Water & Roads Committee

WEVD Commission

September 26, 2025

562 Winterbrook Rd., Campton, NH 03223

1. Call to Order
2. Roll Call
3. Horizon Engineering Presentation
4. Other Business
    a. 2025 Sanitary Survey
5. Approval of Minutes
    a. June 22, 2020
    b. July 22, 2020
    c. August 20, 2020
    d. November 4, 2020
    e. June 28, 2024
    f. July 26, 2024
    g. October 18, 2024
    h. August 23, 2024
    i. April 18, 2025
    j. July 18, 2025
6. Adjourn

WATERVILLE ESTATES VILLAGE DISTRICT

WATER SYSTEM IMPROVEMENT PLAN



Prepared For: WEVD

horizons Engineering

Prepared By: HEI

Date: 9/18/2025

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Executive Summary

Summary

The Waterville Estates Village District (WEVD) owns and operates a small community water system, PWS ID #0341030. The water system serves approximately 560 residential units with growth potential for an additional 281 homes (Note: due to [slopes, etc.] only 1/3 of the lots may be buildable according to the 2025 NHDES Sanitary Survey). In 2024 the recorded average monthly water use was approximately 4.5 million gallons. The water system is supplied by two gravel packed dug wells and includes 6 pump stations and associated pumping equipment with chemical feed day tanks for treatment and control, 5 storage tanks and approximately 21 miles of water transmission and distribution main plus associated valves, blow-offs, and service laterals.

WEVD is expecting growth over the next few decades and is looking for a roadmap to prepare for this growth.

The water system assets included in this plan are summarized below.

SUMMARY OF ASSETS	
ASSET	**INVENTORY**
WELLS	2
PUMP STATIONS	6
STORAGE TANKS	5
TREATMENT DAY TANKS	2
TRANSMISSION MAIN	20,300 LF
DISTRIBUTION MAIN	88,600 LF
GATE VALVES	17
PRESSURE REDUCING VALVES	23
BLOWOFFS	15
WATER METERS	8
APPROXIMATE SERVICE CONNECTIONS (CURRENT)	560
APPROXIMATE SERVICE CONNECTIONS (FULL BUILD-OUT)	830

A detailed summary of each component is included in Appendix A and a map of these assets is included in Appendix B.

Conclusions

The following conclusions are offered based on our investigation:

- Based on previous growth, the Waterville Estates Village District expects customer growth at a rate of roughly 2% over the next 25 years before reaching build-out capacity.
- Currently, the system serves approximately 560 customers and at full buildout will serve approximately 838 (Note: only 1/3 of the empty lots may be buildable per NHDES 2025 Sanitary Survey).

- The **measured** system water supply is at 65% of its rated capacity.
- The **by-rule** system water supply is at 96% of its rated capacity.
- The **by-rule** system water storage is at 97% of its capacity.
- The current rate structure will cover current operating costs in 2025 based on the budgeted revenue and expense reports provided by WEVD.
- To pay for the proposed system improvements over the next 15 years, user rates should be increased by 8% annually (5% for inflation and 3% for improvements).

Recommendations

The district's plan for improving the overall management of the system includes the following:

- The current rate structure is based on the number of bedrooms in a house. The district had planned to install meters at each home. However, in 2023, a vote was held, and it was decided that meters would not be installed for customer usage. It is **highly** recommended that WEVD re-evaluate this decision and install meters for all users.
- Water loss is a metric that describes the overall health of a water system and WEVD is unable to determine their water loss without meters at all user locations. It is recommended to not only install meters at user locations but also to install meters at all transmission line segments and isolated zones to determine where water loss is occurring.
- Both increased storage and an additional water source are recommended to be implemented before system expansion.
- Currently the water operator is working to track system component locations. A GIS mapping system that can be used during all repairs and construction would help with mapping confirmation. This mapping is important for WaterCAD modelling accuracy. It is recommended to purchase a GIS tablet and subscription. Verdantas can provide this service.
- The current treatment method for pH adjustment is caustic soda which is extremely corrosive and dangerous for operators to handle and mix. It is recommended that the caustic soda be replaced with soda ash, a much safer alternative for the operator to use. The system has also seen pH readings of up to 9; soda ash should help maintain a slightly lower pH.
- The aeration system at Ski-Bowl is in poor condition and obsolete. It is recommended to eliminate the aeration process.
- The treatment system utilizes pH and chlorine analyzers. However, the operator still must manually adjust each of these to meet water quality standards. Integrating controls within the SCADA system that enable flow pacing of feed pumps to operator-defined programmable setpoints is advisable.

