D-8: Locate and Expose Isolation/Gate Valves	Varies: Locate 6 existing, Install 5 new valves
D-9: Replace PRV Station/Vault	$80,000
Well/Pump House and Treatment Alternatives	
P-1: Replace Lower Well House Step-Down Transformer	$2,400
P-2: Replace Mid Station Pump House Step-Down Transformer	$2,400
P-3: Remove and Dispose Zinc Orthophosphate System	$1,500 (budgetary cost)
P-4: Telemetry and Control System Upgrades	$78,000
P-5: Convert to Liquid Chlorine System	Screened Out – Not Considered
P-6: Replace Well 1 Discharge Piping	$7,000
P-7: Install Soft Starts on Well 1 and Well 3 pumps	$4,500
P-8: Replace Pump/Control Panels in the Lower Well House	TBD
Storage Alternatives	
R-1: Security Fencing Around Tank Sites	$24,000 (for 3 sites)
R-2: Clean and Video Inspect Tank Sites	$3,550 (for 3 tanks)

2.0 EXISTING FACILITIES

2.1 Location Map

A map of the existing system is shown in Figure 1. Since SMSC did not have a map depicting the entire system, so this figure was developed from several available as-builts and SMSC input. Figure 1 shows the existing water system and notes the well and booster house sites, storage tanks, pipe transmission, and distribution line alignments (type and sizes if known) hydrants, valves, and PRV station location. According to operations personnel familiar with the system, the currently as-built drawings do not necessarily show the exact alignment of some pipelines, so the map was also completed with input concerning past locate efforts and/or excavations.

2.2 History

The majority of the current water system was originally developed in the early 1970s to serve Saddle Mountain Estates' first edition initially. The water system was subsequently upgraded to install a new tank and piping for Saddle Mountain Estates 2nd Addition in about 1977. The lower well house and Mid Station were built in 1972; the lower well house uses Wells 1 and 3. Well 2 at the lower well house is currently inactive and disconnected at this time. A new well house structure was built in 2001 which utilizes Well 5. In 2002, the transmission main from the lower well house was rerouted around the transfer station facility as it exists today. Copies of available record drawings provided by SMSC, on a reduced scale, are included in Appendix C.

In 2018, the existing 50 HP submersible pump in Well 3 was replaced with a lesser 15HP pump to alleviate the previously mentioned sand intrusion issue. Detailed records of this work have not been provided.

The water system began receiving several upgrades in 2021. These improvements included a retrofit to the lower well house, installation of magnetic meters, replacement of the mid-station redundant centrifugal booster pump, and rebuilding of the mid-station variable frequency drive (VFD) operated vertical turbine pump. Wells 1 and 3 were air-blast rehabilitated in 2023. In addition, the pump in Well 3 was moved to Well 1, and a new pump was installed in Well 3.

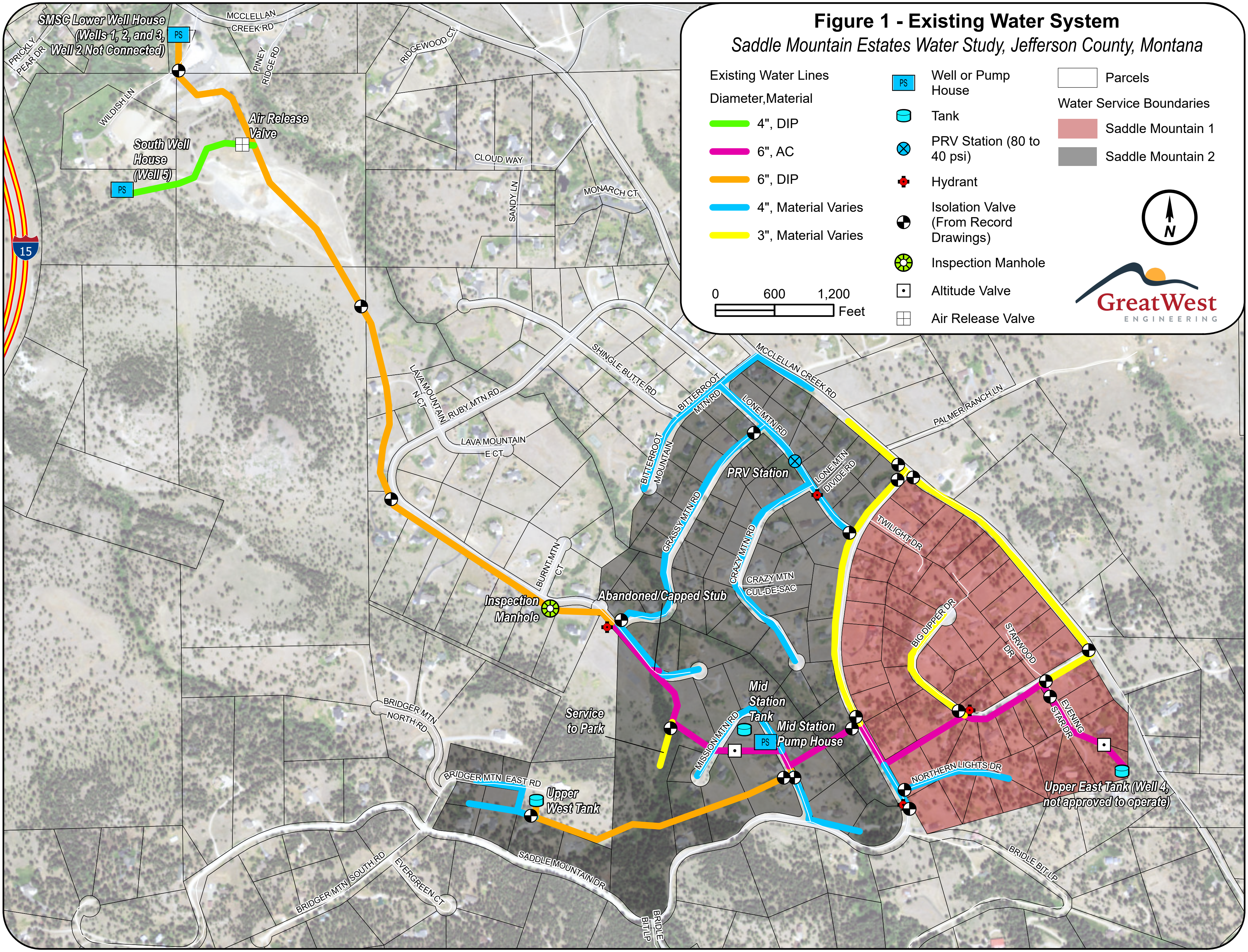


Figure 1 - Existing Water System
Saddle Mountain Estates Water Study, Jefferson County, Montana
Existing Water Lines
Diameter,Material
4", DIP
6", AC
6", DIP
4", Material Varies
3", Material Varies
Well or Pump House
Tank
PRV Station (80 to 40 psi)
Hydrant
Isolation Valve (From Record Drawings)
Inspection Manhole
Altitude Valve
Air Release Valve
Parcels
Water Service Boundaries
Saddle Mountain 1
Saddle Mountain 2
0 600 1,200 Feet
N
GreatWest ENGINEERING
SMSC Lower Well House (Wells 1, 2, and 3, Well 2 Not Connected)
PS
Air Release Valve
South Well House (Well 5)
PRV Station
Abandoned/Capped Stub
Inspection Manhole
Service to Park
Mid Station Tank
Mid Station Pump House
Upper West Tank
Upper East Tank (Well 4, not approved to operate)
MCCLELLAN CREEK RD
PRICKLY PEAR DR
PINEY RIDGE RD
RIDGEWOOD CT
WILDISH LN
CLOUD WAY
SANDY LN
MONARCH CT
15
SHINGLE BUTTE RD
MCCLELLAN CREEK RD
PALMER RANCH LN
LAVA MOUNTAIN N CT
RUBY MTN RD
LAVA MOUNTAIN E CT
BITTERROOT MTN RD
BITTERROOT MOUNTAIN
LONE MTN RD
LONE MTN DIVIDE RD
GRASSY MTN RD
CRAZY MTN RD
CRAZY MTN CUL-DE-SAC
TWILIGHT DR
BIG DIPPER DR
STARWOOD DR
EVENING STAR DR
BURNT MTN CT
BRIDGER MTN NORTH RD
MISSION MTN RD
NORTHERN LIGHTS DR
BRIDGER MTN EAST RD
SADDLE MOUNTAIN DR
BRIDGER MTN SOUTH RD
EVERGREEN CT
BRIDLE BIT LP

The SMSC board is currently in the process of developing operations and maintenance (O&M) for the entire water system. A progress draft of this document, provided at the time of this study, is referenced in Appendix D. A final version of this manual can be replaced in the Appendix upon completion.

2.3 Condition of Existing Facilities

This section describes the present conditions, suitability for continued use, and adequacy of current facilities for supply, treatment, pumping, and distribution systems.

2.3.1 Supply

Saddle Mountain Service Corporation has five wells within the community, however only three are active and being used. The water supply wells are associated with existing water rights, which allow for up to 200 gpm. (See Appendix J)

Images of the lower well house are shown in Figures 2-2 through Figure 2-4.

Figure 2-2 - Lower Well House (Well 3 shown on the left)

Figure 2-3 - Lower Well House (Well 3 on the right)

Figure 2-4 - Lower Well House (Inside showing Well 1, and meter)

Figure 2-4 shows the internal piping and also the new flow meter retrofitted with the lower well house piping in 2021. The panel showing instantaneous and totalized flows is mounted on the wall near the door. Two-inch galvanized piping is currently routed from the Well 1 pump discharge. Well 1 was originally designed for a VT pump with an intake set 40 feet below the surface and later converted to a submersible pump. The original discharge piping (excluding new piping associated with the flow meter installation) associated with Well 1 is observed to be corroded. The system could be revised to be simplified with fewer fittings. Additionally, the galvanized piping should be upsized to 3-inch to match the discharge pipe installed with recent pump improvements.

Well 1 and Well 3 Assessment

A professional drilling company and a certified hydrogeologist completed a well capacity assessment and air burst well rehabilitation as part of this study. The section below highlights some of the evaluation findings. Refer to Appendix A for a copy of the full technical memorandum. During the duration of the study, SMSC Well 1 and 3 were taken off-line due to decreasing yield and sand production during pumping.

Well 1 and 3 were drilled in 1971 and 1991, making them over 52 and 32 years old, respectively. No downhole maintenance of the wells has reportedly been performed since construction. Downhole video logs of the wells indicated well casing and screens were moderately to significantly negatively impacted by mineral scaling and fouling and plugging with sediment. The air-burst redevelopment of the wells removed significant scale and sediment, likely improving the specific capacity of the wells (however no historical data exists on pumping water flow rates and levels to verify).

The Well 1 drop pipe was deteriorated, limiting production from the well and entraining air into the well water, which may have decreased pump performance over time. The pump itself was corroded and worn. The 2-inch galvanized drop pipe was replaced for the pumping test in Well 1, but the pump/motor appeared to have reached the end of its serviceable life.

Figure 2-5 - Existing Well 1 Pump (Removed)

No records were available with respect to the historical production of the two wells. However, inspection and testing of the wells indicates the submersible pump in Well 1 was set within the perforated interval and operated in a manner that likely drew the PWL into the screened interval, producing cascading condition and air-entrainment, decreasing the pumping rate and cavitating the pump, damaging the pump over time.

At Well 3, according to H&L Drilling, a submersible pump set at 84 ft TOC was replaced with the current submersible pump set at 252 ft TOC. This may have been done to increase the available drawdown and yield from Well 3, but depending on its operation may have caused cascading conditions in the upper screen and subsequently entrained air in the pump discharge, reducing water production.

Although Wells 1 and 3 are not screened at similar depths, both wells exploit the upper water bearing zone limestone. The pumping test on Well 1 verified a hydraulic connection exists between the two wells. The wells have historically been operated simultaneously, and while no records of PWLs have been kept, it is likely simultaneous pumping limited the production from Well 1 and may have affected the performance of Well 3.