1. Introduction

This Water System Improvement Plan for the Waterville Estates, in Campton, NH describes how the utility should manage their infrastructure assets. Customer service demands and regulations require utilities to actively manage drinking water assets through careful maintenance, repair, and replacement decisions. This plan serves as an effective tool for combining technical, managerial, and financial practices to ensure clean water is provided at an appropriate cost.

1.1 Development of the Plan

Horizons Engineering, Inc. (A Verdantas Company) performed the following tasks for the development of the Water System Improvement Plan:

A. *System Information Review and Base Map Update*:
Horizons coordinated with the Commissioners and the New Hampshire Department of Environmental Services (NHDES) to refine the project approach, goals, and ensure adequate understanding of the current system. An inventory of the system components was created using information collected from the field visit and file reviews, and included details such as system age, repair history, and other pertinent information. Horizons also generated a system map displaying pipe sizes, tank and booster station locations, etc.

The information review summary is included in Appendix C and an updated base map is attached in Appendix B.

B. *Hydraulic Model*
A WaterCAD hydraulic model was prepared to assess pressure and flow characteristics. The model was used to assess current conditions and project full build-out. The model helped to assess critical areas of the distribution system, identify which areas of system main are undersized, and identify the need for additional source, storage and/or booster station capacity.

The completed hydraulic model including system map and model output were included with the final submission of this report.

C. *Preliminary Water Source Review*
Horizons completed a review of the existing well field. Horizons assessed the ability of the existing source to meet projected demand, the need for water treatment and well field maintenance, and overall source sustainability. Pumping test data was reviewed as well as water level data in the well field to assess the hydraulic influence under normal pumping conditions. The results are included in Appendix C.

D. *Water Usage, Leak History, Operations Costs and Rate Structure Review*
A review was also completed of historical water usage data (including either documented or estimated annual, monthly, daily, and peak hourly flows), leak history, current system operations costs, rate structure, and rates/revenue generation. Horizons used the results to quantify non-billed water loss and the impact of this loss on future build out capacity, operations costs, and revenue generation.

A summary of current water loss and existing rate structure, a proposed approach to addressing water loss and metering upgrades, and suggested modifications to rate structure including rates and connection fees included in Appendix C.

E. *Infrastructure Review, Permitting Summary, Capital Plan, and Funding Assessment*
After compiling the information gathered in Items A-D, Horizons assembled a list of priority infrastructure upgrades, along with associated conceptual opinions of probable cost, a capital planning schedule, and a summary of permitting requirements and applicable funding programs. The proposed work includes upgrades needed to meet existing demand and upgrades necessary to meet future build-out.

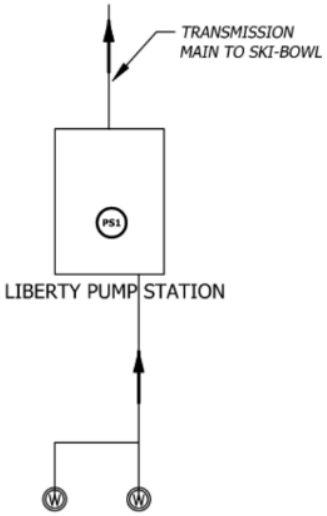
F. *Master Plan Compilation and Presentation*
Using the information gathered and prepared in scope Items A-E, Horizons prepared this comprehensive system Master Plan, which will be presented to the Board of Directors and used as a planning tool for the water system.

2. Utility Overview

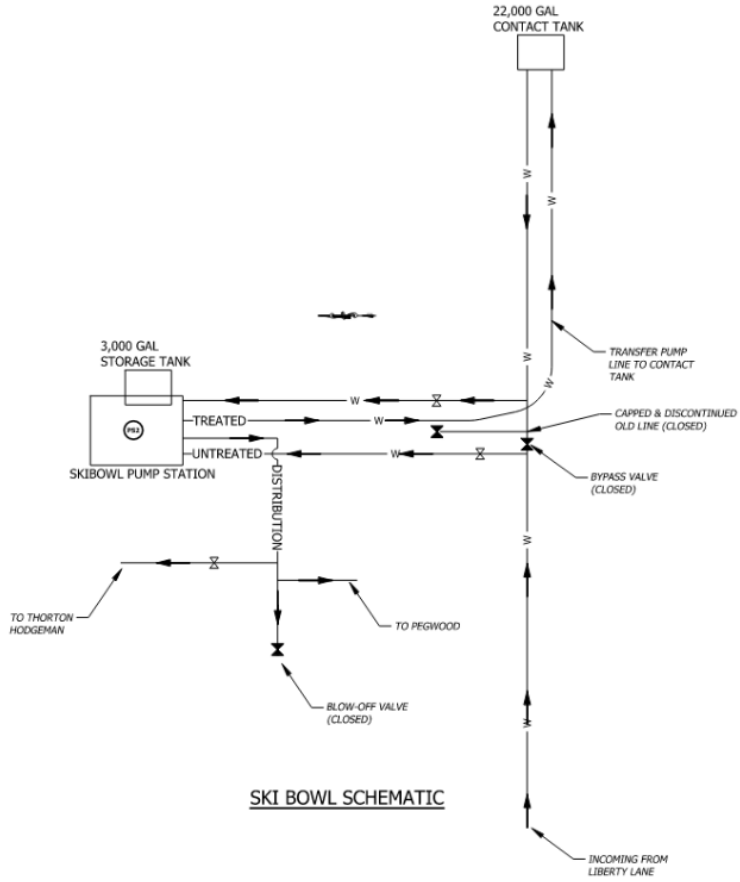
2.1 Existing Facilities

A complete system map is included in Appendix B. Generally, the system operates as follows:

Water is drawn from two gravel packed dug wells located within the same well field at the Liberty Pump Station. From the Liberty pump station, water is pumped using two VFD pumps through a 4-inch, 3,800 LF transmission main to the Ski-Bowl Pump Station. The pumps operate as lead-lag, meaning the second pump will turn on when more demand is required.