Wells 1 and 3 have been redeveloped to improve their specific capacities. To maximize the long-term production from the wells and pumps, the following recommendations were made and completed:

- Well 1: The original submersible pump and motor in Well 3 was determined to be redeployed to Well 1 and set on 3-inch galvanized drop pipe above the top of the perforated interval (above 39 ft TOC). The well should be operated at a pumping rate of about 70 gpm or less to prohibit the pump from cavitating.
- Well 3: Well 3 was determined to be equipped with a new submersible pump and motor set on the existing 250 ft of 3-inch galvanized drop pipe. The well should be operated at a maximum rate of about 150 gpm to prohibit air-entrainment. The pump column check valves were installed to facilitate future removal of the submersible pump as needed.

SMS has indicated a preference for operating both wells simultaneously, if possible. The interference observed during the pumping tests suggests doing so may be problematic.

The pump test evaluation for Well 1 recommended a max flow of 70 gpm. Well 2is offline and recommended by MDEQ to be abandoned. The maximum recommended flow for Well 3 is 150 gpm and previously operated at 70 GPM.

Well 4 is considered an emergency back up and would require refurbishment and testing to be approved by MDEQ for use. Well 5 produces about 260 GPM.

In support of this study, Eagle Electric completed an evaluation of the electrical service panel in the wellhouse and the wiring to the wells. It was determined that the system was originally designed to handle up to 50 HP pumps. However, increased wire sizes were needed to handle the amperage draw. Eagle Electric completed the re-wiring in support of O'Keefe pump installation work. The controls were programmed to serve a 15 HP pump in Well 3, and no pump was operating in Well 1. After completion of the work by O'Keefe well drilling to move the existing Well 3 pumps to well 1 and install a new pump in Well 3, the motor saver controls, installed by Nash Electric, required adjustment in order to prevent the pumps from being cut out. Lewis and Clark Electric was hired to adjust the motor savers to be able to successfully operate both pumps.

2.3.2 Demands

To support this study, SMSC provided existing water flow data including the existing well supply water meter data and meter water sales data from 2021 to 2023. Data for recorded meter flows were provided by SMSC in spreadsheets for the lower pump house, Well 5, the mid-station flow meter, and summation of the individual meter readings recorded each month. Well 3 was offline during the period of measurement.

SMSC placed magnetic flow through meters in well pump houses and an insertion mag meter in the Mid Station pump house in 2021. The In-line magnetic meters are McCrometer Ultramag models. The Insertion meter is a McCrometer FPI Mag model.

SMSC has questioned the accuracy of the mid-station flow meter, given discrepancies between the Well 5 and the mid-station flow meter. To troubleshoot this situation, representatives from MET provided assistance. MET temporarily placed a Flexim 601 model ultrasonic clamp on the meter on April 17, 2023, to compare the instantaneous pumped flow rates for both (centrifugal and VT) mid-station pumps. (Temporary clamp-on meter cut sheet found in Appendix K) Each Mid Station pump was turned on, and the existing insertion flow rate was compared to the clamp-on meter reading, showing the following flow comparison:

- Centrifugal pump running: clamp on = 290 gpm, insertion = 328 gpm, difference 13.3%
- Vertical turbine running: clamp on = 166 gpm, insertion = 188 gpm, difference = 13.2%

At the Well 5 pump house, the clamp-on flow rate was compared with the existing in-line magnetic meter flow. Both flow meters seemed to stabilize close to 260 gpm for instantaneous flow. However, during the period of the Well 5 pump "ramping up pump speed" (using the soft start drive), the flow rate observed on the mag meter was observed to "jump around". The flows on the clamp on and magnetic meter were observed to match closely once the pump was up to full speed, but the "jumping around" could possibly contribute to under-reporting the total flow. At this time, MET added a grounding wire to the flow meter to see if this would help.

The table below shows a comparison of water demands from Well 5, mid-station and the monthly individual meter summations for the period of January 2021 through February 2023. The Mid Station flow recording was reduced by 13.2% based on the clamp-on-meter comparison assessment done by MET as described above. All flows pass through the mid-station. No individual water services are on the transmission main from the wells to Mid Station. The estimated current population is estimated to be 366 people. Flow meter data can be found in Appendix K.

Table 2-1 - Water Demand Summary

2021 through 2023 Source Water VS. Metered Sales						
Date	Well 5 (gal/mo.)	Mid Station w/ 13.2% reduction (gal/mo.)	Mid Station (gal/day)	Total Metered Sales (gal/mo.)	Difference Mid Station minus Metered Sales (gal/mo.)	Approx. Unaccounted Water (%)
July-21	4,388,000	4,452,192	143,619	4,286,800	165,392	3%
Aug-21	3,500,000	3,501,792	116,726	2,827,500	674,292	17%
Sept-21	2,560,000	2,490,048	80,324	2,203,800	286,248	10%
Oct-21	697,000	667,872	21,544	712,500	(44,628)	-6%
Nov-21	520,000	495,072	16,502	414,000	81,072	14%
Dec-21	474,000	457,920	14,772	408,800	49,120	9%
Jan-22	467,000	419,904	13,545	384,900	(82,096)	-17%
Feb-22	412,000	433,728	13,991	361,700	72,028	14%
March-22	492,000	529,632	18,915	429,300	100,332	16%
April-22	338,000	472,608	15,754	426,600	46,008	8%
May-22	380,000	797,472	25,725	727,200	70,272	8%
June-22	1,552,000	2,038,176	67,939	1,771,600	266,576	11%
July-22	1,619,000	3,199,392	103,206	3,174,200	25,192	1%
Aug-22	882,000	4,392,576	**146,419**	3,930,800	461,776	9%
Sept-22	1,504,000	2,414,880	77,899	2,245,900	168,980	6%
Oct-22	320,000	654,912	21,126	576,900	78,012	10%
Nov-22	469,000	450,144	15,005	376,400	73,744	14%
Dec-22	569,000	526,176	16,973	291,800	234,376	38%
Jan-23	631,000	395,712	12,765	354,100	41,612	9%
Feb-23	531,000	499,392	16,109	397,500	101,892	18%
Annual Average (gpd)			**47,940**			
Peak Day (gpd)			**146,420**			

In summary, the peak day demand for the period of measurement is observed to be over 146,000 gallons per day. The average day demand is estimated to be about 48,000 gallons per day (131 gpcd) using a population of 366 people.

SMSC does not anticipate much, if any, growth in the future and can easily account for a couple of potential new homes if constructed on vacant lots within the community.

2.3.3 Treatment

SMSC treats drinking water by means of full-time chlorination using gaseous chlorine injection. Water from Wells 1, 3, and 5 is disinfected at the Mid Station storage facility. In the last two years, no significant DEQ violations have been noted in the system, which appears to be adequate for its disinfection needs. Despite the safety concerns of using a gaseous system, SMSC does not want to consider the conversion to liquid sodium hypochlorite injection due to potential increased chemical costs and operator familiarity reasons. Figure 2-5 shows the existing gas chlorine tanks.

Figure 2-6 - Gas Chlorine Tanks

Both the Mid Station pump house and the lower well house are equipped with plumbing and zinc orthophosphate solution to provide treatment; however, that system is no longer in use, and DEQ recommends the unused equipment be removed.

2.3.4 Storage

The SMSC system operates three existing concrete storage tanks, each with a capacity of 37,500 gallons for a total system storage of 112,500 gallons. This is enough capacity to meet the average day demand capacity, yet not enough capacity to meet the peak daily demand of 146,000 gallons. The existing storage capacity does not meet the recommended fire flow storage capacity of 167,000 gallons, which is the sum of the average daily demand and recommended fire flow storage requirement of 167,000 gallons for SMSC considering the average day demand (47,000 gallons) plus two hours at 1,000 gpm (120,000 gallons).

The service areas fed from all three tanks, including the Mid Station storage tank, can provide up to 1.9 hours of fire flow at 1,000 gpm. If the Mid-Station storage tank is taken offline, the available time to provide 1,000 gpm is reduced to 1.3 hours from two storage tanks. According to the most recent hydrant testing by the Montana City Fire Department, three out of the four existing hydrants in the system can provide about 1,000 gpm. The Lone Mountain hydrant can only provide 200-300 gpm. (See Appendix L for Hydrant Testing Results)

It is noted, however, that while the system was designed and installed before the current fire suppression standard, the current storage tanks do meet the needs of the community and provide a level of fire suppression.

It is noted that the tanks have not been cleaned for several years. The tanks were previously cleaned to remove sand introduced from the wells. It is recommended that the existing tanks be inspected to determine if cleaning is required. Also, a full inside-surface inspection of a tank is recommended to document and track any potential structural concerns. A quote was obtained from Independent Inspection Services out of Helena, Montana, offering a submerged rover inspection of all 3 concrete tanks for a total of $1,100 (2023 dollars), and a cleaning cost for all tanks quoted at $2,450. (See Appendix M) The tanks should be inspected to determine if cleaning is needed in addition to inspecting the structural conditions of the tanks.

2.3.5 Pumping Stations

The water system operates as a combination of pumped and gravity-pressurized systems. Water supply from the wells (Well 1, 3 or 5) is pumped at high pressure, up to 250 psi, to reach the Mid Station tank from well houses. The booster pumps directly treated water to storage tanks after treatment at the Mid-Sation pump house and tank site. The booster pumps discharge at 85 psi to fill the upper-east and upper-west reservoirs. The entire system and then gravity pressure fed from the tanks. The system is reported to have two individual booster pumps to provide sufficient pressure to higher-elevation pressure zone homes near the tanks.

The Mid Station booster station site utilizes a vertical turbine pump and a redundant in-line vertical multistage centrifugal pump. The Mid Station building, constructed in the early 1970s (as-built dated 1972), originally contained a single vertical turbine pump. The as-builts show main-level piping and a subfloor for the inlet piping, as depicted in Figures 2-7 and 2-8.