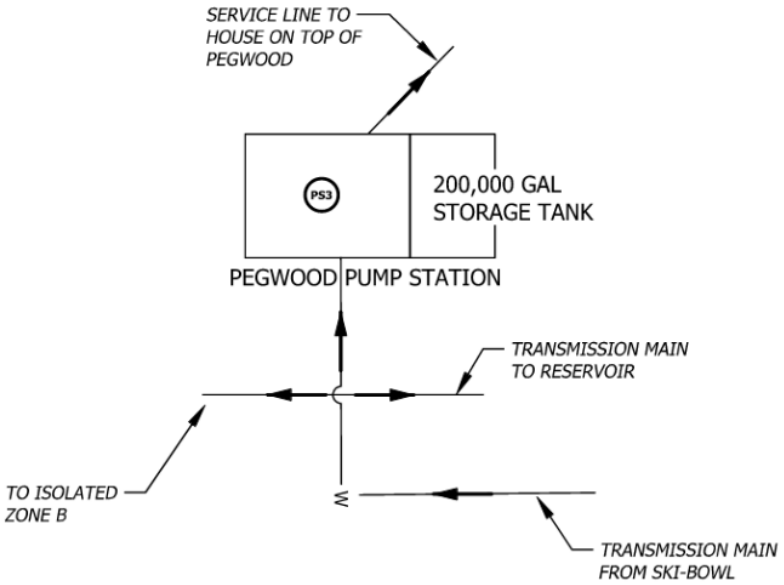


LIBERTY SCHEMATIC



SKI BOWL SCHEMATIC

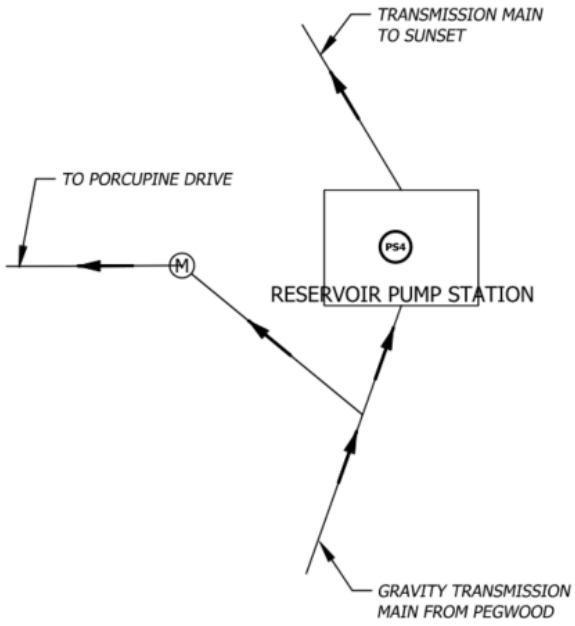
All treatment (pH adjustment and Chlorination) for the system occurs in the **Ski-Bowl station**. Water is aerated, then pumped into the Ski-Bowl 3,000 gallon holding tank before it is and treated with caustic soda (NaOH) and sodium hypochlorite (NaOCl) and transferred to the 22,000-gallon contact tank which sits 250’ southeast and 45’ vertically above Ski-Bowl. From the contact tank, water gravity flows back to Ski-Bowl where it is pumped through two VFD pumps to feed Zone A (Thorton Hodgeman Section) and a transmission line to the Pegwood Pump Station. There is a PRV that reduces the pressure from 180 psi to 60 psi on the Thorton Hodgeman distribution stub. The transmission line to Pegwood has two known users on the line.



PEGWOOD SCHEMATIC

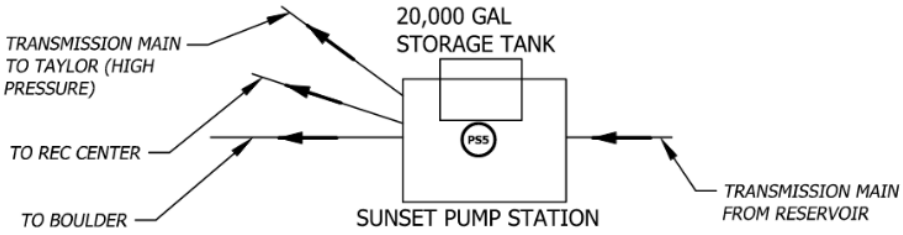
The **Pegwood Pump Station** serves Zone B through gravity flow, a single home on top of Pegwood Rd and a gravity transmission line leading to the Reservoir Pump Station that splits and feeds Bell Valley, David Thompson and Richardson Tr. The Pegwood Pump Station also includes a 200,000-gallon in-ground concrete storage tank.

The **Reservoir Pump Station** includes two VFD pumps and feeds Zone A, Zone C, Zone D and a 3,000 LF transmission line leading to the Sunset Pump Station.

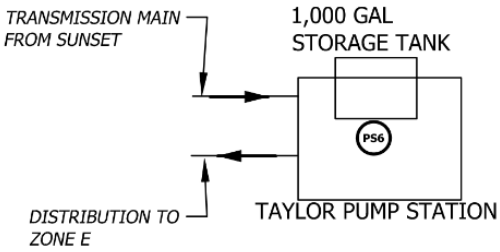


RESERVOIR SCHEMATIC

The **Sunset Pump Station** Includes a 20,000 gallon pneumatic water storage tank. Sunset feeds Zone A and a transmission line running to the highest point of the water system at the Taylor Pump Station.



SUNSET SCHEMATIC



The Taylor Pump Station feeds approximately 10 users and includes a 1,000-gallon atmospheric holding tank and feeds Zone E.