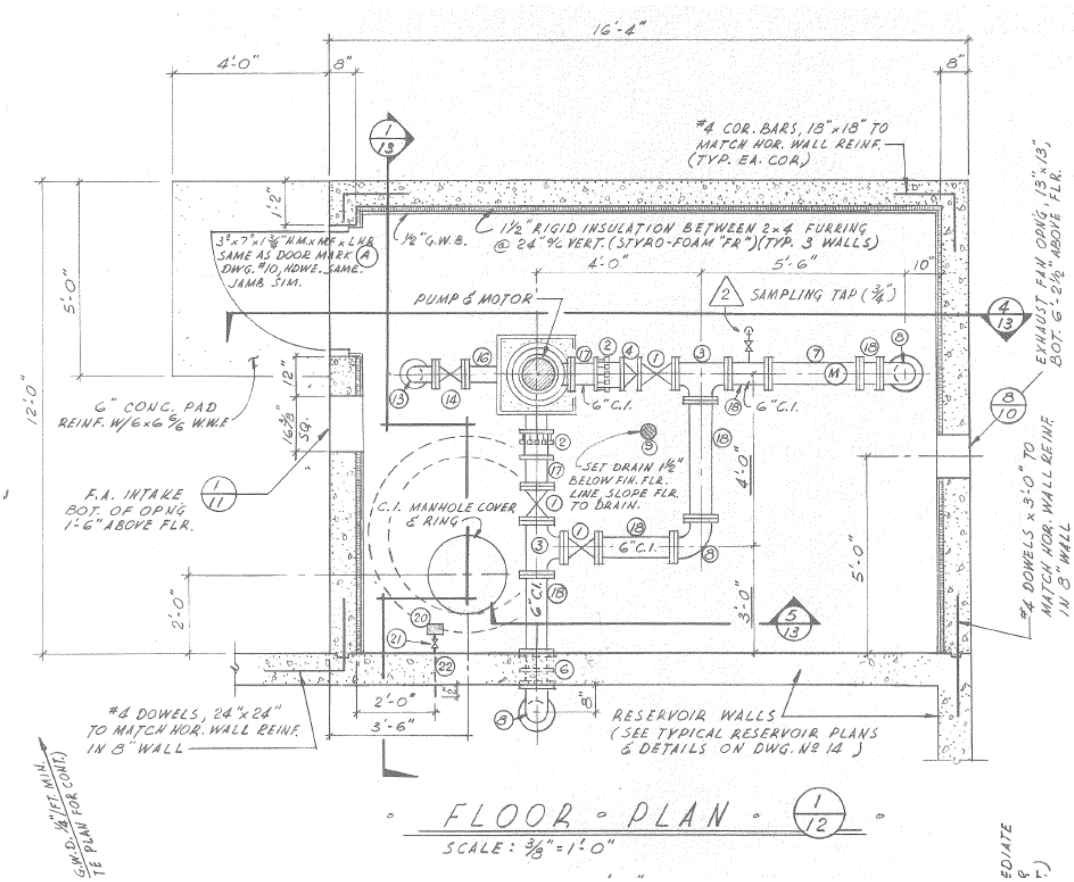


Figure 2-7 - Original Mid Station Floor Piping Plan

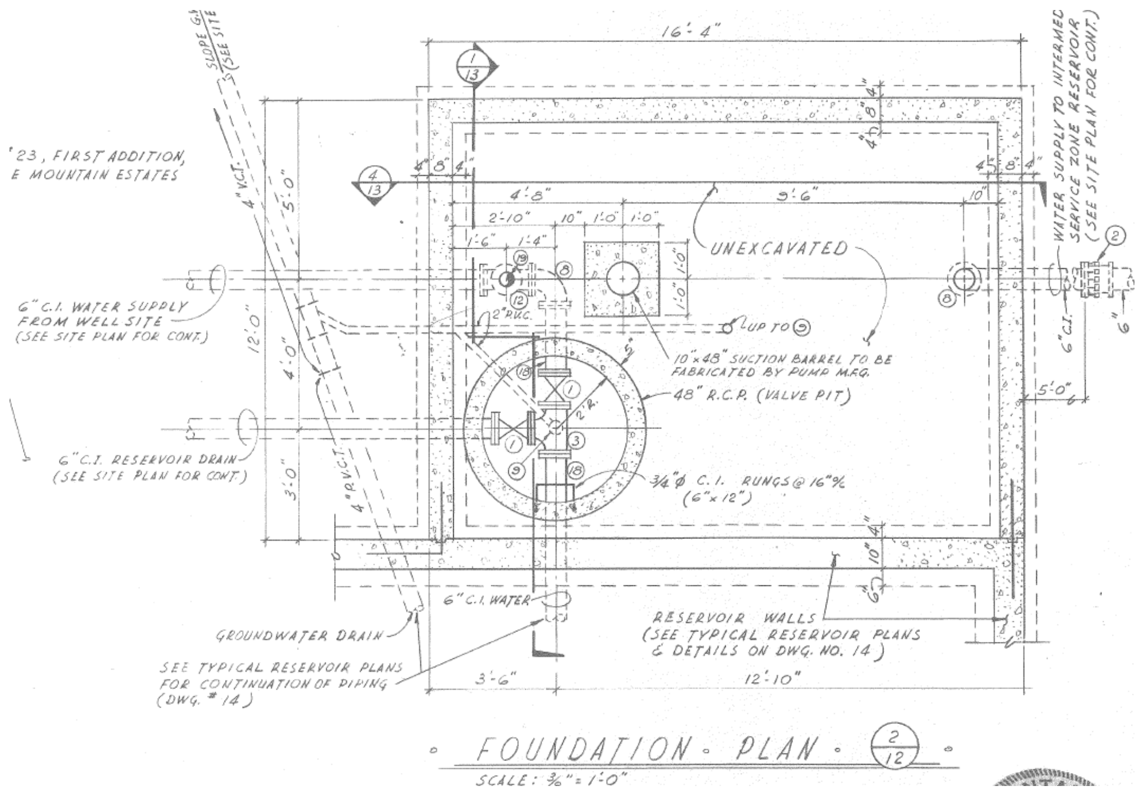


Figure 2-8 - Original Mid-Station Foundation and Subfloor Piping Plan

Several upgrades and retrofits have been completed at the Mid Station pump house. The in-line centrifugal pump with supporting mechanical piping/fittings plumbing was added to the piping (date not determined) and then replaced in 2001. The in-line centrifugal pump was replaced again in 2021 with a 15 HP Berkely Model BVM(X) 45-2 model pump. The new Berkely model was approved by DEQ, and pumping flow rates increased from about 100 gpm to 240 gpm to meet peak summer demands and provide full redundancy to the existing vertical turbine pump.

A copy of the 2021 Mid Station retrofit is found in Appendix A. A copy of the centrifugal pump curve is found in Appendix N. In 2021, the Mid Station pump house was also retrofitted with a new insertion magnetic flow meter. The existing vertical turbine pump was also rebuilt in 2021 and retrofitted with a soft start driver.

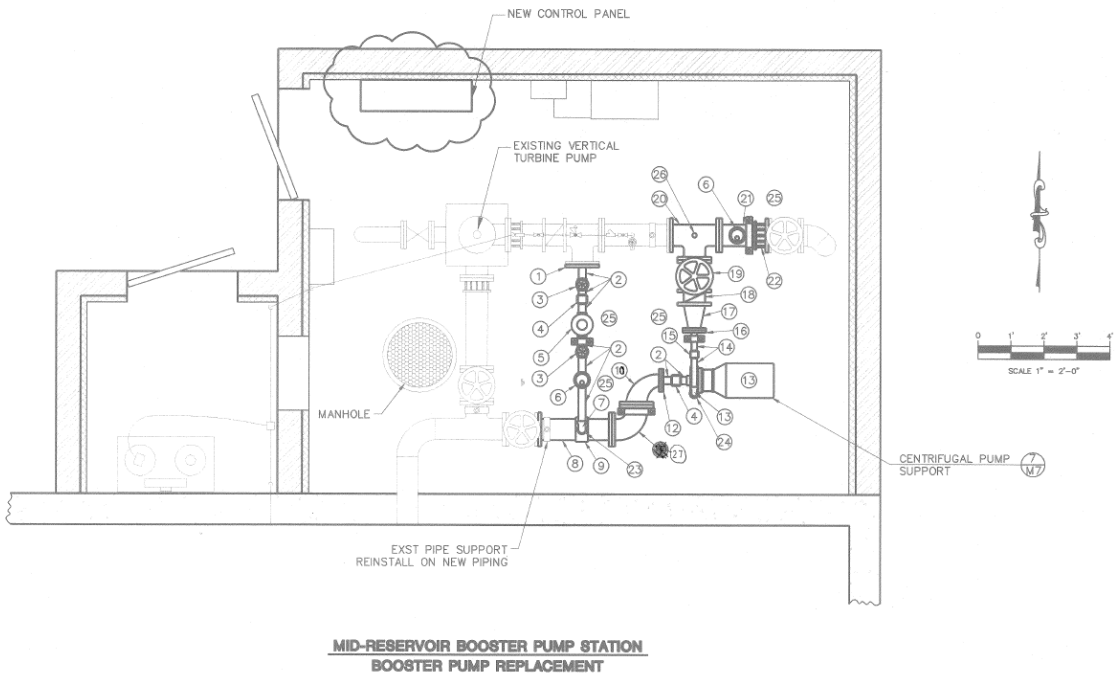


Figure 2-9 - Mid Station Centrifugal Pump Replacement (2001)

At this time, no major mechanical or pumping deficiencies have been noted with Mid Station, given the recent upgrades.

2.3.6 Distribution and Transmission System

The distribution and transmission piping system for SMSC is a mix of 3-inch through 6-inch pipe ranging in ductile iron pipe (DIP), asbestos cement (AC), and PVC types of piping. The map shown in Figure 2-1 indicates the pipe sizes derived from available record drawings and operator feedback. Some of the record drawings do not show the installed type of pipe. Therefore, the types shown on the map are based on feedback from the operations personnel where the pipes were excavated for repairs or maintenance. If the pipe has not been verified with an excavation, then the pipe type is noted as unknown. The earliest distribution pipe installed is thought to be AC material.

Most distribution piping that is three-to-four inches in diameter does not comply with the latest DEQ standards for a system providing fire protection based on the number of hydrants, the size of the mains, and hydrant leads feeding the hydrant. Moreover, the latest DEQ standards require fire hydrants to be located at the corner of every block and to have at least a 6-inch hydrant lead line connected to the hydrant. The community was constructed before the current

DEQ design standards were implemented and SMSC has no plans to replace/upsize distribution system piping at this time.

Blow-off valves are present at dead ends (Crazy Mountain, Lone Mountain, and Bitterroot Mountain), and gate valves are located throughout the community.

Curb Valves

Curb valves are used for individual services in the community. However, there are an estimated 6 to 10 curb valves that are still unlocated according to operations personnel. Water service lines are noted to be primarily ¾" PE.

Isolation Valves

This study completed an assessment of the location and number of gate valves in the community. Table 2-2 below lists the street intersection, the number of valves shown on the available record drawings, and the indication of whether the valves are currently operational. Photos of the valve locations taken at the time of the assessment are found in Appendix O.

Table 2-2 - Exist Valve Assessment Summary

M Intersection/Street	No. of Valves Shown on As-Built	No. of Valves Visible	No. of Verified Operable Valve	Remarks
Big Dipper	2	0	TBD	Not visible at time of inspection. (Reported to be near the posts)
Big Dipper/Evening Star	1	1	1 - Reported to be operable (Keith)	Visible
Big Dipper/McLellan	1	0	0	Not visible and never found
Saddle Mountain/McClellan	3	2	TBD	Visible
Saddle Mountain/Lone Mountain	1	1	1	Just used for a leak repair
Saddle Mountain (between lots 32/38)	2	0	0	Plans show the valves might be on the shoulder
Saddle Mountain/Northern Lights	2	0	0	One painted blue where something was picked up by the metal detector
Mission Mountain Road	1	2	TBD	Visible next to posts
Lone Mountain/Grassy Mountain	1	0	0	No visible
Ruby Mountain/Grassy Mountain	1	2	TBD	
6-inch Transmission Main	2			Not Verified

The valve site assessment did not show the valves shown for the Bridger Mountain Road services area, nor the services shown on plans for the transmission main. Based on the findings of the assessment, it is recommended that SMSC consider completing the following:

- Locate, uncover, and/or raise about 6 existing gate valves that are possibly buried. A contractor could be hired to locate and raise several valves with a single project.
- Verify that all valves are operational and replace those that are not working.
- Include all accessible valves in the regular valve exercise program.
- Consider installing additional valves in the system so that there is a shutoff valve at every intersection and an intermediate gate valve along some longer road sections with water mains (i.e., Grassy Mountain Road).
    - Install five new valves at the following locations:
        - Bitterroot/Lone Mountain Road Intersection – 2 Valves
        - Grassy Mountain Rd. (mid-way) – 1 Valve
        - Crazy Mountain Rd./Lone Mountain Rd. Intersection – 1 Valve
        - McClellan Rd. (mid-way between Saddle Mountain Rd. and Bid Dipper Rd.) – 1 Valve

Note that according to DEQ-1 8.3, *"Sufficient valves must be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves should be located at not more than 500-foot intervals in commercial districts and at not more than one block or 800 foot intervals in other districts."*

PRV Station

A PRV station vault separates the lower pressure zone on Lone Mountain Road. The lower pressure zone serves 25 homes along Lone Mountain Road, Grassy Mountain Road, Bitterroot Mountain Road, and a portion of McClellan Road. According to Saddle Mountain 2 record drawings (Appendix C), the PRV system is likely operating beyond its useful design life.

The pressure gauge in the PRV assembly is faulty, so current upstream and downstream operating pressures are not known at this time. Based on the proximity of the nearby homes located immediately upstream of the PRV station and the elevation difference between the PRV and upper storage tanks, it is assumed that the upstream pressure is currently at about 80 psi. The downstream pressure would need to be set at no more than 40 psi to limit the lowest homes in the pressure zone (i.e., Bitterroot Mountain Rd.) from exceeding the DEQ recommended maximum pressure of 80 psi. (DEQ-1 8.2.1)

One of the SMSC board members noted that some homeowners in the lower pressure zone have noticed an increase in their service pressures as of January 2024. Priority should be given to the PRV upgrades.

The estimated flow range of the PRV station is likely from about 5 gpm to 200-300 gpm, for average day flow conditions to peak flow demands during irrigation periods. The PRV assembly is set in a manhole and accessed from the surface. Despite being insulated on the walls and top access, the valves have been reported to freeze during extended periods of extremely cold temperatures (below zero degrees F), so a heater has been wired into the space. A photo of the existing PRV station is shown in Figure 2-10, below.

Figure 2-10 - Existing PRV Station

The PRV station is sized for 4-inches high flow and a 1-inch low flow. At the time of the photo, the low flow side appears to be valved off. The image indicates the PRV valves are in a corroded state, and the bolts are not accessible around the entire assembly. It is not likely that the valves have been replaced or rebuilt since installation. The current operations personnel cannot recall if/when the PRV station was rebuilt.

Given the age and condition of the PRV station, it is recommended that SMSC consider replacing the station to protect the downstream users. Pipestone Equipment was contacted to obtain a PRV station upgrade recommendation and budgetary price for a turnkey PRV vault that would be ready to be installed by a contractor. If the service area is to upgrade to 6-inch distribution piping someday, then a 6”x2” PRV station is recommended to account for a flow range of 5 to 750 gpm. However, a 4”x2” PRV station is sufficient to account for peak flows up to 400 gpm with the current 25 homes.

Fire Flows and Fire Hydrants

The system currently has four hydrants. Fire hydrant testing data was available for testing completed by the Montana City Fire Department in 2015, 2022 and 2023.

According to the testing done in 2015, the following flows were reported:

- Ruby Mountain Rd. Hydrant (Reported to be in poor condition, likely bad valve, hard to open), 375 gpm.
- Lone Mountain Hydrant (possible flow restriction, large pressure drop), 503 gpm.
- Big Dipper Hydrant, 822 gpm
- Saddle Mountain Hydrant, 919 gpm

According to SMSC operations personnel, the Ruby Mountain and Lone Mountain hydrants have now been repaired since 2025. For comparison, the latest testing completed in 2023 shows the following:

- Ruby Mountain Rd. Hydrant 966 gpm.
- Lone Mountain Hydrant 349 gpm.
- Big Dipper Hydrant, 1,103 gpm
- Saddle Mountain Hydrant, 1,103 gpm

For systems providing fire capacity, DEQ standards require a minimum storage capacity equal to average day demand plus fire demand. A fire flow capacity analysis is summarized below:

- Existing average day demand for entire system = 47,040 gallons (Section 2.3.2)
- Recommended fire flow is 1,000 gpm for 2 hours = 120,000 gallons.
- The minimum recommended storage volume is 167,000 gallons.

The existing available storage capacity is provided by 3 each 37,500-gallon rated partially buried concrete storage tanks for 112,500 gallons total. SMSC does not have any plans to install or upgrades their water storage tanks at this time.

2.3.7 Electrical and Control System

The current control system is outdated. The electrical components and panels are operational for the system, yet no longer supported by suppliers for the entire control system.

The original control system included hard-wired telemetry between the lower well house and the Mid Station building. The most recent major telemetry upgrades were completed in 2001, and they included a Zetron system installed by Crum Electronics. The system works with the Mid Station tank level Murphy switches by calling for water from either well field with the well pumps alternating. The upper tank calls for water from the Mid Station booster pumps, which alternate between the centrifugal and vertical turbine pumps using a pressure transducer. The upper west reservoir (UWR) is 4 feet lower in elevation than the upper east reservoir (UER) and an altitude valve is placed at the UWR tank inlet to control the water surface elevation. This is used to prevent the UWR from overflowing, which allows the UER to fill completely.

Currently, there is no outside monitoring notification capability for the operator from the system. SMSC has expressed an interest in upgrading to a full monitoring and control system someday. The highest priority would be to monitor tank levels and Mid Station pumps. There is currently no internet or phone line at any site; only telemetry at all sites except the UWR.

The SMSC board has solicited quotes for some recent upgrades. In 2019, the board solicited a quote for SCADA upgrades from XiO Cloud. A copy of this proposal was not obtained for inclusion in this study.

Prior to the XiO solicitation, the most recent telemetry and control upgrade proposal was provided by Nash Electric in 2018 for $57,000 to provide a complete SCADA system upgrade. This cost is considered no longer valid in today's market. Nash has some experience working with the SMSC system and installed a custom-built local panel for the upper west tank in 2017 with remote pressure transducers for a total cost of $7,000. All work took place in the existing altitude valve vault. Nash installed two pressure transducers and integrated them into the new local control panel. The transducers provide feedback on the local pressure and tank level.

A more recent SCADA system upgrade quote was provided by MET out of East Helena for a total cost of $77,965. MET completed a site visit and assessment in May 2023. According to MET, due to the age and decreasing reliability of the SMSC equipment, MET recommends a full upgrade of the existing SCADA system as opposed to partial improvements. Merging old and new equipment and systems is never as seamless as it appears and increases the likelihood of higher maintenance required after installation. Additionally, performing a retrofit limits the warranty availability. Merging with 20+ year old equipment has challenges and risks and can result in “finger-pointing,” according to MET. Completing intermediate upgrades for monitoring only does not offer significant savings. According to MET, if each site provides monitoring only, they will still need a PLC and panel that comprise a significant portion of the cost. (See Appendix B)

The general scope of a full-system upgrade by MET is summarized below:

- *The system site includes:*
  - *Upper East Reservoir*
  - *Upper West Reservoir*
  - *Mid station*
  - *Wellhouse 1 & 3*
  - *Wellhouse 5*
- *New level transmitters at all 3 reservoirs and the ability to control the three wells in a Lead/Lag/Dual order. Specific operating protocol will be determined with Saddle Mountain Service Corp, before programming and panel construction.*
- *This proposal includes the integration of SMSC supplied flowmeters into the SCADA system, including trending totals.*
- *For the hardware and installation of an entire system, see the primary components listed below.*
  - *Hardware:*
    - *QTY 2: Reservoir RTU (Remote Terminal Unit)*
      - *Located at upper East and West tank.*
      - *New Transmitter for level monitoring*
      - *Radio for level communication to wells.*
      - *Cabinet hardware*
      - *Antenna / cable*
    - *Qty 2: Well, RTU’s X 2 (Remote Terminal Unit) Wells 1&3, Well 5*
      - *Allen Bradley PLC*
      - *Schneider Trio Radio for communication to wells.*
      - *Relays/Power Supplies/All required Hardware.*
      - *Cabinet hardware*
      - *Antenna / cable*
    - *Qty 1: Mid Station CTU X 1 (Central Terminal Unit)*
      - *Allen Bradley PLC*
      - *Trio Radio for communication to wells.*
      - *Operator Interface Terminal*

- *Relays/Power Supplies/All required Hardware.*
- *New Cabinet and all hardware*
- *Antenna / cable*
- *Remote access will be enabled VIA VPN Router using Saddle Mountain Service Corp provided internet.*

2.4 Operational and Management Practices and Capabilities

Contract operator Mark Zitzka is the primary active fully certified class 4AB water system operator for this system. Contract backup operator Matt Weber is also an active certified class 4AB drinking water system operator for this system. This currently satisfies the state requirements for this class 4AB drinking water system. The system will need to be prepared to continue to have a primary and backup operator, as provided by the system. According to DEQ, the system appears to be adequately maintained, managed, and operated. There are no safety concerns in the note.

2.5 Financial Status of any Existing Facilities

A summary of revenues and expenses for 3 years of operation is shown below. A base rate increase from $45 to $60 per month was initiated in 2021. SMSC also receives victim compensation, as listed in the table. Note that the revenues that come from ARPA funding are not shown in the table below in the revenues section.

Table 2-3 - Existing Water System Revenues and Expenses

Existing Water System Revenues and Expenses (Fiscal Year)			
Line Item	**2020**	**2021**	**2022**
Revenues ($)			
Base Rates	68,610	81,273	81,837
Meter Usage	36,820	36,902	32,119
Misc/Late fees/Interest	800	995	1,138
Victim Compensation	4,320	14,760	6,435
Total Revenues	**110,550**	**133,930**	**121,529**
Expenses ($)			
Chemical	471	785	270
Primary Operator	18,843	19,195	19,584
Backup Operator	4,680	5,280	5,280
Mowing and Grounds	750	250	750
Snow Removal	616		400
O&M	50	600	187
System Repairs - Other		10,469	
Capital Repairs (over $8k)	19,228	11,491	56,679
Labor	5,308	1,403	1,294
Parts	9,370	1,197	2,862
Building Repair		3,850	-
Other	130	-	-
Electric Utility	18,532	14,972	15,144
Water Testing	2,665	339	376
Travel	304	504	226
Licenses and Permits	244	15	20
Due and Subscriptions	67	398	20
Property Ins.	3,248	3,727	4,147
Liability Ins.	1,486	1,459	1,484
Meeting/Zoom Expense	186	156	156
Office Supplies	278	259	334
Postage and Delivery	1,087	23	58
Accounting	6,525	7,003	7,490
Legal	9,120	2,540	6,954
Engineering	3,260	6,815	9,600
Professional (other)	2,133	1,109	-
Property Taxes	344	346	344
Total Expenses	**108,925**	**94,185**	**133,359**
Revenue minus Expenses	**1,625**	**39,745**	**(11,830)**

3.0 ALTERNATIVES CONSIDERED

This section provides a summary of the potential alternatives that can be considered by SMSC for implementation. A brief project description and a budgetary cost estimate are provided for each alternative. The budgetary project cost estimates assume estimated construction costs, engineering fees (where applicable), estimated DEQ fees (where applicable), and a contingency factor. Construction costs are derived from bid tabs for similar projects. All construction projects will need to comply with SMSC and Jefferson County procurement policies and state laws. An evaluation of the procurement policies is beyond the scope of this project. Generally, projects less than $80,000 will require the solicitation of at least three contractor quotes. Construction projects exceeding $80,000 will require a public bidding process.

3.1 Alternatives screening

Replacing and/or installing new hydrants within the system is recommended for consideration but will not be pursued by SMSC. It has been reported that the problematic hydrants described in Section 2.3.6 have been repaired. The estimated budgetary cost to replace fire hydrants with ancillary gate valves is about $8,000 to $10,000 each if SMSC chooses to proceed with hydrant installations in the future.

These alternatives are not evaluated in more detail:

- D-6: Replace Problematic Fire Hydrants (estimate $8-10k each hydrant/valve assembly) (not pursued as hydrants have been repaired)
- D-7: New Fire Hydrants (not pursued)
- P-5: Convert to Liquid Chlorine System (not pursued)

3.2 Supply Alternatives

3.2.1 Alt. S-1: Move Well 3 Pump to Well 1, Install New Well 3 Pump

Description/Design Criteria

As described in Section 2.3.1, it was determined based on post-well-rehabilitation and well pumping testing, that Well 1 should be operated at a pumping rate of about 70 gpm or less to prohibit the pump from cavitating and that the Well 3 pump should be operated at a maximum rate of about 150 gpm to prohibit air-entrainment.

Well 3 was equipped with a new submersible pump and motor set on the existing 250 ft of 3-inch galvanized drop pipe. The drop pipe on Well 1 was recently replaced concurrently during this study. Pump column check valves were installed on the Well 1 and Well 3 drop pipes to facilitate future removal of the submersible pumps, as needed.

It was determined that the existing Well 3 pump was able to meet the duty point for Well 1, and the pump was moved from Well 3 to Well 1 to meet the calculated operating duty point of about 70 gpm at 5 ft. of the calculated total dynamic head (TDH). A new pump was furnished and installed by the driller to meet the calculated operating duty point of about 150 gpm at 603 ft. TDH. Copies of the well pump system/pump curves for the specified pump models are found in Appendix A.

Some issues were encountered during this work. These included delays stemming from weather and driller availability, delays related to troubleshooting the existing electrical and controls in the lower pump house for the motor saver settings, and limited electrical/controls technician availability. Once the electrical issues were resolved, the pumps were turned on and able to be integrated into the automatic pump control settings.

Cost Estimates

The work for this alternative has been completed by O'Keefe for a total cost of $49,832.13 which also includes the initial well testing and air blast rehabilitation work totaling $26,508.23. See Appendix P for a copy of the invoices for this work. Professional hydrogeologist services were included in the engineering contract for the completion of this study.

3.2.2 Alt. S-2: Upgrade Well 4 To Serve as System Backup

Description/Design Criteria

This alternative includes the testing, rehabilitation, and upgrades necessary for converting Well 4 to be in compliance with DEQ standards. In general, this work would be completed in two phases, with the first phase being an initial assessment of the existing well to inform the second phase (if needed), which is comprised of completing upgrades. The first phase would include initial baseline sampling and testing, video inspection and aquifer pump testing. The second phase would include rehabilitating or replacing the existing well pump (if necessary), constructing a new valve vault and installing new plumbing. This alternative would require DEQ review and approval.