TAYLOR SCHEMATIC

2.2 Condition of Existing Facilities

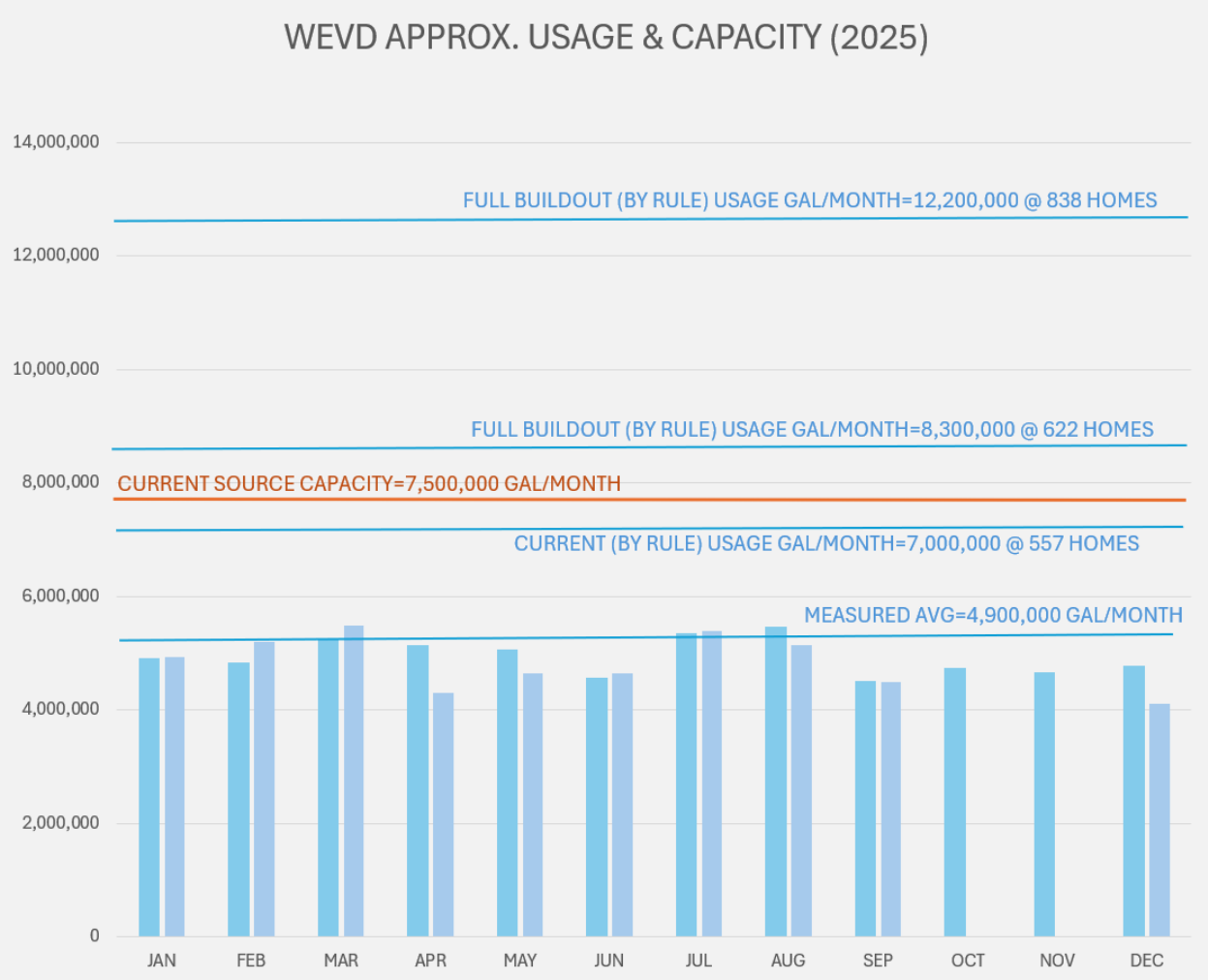
2.2.1 Source

Both wells are located roughly 400’ west and downslope of the Liberty Pump Station and are thought to be in good condition. The wells are both roughly 20’ deep and can produce 95-110 gpm each. In tandem, the pumps can produce 172 gpm.