The project and cost also assume well "swabbing/redevelopment"; this could be an air-burst technique that was implemented on Wells 1 and 3 or something more conventional like brushing the screen/slot section and pumping/bailing the well to remove any sediment. The development method would be determined based on downhole video inspection described for phase 1 assessments.

Cost Estimates

The estimated total project cost for Alternative S-2 is shown on Table 3-1, below.

Table 3-1 - Alternative S-2 Well 4 Upgrade Estimated Cost

Saddle Mountain Service Corp. Water S-2 Well 4 Upgrade					
#	BID ITEM	QTY	UNITS	UNIT PRICE	TOTAL
	Phase 1 - Initial Assessment				
1	Initial sampling and testing	1	LS	$ 2,000.00	$ 2,000
2	Video inspection of existing well (driller cost)	1	LS	$ 5,000.00	$ 5,000
3	Aquifer Pump Test (driller cost)	1	LS	$ 5,000.00	$ 5,000
	Phase 2 - Well Site Upgrades				
4	Replace Well Pump (furnish and install)	1	EA	$ 10,000.00	$ 10,000
5	New Concrete Valve/Testing Vault	1	EA	$ 8,000.00	$ 8,000
6	Plumbing inside vault (flow meter, sample tap, valves, blow off)	1	LS	$ 6,000.00	$ 6,000
	Direct Construction Subtotal				**$ 36,000**
	Mobilization			10%	$ 4,000
	Construction Subtotal (2023 Dollars)				**$ 40,000**
	Contingency			20%	$ 8,000
	Hydrogeologic Services				$ 10,000
	Well Swabbing/Well Redevelopment				$ 10,000
	DEQ Review Fees				$ 1,000
	Engineering Design for DEQ Approval				$ 8,000
	TOTAL				**$ 77,000**

3.2.3 Alt. S-3: Abandon Well 2

Design Criteria

The alternative includes the abandonment of Well 2, which is currently inactive. Abandonment would be per ARM 36.21.670, which is recommended by DEQ if the well is not being kept as an emergency backup well. SMSC is not required to complete the work, so this alternative can be provided as a reference if needed. According to the ARM, the work would need to include filling in the well with an impervious material to prevent movement of water, sealing all material to within 3 feet of the surface, cutting the casing off within 3’ of the ground surface, and grading to match the natural contours.

Cost Estimates

The estimated budgetary cost for this work is $3,000.

3.3 Storage Alternatives

3.3.1 Alt. R-1: Security Fencing Around Tank Sites

Description/Design Criteria

This alternative assumes placing chain link fencing and gates around all three tank sites for security. Sufficient working clear space would be accounted for in the fencing alignments.

Cost Estimates

The estimated total project cost for Alternative R-1 is shown in Table 3-2 below.

Table 3-2 - Alternative R-1 Security Fencing Around Tank Sites Estimated Cost

Opinion of Probable Cost Saddle Mountain Service Corp. R-1 Alternative Security Fencing Around Tank Sites					
#	BID ITEM	QTY	UNITS	UNIT PRICE [1]	TOTAL
	Mid Station Pump Station/Tank				
1	Security Chain Link Fencing and Gates	95	LF	$ 80.00	$ 7,600
	Upper West Tank				
2	Security Chain Link Fencing and Gates	125	LF	$ 80.00	$ 10,000
	Upper East Tank				
3	Security Chain Link Fencing and Gates	125	LF	$ 80.00	$ 10,000
	Direct Construction Subtotal				**$ 20,000**
	Contingency	20%			$ 4,000
	TOTAL				**$ 24,000**

3.3.2 Alt. R-2: Clean and Video Inspect Tanks

Description/Design Criteria

This alternative includes performing a video inspection using a remote-controlled submerged rover in each tank site and cleaning/removing the sediment from each tank site if necessary, following the inspection. A periodic tank inspection is a beneficial maintenance tool to determine if there are any leaks, cracks, corrosion, or other notable areas of degradation. Performing video inspections periodically is useful in monitoring any potential areas of concern. Cleaning of the tank is needed to remove accumulating debris, organic matter, silts, and other matter that may impact the water quality.

Cost Estimates

A proposal was provided by Independent Inspection Services out of Helena to inspect and clean all three tank sites for a total cost of $3,550. (See Appendix M)

3.4 Pumping Station Alternatives

3.4.1 Alt. P-1: Replace Lower Well House Step-Down Transformer

Description/Design Criteria

This alternative includes replacing the lower well house step-down transformer. While the current transformer is in working order, it is operating beyond its useful design life, having been installed in the late 1970s. The well-house electric heater is connected to the 120-V service after the transformer, so it is considered important to prevent the failure of this unit.

Cost Estimates

A proposal received from Eagle Electrical in 2023 was for $2,400. (Appendix H)

3.4.2 Alt. P-2: Replace Mid-Station Step-Down Transformer

Description/Design Criteria

This alternative includes replacing the Mid Station pump house step-down transformer similar to the lower well house described above.

Cost Estimates

A proposal received from Eagle Electrical in 2023 was for $2,400. (Appendix H)

3.4.3 Alt. P-3: Remove Zink Orthophosphate System

Description/Design Criteria

This alternative includes removing and legally disposing of the existing unused chemical equipment as recommended by DEQ.

Cost Estimates

A budgetary cost is estimated to be $1,500.

3.4.4 Alt. P-4: Telemetry and Control System Upgrades

Description/Design Criteria

This alternative includes a full system upgrade as described in Section 2.3.7. A full system upgrade is recommended over partial retrofits.

Cost Estimates

A proposal was received from MET in 2023 for about $78,000. (See Appendix B)

3.4.5 Alt. P-6: Replace Well 1 Discharge Piping

Description/Design Criteria

This alternative includes removing the existing Well 1, 2-inch galvanized piping and fittings in the lower well house for them and replacing it with 3-inch galvanized piping to match the 3-inch Well 1 drop pipe recently installed. The number of bends and fittings will be reduced to limit head losses. The upgrades would maintain the pressure relief blow out connection to the exterior.

Cost Estimates

A proposal was received from MJD for approximately $7,000 (See Appendix I)

In addition, if DEQ review and approval is required, assume an additional cost of $3,000.

3.4.6 Alt. P-7: Install Soft Starts on Well 1 and Well 3 Pump

Description/Design Criteria

This alternative includes retrofitting soft start drivers into the existing pump controls for both Well 1 and Well 3 pumps.

Cost Estimates

A proposal was received from Lewis and Clark Electric for this upgrade for a total cost of $4,500 (See Appendix H)

3.4.7 Alt. P-8: Replace Pump Control Panels in Lower Well House

Description/Design Criteria

This alternative includes replacing the existing electrical and control panels in the lower well house in addition to the soft starter installation described above.

Cost Estimates

A proposal was solicited from Lewis and Clark Electric for this upgrade, but more information is needed to make an accurate proposal. (See Appendix H)

3.5 Distribution System Alternatives

3.5.1 Alt. D-1: Install New Individual Meter Bases

Description/Design Criteria

This alternative includes replacing the individual meter bases and the encoder register only. The costs below include only the bare meter and register, and not the endpoint. This includes both furnishing and installing the meters. The community uses inside-premises meters with outside reader units.

Cost Estimates

A cost proposal was obtained from Yellowstone Water Works for meter upgrades. (See Appendix M) The budgetary cost to replace meters using the conventional bronze with nutating disc Bader model meters is estimated to be $30,500 (2023 dollars), assuming $148/each to furnish and $100/each to install considering that the work would be done as a single project using a local contractor. SMSC could consider installing the new meters to save costs.

Ultrasonic (E-series) badger meter model is also another option that SMSC may consider for replacements. The E-series meters are about $218/each furnished, or would be estimated to cost about $39,100, installed.

3.5.2 Alt. D-2: Upgrade to Radio Read System

Description/Design Criteria

This alternative includes the scope of work portion for converting the meters to a radio read type system. This would include the necessary hardware, software, and equipment required for the conversion including a new register, endpoint, and tablet with transceiver. The upgrade will also require onsite integration and training in operating and accounting services.

Cost Estimates

A cost proposal was obtained from Yellowstone Water Works for a meter reading program upgrade. (Appendix Q) The budgetary cost to upgrade to a radio read system, including the replacement of the individual meters described in Alternative D-1, is about $69,724 (2023 dollars). The meter base D-1 above is added to the cost of an endpoint used for drive-by reading (i.e. ORION ME proprietary system). According to Yellowstone Waterworks, the capital cost for this alternative is meter basses from D-1 ($148/each furnish + $100/each install), endpoints at $140/each, a new data collector is $12,000, engagement fee is $4,000, and training is $6,000 in addition to the meter, encoder register and endpoint costs.

Ongoing annual costs for this system would be $0.13/meter/mo. = $15.99/year plush mobile read license of $432 and a user login license of $384 for a total annual cost of $822/year.

3.5.3 Alt. D-3: Upgrade to Cellular/Cloud Based Read System

Description/Design Criteria

This alternative includes the scope of work portion of converting the meters to a cloud-based cellular read system. This would include the necessary hardware (meter bases in Alternative D-1) software, and equipment required for the conversion including a new register, cellular endpoint. The upgrade will also require onsite integration and training for operating and accounting services, similar to a touch-read system upgrade.

Cost Estimates

A cost proposal was obtained from Yellowstone Water Works for a cloud-based cellular read system upgrade. (Appendix M) The budgetary cost to upgrade to this type of system, including the replacement of the individual meters described in Alternative D-1, is about $59,310 (2023 dollars). According to Yellowstone Waterworks, the capital cost for this alternative is meter basses from D-1 ($148/each furnish + $100/each install), cellular endpoints at $172/each, engagement fee is $4,000, and training is $3,650 in addition to the meter, encoder register and endpoint costs.

This type of system will require an annual subscription fee quoted to be about $1.03 per meter/month or about $1,520/year. However, the reduction in labor hours that were previously used to read meters and process the data would be significant with this alternative.

3.5.4 Alt. D-4: Locate Missing Curb Stop Valves

Description/Design Criteria

This task would include locating the estimated six to ten currently unlocated curb stop shut-off valves. This alternative could be done with SMSC operations personnel using metal detection equipment or by hiring a service provider/contractor to locate the missing curve valves.

Cost Estimates

The estimated budgetary cost for this work will vary and is not known at this time until more information is obtained. The majority of the work can be completed by the operations personnel.

3.5.5 Alt. D-5: GIS Mapping of System Assets

Description/Design Criteria

This task would include performing site surveying and mapping of water system features, including curb valves, gate valves, water line (transmission and distribution) alignments, and other important appurtenance.

Cost Estimates

The estimated budgetary cost for hiring a consultant to survey and map the system assets is $10,000 to $15,000. A detailed proposal will be required at such a time that SMSC chooses to proceed. This task assumes that the water system appurtenances (valves, main locations) would already be located and accessible on the surface and ready for surveying.

3.5.6 Alt. D-8: Locate Isolation/Gate Valves

Description/Design Criteria

This alternative would include finding the gate valves that are shown on record drawings but not visible or accessible to the surface. Table 2-2 in Section 2.3.6 indicated that 6 valves may need to be exposed and located. Once these valves are exposed, SMSC will need to verify if they are actually operational.

The work to find and uncover the valves could be done by a hired contractor. However, SMSC should attempt to locate the valves with a metal detector first before proceeding with spending funds to complete excavation work. For valves located in paved roadways, work would likely include asphalt saw-cutting and surface excavations to expose each valve cover, then raising/extending the valve box, and patch paving with possible concrete collar installation.

Cost Estimates

The estimated budgetary cost to expose each valve, assuming that the location has been confirmed, is estimated to be about $9,000 ($1,500/each x 6 valves).

3.5.7 Alt. D-9: Install New Isolation/Gate Valves

Description/Design Criteria

This alternative would include installing new gate valves in the recommended intersection locations described in Section 2.3.6. A total of 5 additional new gate valves are recommended to be installed in the water system.

Cost Estimates

The estimated budgetary cost to install each new valve is estimated to be $30,000 ($6,000/each for 5 gate valves) for furnishing and installing the valves along with surface restoration costs.

3.5.8 Alt. D-10: Replace PRV Station/Vault

Description/Design Criteria

This alternative would include installing a new PRV station and vault in accordance with the latest standards. A proposal was solicited from Pipestone Equipment for preliminary recommendations and conceptual layout of a new PRV station given a flow range of up to 300 gpm and also a PRV option for up to 750 gpm (if fire flows and hydrants are required). It is assumed that a pressure reduction of 80 psi to 40 psi is needed. A new station would include either a 4”x2” PRV or 6”x2” PRV setup.

It is anticipated that a new PRV station could be installed separately and away from the existing pipeline while the existing PRV station remains in use. The new PRV can then be connected to the existing water main with short-duration tie-ins and minimal water service disruption.

This alternative assumes that engineering design and DEQ review and approval may be required. Figure 3-1 shows a typical PRV vault layout per the latest design standards, showing pressure gauges, strainer, isolation valves, and (high-flow/low-flow PRVs) with access from all sides.

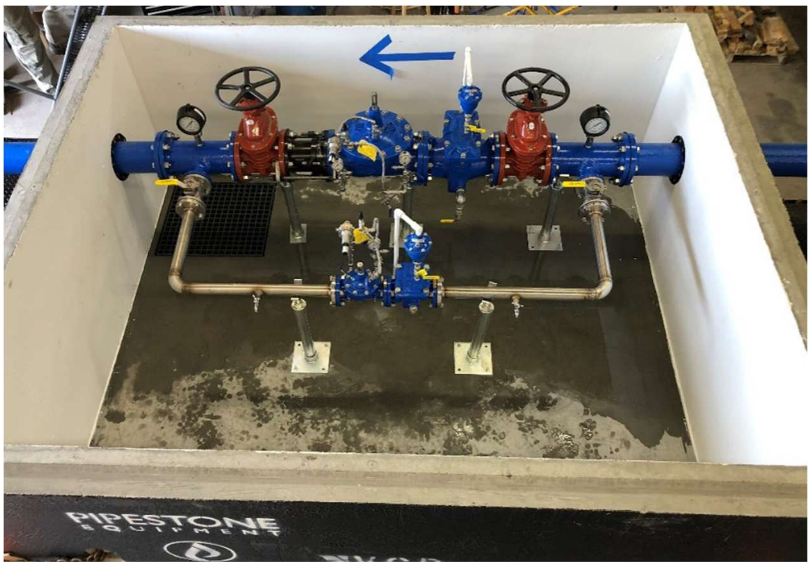


Figure 3-1 - Typical PRV Station Layout

Cost Estimates

The estimated total project cost for Alternative R-10 is shown in Table 3-3 below.

A proposal was obtained from Pipestone Equipment for furnishing either a 6”x2” (up to 750 gpm) or a 4”x 2” PRV (up to 400 gpm) setup. The PRV station would be prefabricated assembled and installed by a local contractor upon delivery. Another potentially more economical option is to hire a qualified local contractor to custom-build the unit in a precast vault. A new PRV station would require the design and approval by DEQ. The budgetary cost estimate shown below assumes a 4”x2” PRV assembly setup, assembled by a qualified local contractor. The estimate also assumes that asphalt surface restoration is required. (See Appendix R)

If the PRV station is replaced in kind, then DEQ approval may not be required.

Table 3-3 - Alternative R-10 Replace PRV Station/Vault

Opinion of Probable Cost Replacement of PRV					
#	**BID ITEM**	**QTY**	**UNITS**	**UNIT PRICE [1]**	**TOTAL**
1	Furnish PRV Station and Vault	1	LS	$ 35,000.00	$ 35,000
2	Install PRV Station and Vault	1	LS	$ 15,000.00	$ 15,000
3	Type A Surface Restoration (3" Asphalt/8" Gravel)	50	SY	$ 60.00	$ 3,000
	Direct Construction Subtotal				**$ 53,000**
	Mobilization	10%			$ 5,000
	Construction Subtotal				**$ 58,000**
	Contingency	20%			$ 11,600
	Basic Engineering Services - Preliminary Design, Final Design, Bidding, Construction, Post Construction				$ 10,000
	TOTAL				**$ 79,600**

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Funding

4.1.1 Funding Sources

The following sections provide a brief description of the potential funding sources and whether SMSC would be eligible for them.

American Rescue Plan Act (ARPA)

The American Rescue Plan Act (ARPA) is a new program in 2021. It was passed by Congress and signed into law in March of 2021 (PUB. L. NO 117-2 SEC 602 (c)(1)(d)). The act was primarily focused on Covid-19 relief for communities. As part of the ARPA funding package, the federal government allotted funds to be used for eligible water and wastewater improvements as considered critical infrastructure. The act allowed for each individual state to determine how the funds for each state were to be distributed. The American Rescue Plan Act of 2021 provides state and local aid to make necessary investments in water and sewer infrastructure. The 67th Montana Legislature passed HOUSE BILL 632 which directed the federal funds available under the American Rescue Plan Act for use in Montana. Section 1 – Section 5 addresses how federal funds will be distributed to necessary water and sewer infrastructure projects. House Bill 632 created the Infrastructure Advisory Commission which oversees spending on water and sewer infrastructure projects along with the Governor of Montana. Funds were directed to Counties and Cities in Montana for the use of water and sewer infrastructure with direct treasury funds and minimum allocation (non-competitive grants). There is also a competitive grant option.

ARPA funding was made available to Montana communities through the March 11, 2021, American Rescue Act (H.R. 1319). The act provided assistance to Montana communities in three different ways:

1) ARPA Local Fiscal Recovery Funds (LFR) – The act provided direct assistance from Treasury to towns, cities, and counties. Direct assistance was given to local governments in two tranches. The first tranche became available in June 2021, and the second will be available in June 2022. The funds can be used for various purposes, including water and sewer infrastructure.

2) ARPA Minimum Allocation Grants (MAG) – The act appropriated $463 million to the State of Montana. The State of Montana, through House Bill 632, allocated $150 million of the appropriation to towns, cities, districts, and counties through the Minimum Allocation grant process that was developed in Montana's 2021 legislative session through House Bill 632. Minimum Allocation Grants can be used for water and sewer infrastructure and must be committed by January 1, 2023. A commitment of funds requires local governments to have all matching funds for the proposed project in place by January 1, 2023.
3) ARPA Competitive Grants – Montana House Bill 632 allocated $315 million to towns, cities, districts, and counties through a competitive grant process. The grants could be used for water and sewer infrastructure projects providing a necessary investment in water or sewer infrastructure as defined by the American Rescue Plan Act. The first round of applications for competitive grants was due July 2021, and the second round of applications was due January 14, 2022.

SMSC did not apply for competitive grants and did not receive ARPA funding in the form of LFR funding from Jefferson County. However, SMSC received MAG funds sponsored by Jefferson totaling over $59,000.

Montana Coal Endowment Program (MCEP)

MCEP is a state funded grant program, which is administered by the Montana Department of Commerce (MDOC). MCEP provides financial assistance to local governments for infrastructure improvements. Grants can be obtained from MCEP for up to $500,000 if the projected user rates are less than 125% of the target rate, for up to $625,000 if projected user rates are between 125% and 150% of the target rate, and for up to $750,000 if the projected user rates are over 150% of the target rate. MCEP grant recipients are required to match the grant dollar for dollar, but the match may come from a variety of sources including other grants, loans, or cash contributions.

Currently, SMSC is eligible for the MCEP grant given that the system is not a District and also that the water rates do not exceed the MDOC target rate even if SMSC were to convert to a District. The community has an average median household income (MHI) exceeding $95,000 per year with a calculated target rate for water only at over $111/month. (See Appendix S)

The average monthly water rate for SMSC is estimated to be about $75/month (a base rate of $65 plus an average usage fee).

Renewable Resource Grant and Loan Program (RRGL)

RRGL is a state program that is funded through interest accrued on the Resource Indemnity Trust Fund and the sale or Coal Severance Tax Bonds and is administered by the Montana Department of Natural Resources and Conservation (DNRC). The primary purpose of the RRGL is to enhance Montana's renewable resources. For public facilities projects that conserve, manage, develop, or protect renewable resources, grants of up to $125,000 are available.

The RRGL program is competitive; however, the proposed project will be promoting water conservation efforts by eliminating severe leaks in the water system.

SMSC is not a District and not eligible for DNRC-RRGL grant funding.

Community Development Block Grant (CDBG)

CDBG is a federally funded program that is also administered by the Montana Department of Commerce (MDOC). The primary purpose of CDBG funds is to benefit low to moderate income (LMI) families. Hence, a municipality must have an LMI of 51% or greater. This is usually determined by the current Census. However, under certain circumstances, the MDOC may allow an income survey to be completed (such as there have been major economic changes since the Census or if a community is only slightly under the required LMI percentage).

The CDBG grant funds can be applied for in an amount of up to $750,000 with a limit of $20,000 per LMI household, so a community needs 30 LMI households to apply for the maximum grant funds. The use of CDBG funds requires a 25% local match that can be provided through cash funds, loans, or a combination thereof.

SMSC is not a District nor to the community have an LMI over 51% to be eligible.

State Revolving Fund (SRF)

SRF provides low-interest loan funds for both water and wastewater projects through the Drinking Water State Revolving Fund (DWSRF) and the Water Pollution Control State Revolving Fund (WPCSRF), respectively. The SRF program is administered by the Montana Department of Environmental Quality. Current loan terms include an interest rate of 2.50% or lower for a 20-year period. In some cases, a longer term can be applied to the loan.

SRF also has a limited amount of “principal forgiveness” funds available for projects. For water projects, up to 50% or $500,000 may be obtained depending on the availability of funds.

SMSC is not eligible for an SRF loan, given the system is not a District.

USDA Rural Development (RD)

RD provides grant and loan funding to municipalities for water and wastewater projects that improve the quality of life and promote economic development in Rural America. Municipalities with a population of less than 10,000 are eligible to apply, though; priority is given to those with a population of less than 5,500.

Grant eligibility and loan interest rates are based on the community’s median household income (MHI) and user rates. A community's qualification for grant funding is based on its MHI compared to Montana's non-metropolitan median household income, which is $50,324 (2021 American Community Survey data, Appendix J). The threshold for RD's intermediate loan rate, as well as up to 45% of its project cost being grant-funded, is $50,894. In other words, a community with an MHI that is less than $63,617 but greater than $50,894 qualifies for the intermediate rate. If the MHI is less than $50,894, it qualifies for the poverty rate, and up to 75% of the project cost is grant-funded. However, the project must address a severe public health or sanitation concern to allow for the 75% grant contribution. Without a severe public health or sanitation concern, the applicant qualifies for the 45% grant contribution. For example, a City/County/District with an MHI of $55,426 currently qualifies for the Intermediate Rate, which is 2.75%. At the time of this PER, the Market Rate is currently 3.50%, while the Poverty Rate is 2.125%. Rural Development adjusts its rates every quarter.

SMSC is not eligible for an RD grant but could, if desired, obtain an RD-underwritten loan through a local bank.

Economic Development Administration (EDA)

EDA provides grant funding for projects that are demonstrated to be needed for the placement of a new business. The amount of the grant is dependent on the number of jobs created.

SMSC is not a good candidate for an EDA grant.

INTERCAP

INTERCAP provides loan funds at a low cost, at a variable interest rate, to local governments. INTERCAP is administered by the Montana Board of Investments and is very flexible in the variety of funding, which would include both water and wastewater projects. There is no funding cycle (funds are always available), however, the maximum loan term is 15 years.

Since there is a large amount of funding required, a maximum loan term of 15 years would result in high user rates. The INTERCAP loan is not recommended for funding the project in its entirety as there are better long-term loan options.

4.1.2 Funding Strategy

SMSC intends to complete projects as funding allows using available le reserves. ARPA funding sponsored by the County is sunsetting as of the date of this study.

4.2 Implementation

The recommended improvement program shown in Table 1-1 was provided to SMSC for input on project priorities and ranking order. Table 4-1 below shows the desired priority order and intended completion date by SMSC.

Table 4-1 Insert Project Priority List

Complete with a total ranking order (Need from SMSC)

P.O. Box 241826
Omaha, NE 68124

RETURN SERVICE REQUESTED

SADDLE MOUNTAIN SERVICE CORPORATION
919 BIG DIPPER DR
CLANCY MT 59634-8600

Statement Ending 11/29/2024

SADDLE MOUNTAIN SERVICE

Account Number: XXXXXXXXXXX2837

Managing Your Accounts

Client Contact Center	855-342-3400
Website	firstinterstate.com

Summary of Accounts

Account Type	Account Number	Ending Balance
ENHANCED BUSINESS CHECKING	XXXXXXXXXXX2837	$22,299.35
BUSINESS INDEXED MONEY MARKET	XXXXXXXXXXX0043	$119,842.82
Total Current Value		**$142,142.17**

THIS FORM IS PROVIDED TO HELP BALANCE YOUR STATEMENT

HOW TO BALANCE YOUR ACCOUNT

ACCOUNT RECONCILEMENT PRINCIPLES ARE FAIRLY SIMPLE, IT IS NECESSARY TO FIND ITEMS IN YOUR CHECKBOOK WHICH THE BANK HAS NOT YET PROCESSED, AND THOSE ON THE BANK STATEMENT BUT NOT YET IN YOUR CHECKBOOK. TO YOUR CHECKBOOK BALANCE ADD OR SUBTRACT THE OUTSTANDING BANK STATEMENT ITEMS, AND TO THE STATEMENT BALANCE ADD OR SUBTRACT OUTSTANDING CHECKBOOK ITEMS. THE TWO TOTALS SHOULD AGREE.

1. SORT CHECKS AND DEPOSITS INTO NUMBER OR DATE ORDER.
2. MARK OFF (✓) EACH ITEM AGAINST YOUR CHECKBOOK. THOSE NOT MARKED WILL BE OUTSTANDING ITEMS. ALSO NOTE ANY BANK OR OTHER CHARGES, OR AUTOMATIC DEPOSITS ON THE STATEMENT, NOT IN YOUR CHECKBOOK.
3. FILL IN THE FOLLOWING FORM FOR EASY RECONCILEMENT.

CHECKBOOK BALANCE	
ADD ANY DEPOSITS INCLUDING AUTOMATIC DEPOSITS NOT YET ENTERED IN YOUR CHECKBOOK. (BE SURE TO ENTER THEM)	
SUB-TOTAL	
SUBTRACT SERVICE CHARGE HERE AND IN YOUR CHECKBOOK	
IF SAVINGS TRANSFER ACCOUNT, ADD SAVINGS INTEREST	
SUBTRACT ANY AUTOMATIC LOAN PAYMENTS OR OTHER AUTOMATIC CHARGES NOT YET ENTERED IN YOUR CHECKBOOK (BE SURE TO SUBTRACT FROM CHECKBOOK)	
ADJUSTED CHECKBOOK BALANCE	

ADJUSTED STATEMENT BALANCE AND CHECKBOOK BALANCE SHOULD AGREE

CHECKING BALANCE SHOWN ON THIS STATEMENT	
IF SAVINGS TRANSFER ACCOUNT ADD SAVINGS BALANCE	
ADD DEPOSITS OUTSTANDING NOT YET CREDITED TO YOUR ACCOUNT (INCLUDE ANY AUTOMATIC DEPOSITS EXPECTED, NOT YET CREDITED)	
SUB-TOTAL	

CHECKS OUTSTANDING
WRITTEN BUT NOT YET CHARGED TO YOUR ACCOUNT

CHECK NO.	AMOUNT	CHECK NO.	AMOUNT
SUB TOTAL			

SUBTRACT TOTAL CHECKS OUTSTANDING	
ADJUSTED STATEMENT BALANCE	

ADJUSTED STATEMENT BALANCE AND CHECKBOOK BALANCE SHOULD AGREE

To report a lost or stolen ATM or First Interstate Debit Card call 1-888-752-3332 between the hours of 7:30 AM – 6:00 PM Mountain Time. Before or after hours call the Lost or Stolen Service at 1-800-342-6599.

Information for Consumer Checking and Savings Account Customers:

IN CASE OF ERRORS OR QUESTIONS ABOUT YOUR ELECTRONIC TRANSFERS
Telephone us or write us at the phone number and/or address on the front of this statement as soon as you can, if you think your statement or receipt is wrong or if you need more information about a transfer on the statement or receipt. We must hear from you no later than 60 days after we sent you the FIRST statement on which the error or problem appeared.

(1) Tell us your name and account number (if any).
(2) Describe the error or the transfer you are unsure about, and explain as clearly as you can why you believe it is an error or why you need more information.
(3) Tell us the dollar amount of the suspected error.

We will investigate your complaint and will correct any error promptly. If we take more than 10 business days to do this, we will credit your account for the amount you think is in error, so that you will have the use of the money during the time it takes us to complete our investigation.

Information for Balance Plus Overdraft Checking Customers:

BALANCE SUBJECT TO INTEREST RATE
We figure the interest charge on your account by applying the periodic rate to the "daily balance" of your account for each day in the billing cycle. To get the "daily balance" we take the beginning balance of your account each day, add any new advances and fees, and subtract unpaid interest or other finance charges and any payments or credits. This gives us the daily balance.

WHAT TO DO IF YOU THINK YOU FIND A MISTAKE ON YOUR STATEMENT
If you think there is an error on your statement, write to us (on a separate sheet) at the address shown on the front of this statement.

In your letter, give us the following information:

- Account information: Your name and account number.
- Dollar amount: The dollar amount of the suspected error.
- Description of Problem: If you think there is an error on your bill, describe what you believe is wrong and why you believe it is a mistake.

You must contact us within 60 days after the error appeared on your statement.

You must notify us of any potential errors in writing. You may call us, but if you do we are not required to investigate any potential errors and you may have to pay the amount in question.

While we investigate whether or not there has been an error, the following are true:

- We cannot try to collect the amount in question, or report you as delinquent on that amount.
- The charge in question may remain on your statement, and we may continue to charge you interest on that amount. But, if we determine that we made a mistake you will not have to pay the amount in question or any interest or other fees related to that amount.
- While you do not have to pay the amount in question, you are responsible for the remainder of your balance
- We can apply any unpaid amount against your credit limit.

ENHANCED BUSINESS CHECKING - XXXXXXXXXXX2837

Account Summary

Date	Description	Amount
11/01/2024	**Beginning Balance**	**$21,154.11**
	7 Credit(s) This Period	$27,592.32
	13 Debit(s) This Period	$26,447.08
11/29/2024	**Ending Balance**	**$22,299.35**

Interest Summary

Description	Amount
Interest Earned From 11/19/2024 Through 11/29/2024	
Annual Percentage Yield Earned	0.05%
Interest Days	11
Interest Earned	$0.42
Interest Paid This Period	$0.42
Interest Paid Year-to-Date	$0.42
Average Ledger Balance	$28,192.77

Account Activity

Post Date	Description	Debits	Credits	Balance
11/01/2024	**Beginning Balance**			**$21,154.11**
11/01/2024	CHECK # 8013	$659.87		$20,494.24
11/05/2024	DEPOSIT		$20,000.00	$40,494.24
11/07/2024	CHECK # 8015	$20.00		$40,474.24
11/08/2024	Service Charge Refund		$1.00	$40,475.24
11/08/2024	CHECK # 8014	$25.00		$40,450.24
11/12/2024	MASTERCARD PAYMENT 552746XXXXX1696	$251.35		$40,198.89
11/15/2024	DEPOSIT		$2,328.20	$42,527.09
11/19/2024	DEPOSIT		$1,711.10	$44,238.19
11/19/2024	CHECK # 8016	$11,186.50		$33,051.69
11/20/2024	CHECK # 8024	$1,698.00		$31,353.69
11/25/2024	CHECK # 8020	$126.00		$31,227.69
11/25/2024	CHECK # 8021	$248.00		$30,979.69
11/26/2024	DEPOSIT		$1,721.00	$32,700.69
11/26/2024	DEPOSIT		$1,830.60	$34,531.29
11/26/2024	From <2837>, to <9531> by <Linda Kindrick>	$10,000.00		$24,531.29
11/26/2024	CHECK # 8022	$500.00		$24,031.29
11/26/2024	CHECK # 8023	$1,607.36		$22,423.93
11/27/2024	CHECK # 8017	$25.00		$22,398.93
11/27/2024	CHECK # 8018	$100.00		$22,298.93
11/29/2024	INTEREST		$0.42	$22,299.35
11/29/2024	**Ending Balance**			**$22,299.35**

Checks Cleared

Check Nbr	Date	Amount	Check Nbr	Date	Amount	Check Nbr	Date	Amount
8013	11/01/2024	$659.87	8017	11/27/2024	$25.00	8022	11/26/2024	$500.00
8014	11/08/2024	$25.00	8018	11/27/2024	$100.00	8023	11/26/2024	$1,607.36
8015	11/07/2024	$20.00	8020*	11/25/2024	$126.00	8024	11/20/2024	$1,698.00
8016	11/19/2024	$11,186.50	8021	11/25/2024	$248.00			

* Indicates skipped check number

Daily Balances

Date	Amount	Date	Amount	Date	Amount
11/01/2024	$20,494.24	11/12/2024	$40,198.89	11/25/2024	$30,979.69
11/05/2024	$40,494.24	11/15/2024	$42,527.09	11/26/2024	$22,423.93
11/07/2024	$40,474.24	11/19/2024	$33,051.69	11/27/2024	$22,298.93
11/08/2024	$40,450.24	11/20/2024	$31,353.69	11/29/2024	$22,299.35

ENHANCED BUSINESS CHECKING - XXXXXXXXXXX2837 (continued)

Overdraft and Returned Item Fees

	Total for this period	Total year-to-date
Total Overdraft Fees	$0.00	$0.00
Total Returned Item Fees	$0.00	$0.00

BUSINESS INDEXED MONEY MARKET - XXXXXXXXXXX0043

Account Summary

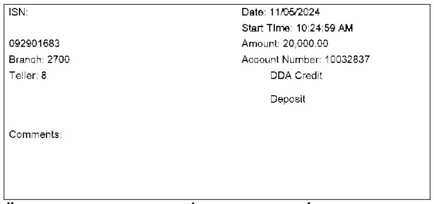
Date	Description	Amount
11/01/2024	**Beginning Balance**	**$119,612.61**
	1 Credit(s) This Period	$230.21
	0 Debit(s) This Period	$0.00
11/29/2024	**Ending Balance**	**$119,842.82**

Interest Summary

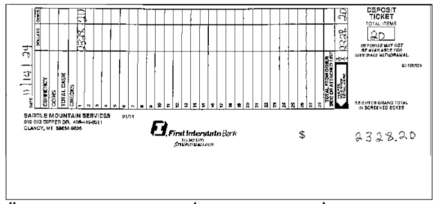
Description	Amount
Interest Earned From 11/01/2024 Through 11/29/2024	
Annual Percentage Yield Earned	2.45%
Interest Days	29
Interest Earned	$230.21
Interest Paid This Period	$230.21
Interest Paid Year-to-Date	$3,397.10
Average Ledger Balance	$119,612.61

Account Activity

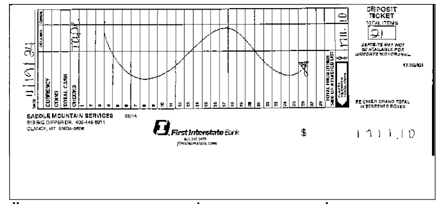
Post Date	Description	Debits	Credits	Balance
11/01/2024	**Beginning Balance**			**$119,612.61**
11/29/2024	INTEREST		$230.21	$119,842.82
11/29/2024	**Ending Balance**			**$119,842.82**


ISN:
092901683
Branch: 2700
Teller: 8
Comments:
Date: 11/05/2024
Start Time: 10:24:59 AM
Amount: 20,000.00
Account Number: 10032837
DDA Credit
Deposit

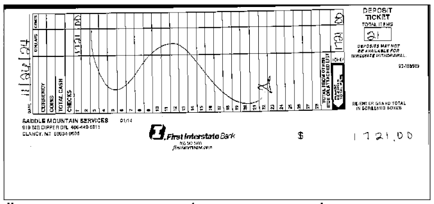
#0000 11/05 $20,000.00


DEPOSIT TICKET
SADDLE MOUNTAIN SERVICES
First Interstate Bank
$ 2328.20

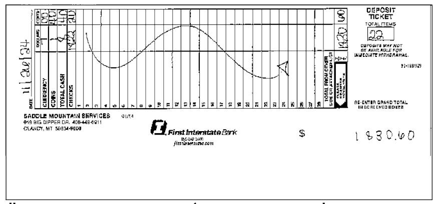
#0000 11/15 $2,328.20


DEPOSIT TICKET
SADDLE MOUNTAIN SERVICES
First Interstate Bank
$ 1711.10

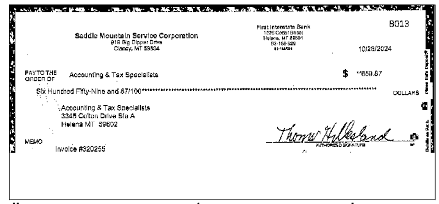
#0000 11/19 $1,711.10


DEPOSIT TICKET
SADDLE MOUNTAIN SERVICES
First Interstate Bank
$ 1721.00

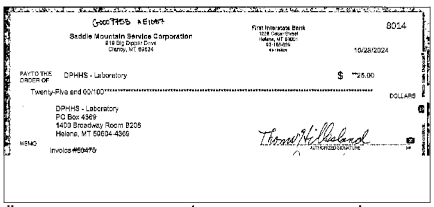
#0000 11/26 $1,721.00


DEPOSIT TICKET
SADDLE MOUNTAIN SERVICES
First Interstate Bank
$ 1830.60

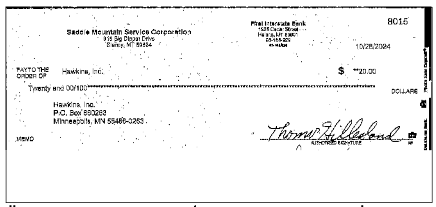
#0000 11/26 $1,830.60


Saddle Mountain Service Corporation
First Interstate Bank
8013
10/28/2024
PAY TO THE ORDER OF Accounting & Tax Specialists $ **659.87
Six Hundred Fifty-Nine and 87/100 DOLLARS
Accounting & Tax Specialists
3345 Colton Drive Ste A
Helena MT 59602
MEMO Invoice #320265

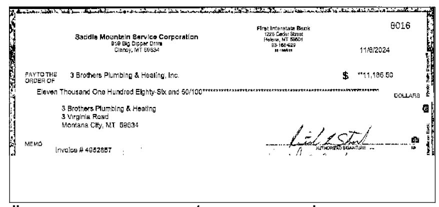
#8013 11/01 $659.87


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8014
10/28/2024
PAY TO THE ORDER OF DPHHS - Laboratory $ **25.00
Twenty-Five and 00/100 DOLLARS
DPHHS - Laboratory
PO Box 4369
1400 Broadway Room B206
Helena, MT 59604-4369
MEMO Invoice #59476
AUTHORIZED SIGNATURE

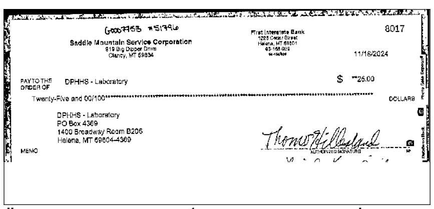
#8014 11/08 $25.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8015
10/28/2024
PAY TO THE ORDER OF Hawkins, Inc. $ **20.00
Twenty and 00/100 DOLLARS
Hawkins, Inc.
P.O. Box 860263
Minneapolis, MN 55486-0263
MEMO
AUTHORIZED SIGNATURE

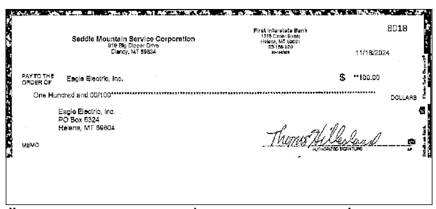
#8015 11/07 $20.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8016
11/6/2024
PAY TO THE ORDER OF 3 Brothers Plumbing & Heating, Inc. $ **11,186.50
Eleven Thousand One Hundred Eighty-Six and 50/100 DOLLARS
3 Brothers Plumbing & Heating
3 Virginia Road
Montana City, MT 59634
MEMO Invoice # 4952857
AUTHORIZED SIGNATURE

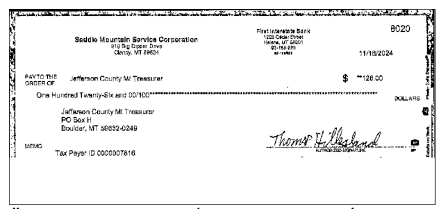
#8016 11/19 $11,186.50


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8017
11/18/2024
PAY TO THE ORDER OF DPHHS - Laboratory $ **25.00
Twenty-Five and 00/100 DOLLARS
DPHHS - Laboratory
PO Box 4369
1400 Broadway Room B206
Helena, MT 59604-4369
MEMO
AUTHORIZED SIGNATURE

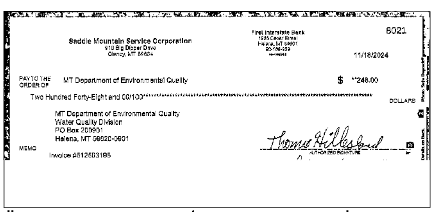
#8017 11/27 $25.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8018
11/18/2024
PAY TO THE ORDER OF Eagle Electric, Inc. $ **100.00
One Hundred and 00/100 DOLLARS
Eagle Electric, Inc.
PO Box 5324
Helena, MT 59604
MEMO
AUTHORIZED SIGNATURE

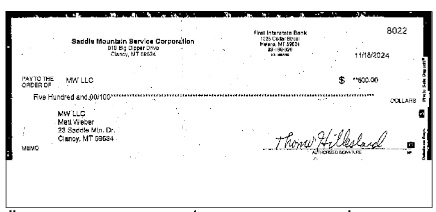
#8018 11/27 $100.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8020
11/18/2024
PAY TO THE ORDER OF Jefferson County Mt Treasurer $ **126.00
One Hundred Twenty-Six and 00/100 DOLLARS
Jefferson County Mt Treasurer
PO Box H
Boulder, MT 59632-0249
MEMO Tax Payer ID 0000007816
AUTHORIZED SIGNATURE

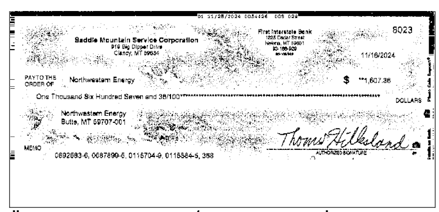
#8020 11/25 $126.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8021
11/18/2024
PAY TO THE ORDER OF MT Department of Environmental Quality $ **248.00
Two Hundred Forty-Eight and 00/100 DOLLARS
MT Department of Environmental Quality
Water Quality Division
PO Box 200901
Helena, MT 59620-0901
MEMO Invoice #512503195
AUTHORIZED SIGNATURE

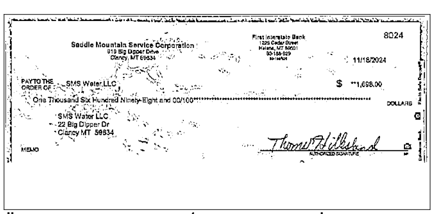
#8021 11/25 $248.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8022
11/18/2024
PAY TO THE ORDER OF MW LLC $ **500.00
Five Hundred and 00/100 DOLLARS
MW LLC
Matt Weber
23 Saddle Mtn. Dr.
Clancy, MT 59634
MEMO
AUTHORIZED SIGNATURE

#8022 11/26 $500.00


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8023
11/16/2024
PAY TO THE ORDER OF Northwestern Energy $ **1,607.36
One Thousand Six Hundred Seven and 36/100 DOLLARS
Northwestern Energy
Butte, MT 59707-001
MEMO 0692683-6, 0687899-5, 0115704-9, 0115584-5, 368
AUTHORIZED SIGNATURE

#8023 11/26 $1,607.36


Saddle Mountain Service Corporation
919 Big Dipper Drive
Clancy, MT 59634
First Interstate Bank
8024
11/18/2024
PAY TO THE ORDER OF SMS Water LLC $ **1,698.00
One Thousand Six Hundred Ninety-Eight and 00/100 DOLLARS
SMS Water LLC
22 Big Dipper Dr
Clancy MT 59634
MEMO
AUTHORIZED SIGNATURE

#8024 11/20 $1,698.00

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Saddle Mountain Service Corporation Board Meeting Minutes

December 16, 2024

Via Zoom

Attendees:

Tom Hillesland, President

Mike Johnson, Vice President

Linda Kindrick, Treasurer

Keith Stark, Director

Amy Teegarden, Director

Matt Weber, Backup Operator

_______________, Guest

Meeting called to order at 6:35 PM

Minutes from last month's meeting: The meeting minutes are attached and become part of the minutes. Keith S. moved the minutes be approved. Linda K. provided the second. Motion passed unanimously.

Operator's report: Report dated 12/15/24 is attached and becomes part of the meeting minutes. Amy T. moved the minutes be approved. Linda K. provided the second. Motion passed unanimously.

Treasurer's report: Treasurer's report dated 12/13/24 is attached and becomes part of the meeting minutes. The various reports were reviewed by the board. Linda highlighted that water bill statements were mailed on 12/5/24. The SMS financial goal is to have $200K in reserves. Currently there is $142,000 in cash; 4 CD's ~$40,000. This results in approximately $182,000 available in reserves.

Keith S. moved the report be approved. Mike J. provided the second. Motion passed unanimously.

Keith Stark activities: Keith's report does not require board approval. Keith reported that there was not much happening this month to report on. 3-Brothers did not charge the additional $5K for road work for the connection on #2 Big Bear. He also reported that the mechanisms for well #5 are in the wellhouse. He contacted Marty Logan regarding individual grounds, still no contact. He will continue to follow up.

Old Business:

1. **Review, authorize and sign updated ATS contract for accounting services (Due Jan. 1 of each year)** Linda sent the contract out last week. Tom had no changes. Tom and Linda will coordinate the execution of the contract.

2. **Well #3 replacement pump/motor doesn't move adequate water.** This issue is on hold until the water hammer issue is resolved. Matt Mudd would like to see the report regarding the manganese level on well #3 (the high level may be residual from no activity of the well.)

3. **Draft Improvement List from Matt M at GWE-** Tom requested comments by the end of the week.

4. **Develop operations manual, maintenance manual, and maintenance schedule, maintenance records and system history** –Matt W. is almost finished reviewing procedures and maintenance tasks, then writing and adding sections that are needed. He is still fine-tuning and troubleshooting the meters. Mike is updating the equipment list. Tom will get a PDF from DEQ. Map has been updated. Matt/Mike/Keith should get together and discuss progress and hangups. Stated that we need Mark Z's involvement in this effort. Amy suggested recording an "interview" with Mark- ask him system questions and get his answers and institutional knowledge.

5. **The flowmeter at mid station indicates it pumps more water out than it gets**. **NEXT STEP** > Marty Logan to contact manufacturer after installing recommended supplemental ground at all 3 locations for the meters. Keith to get Marty to install dedicated ground rods.

   This still has not happened. Keith has had difficulty getting a response from Marty.

6. **Water System Walk-thru-** Kirk and Mark have scheduled a walkthrough. Mike does not need one but would like the keys to buildings so he can do his work. Get keys from Keith and Tom.

7. **Bylaws Review and Revision-** This effort is ON HOLD

8. **#2 Big Bear Connection-** remaining amount of bill to be submitted to Austin Witham. Still waiting on payment.

9. **Notes to the Pumphouse-** 3 items identified to be included in the January newsletter. 1) Updated Board contacts; 2) lead service line results; and 3) Website update and "Dial My Call". Amy will complete and have ready for the next billing.

10. **ARPA Funds-**waiting for final payment. Tom and Linda are monitoring and coordinating this effort.

11. **Power Panels for wells 1 & 3-** This effort is ON HOLD. Will wait until we determine we can use well #1 as a last resort.

12. **Well #1 Discharge piping-** No discussion

13. **Isolation Valve Locations-** Matt W. will update.

14. **Copies of original plans-**Have not received the originals back from Matt Mudd. Will ask him to digitize.

15. **Letter of response to Mr. McClusky-** this matter is considered closed. Tom H is working on a letter to notify this member.

New Business: No new business.

With no further business noted, Keith S. moved to adjourn. Linda K. provided a second. With no further conversation, Tom asked that all in favor say aye; opposed same sign. Motion passed unanimously. Meeting adjourned at7:30 PM.

Submitted by: Amy Teegarden, Secretary

Next meeting – January 20, 2025, via Zoom at 6:30 p.m.