WATER SOURCE - LIBERTY WELLS					
WELL ID	CASING DIAMETER	WELL DEPTH	RATED CAPACITY (GPM)	MEASURED DAILY PRODUCTION (GPM)	% OF CAPACITY USED
DUG WELL 1	12"	17'	95	55	58%
DUG WELL 2	12"	19'	95	55	58%
IN TANDEM			172	113	66%

Metered data are available from the well source but there is no metering available from consumers to calculate water loss. The figure below shows actual usage measured during 2023 and 2024 from the

Liberty source along with calculated current usage, calculated source capacity and calculated expected usage at full development with approximately 622 (minimum based on NHDES 2025 Sanitary Survey Report) to 838 (maximum based on WEVD D&K Report) homes depending on buildability. The calculated current usage and calculated expected usage are based on the total number of bedrooms within the system at 150 gal/day per bedroom. The calculated capacity is based on the tandem well production of wells 1 and 2.



Measured data from the last two years indicates that the system is running at approximately 66% of its rated source capacity. This is based on the quotient of the produced flow to the source capacity.

2.2.2 Treatment, Controls and Structures

Treatment / Controls: The Ski-Bowl pump station contains two 1,000-gallon storage tanks. One filled with caustic liquid potash and the other for chlorination. Water moves from the Liberty Pump station to the Ski-Bowl Pump Station, where it is aerated, pumped to the contact tank, and then gravity-fed back for distribution to Zone A and Pegwood. The treatment is adjusted manually while the operator takes daily recordings. A SCADA system is used to record both pH and chlorine levels through analyzers in the Ski-Bowl station.



2.2.3 Storage Tanks

There are five storage tanks in the system, with a total capacity of roughly 245,000 gallons. The Sunset holding tank and the Ski-bowl holding tank are in very poor condition.

STORAGE TANKS				
LOCATION	**CAPACITY (GAL)**	**ELEVATION**	**TYPE**	**MATERIAL**
SKI-BOWL CONTACT TANK	22,000	1,265	ATMOSPHERIC	Metal (RUBBER LINED 2012)
SKI-BOWL HOLDING TANK	3,000	1,220	HOLDING	STEEL
PEGWOOD	200,000	1,630	ATMOSPHERIC	CONCRETE
SUNSET	20,000	1,660	HOLDING	STEEL
TAYLOR	1,000	1,815	HOLDING TANK	POLY
TOTAL	**246,000**			

Ski-Bowl Storage Tanks:

The Ski-Bowl Pump Station includes two water storage tanks. Both tanks are thought to be installed in the 1980's. The 22,000-gallon atmospheric contact tank is in good condition and was lined with rubber in roughly 2012. The roughly 3,000-gallon steel holding tank is thought to be in very poor condition based on age and exterior tank condition.



Pegwood Storage Tank:

The Pegwood 200,000-gallon atmospheric tank was installed in 2006 and is in very good condition. Pegwood gravity feeds to zones B, D and the Reservoir pump station.





Sunset Storage Tank

The sunset 20,000-gallon steel holding tank is in very poor condition. Its estimated installation year is 1980 and it feeds zone A and the Taylor pump station.

Taylor Storage Tank

The Taylor plastic 1,000 gallon holding tank is in fair condition and was installed in roughly 2005. It feeds zone E (Approximately 10 homes) and sits at the highest elevation within the WEVD water system.



2.2.4 Pumping

The WEVD water system currently includes ten pumps ranging in size from 5HP to 25HP. The system schematic indicates pump locations, flow directions, and elevation scaling.

The Liberty Pump Station includes two 25HP submersible source pumps at the wells. The submersible pumps flow directly to the Ski-Bowl 5,000-gallon transfer tank through a transmission main. The pumps alternate each cycle and are controlled by the water level in the 22,000-gal Ski-Bowl holding tank.

From the transfer tank, two 5HP transfer pumps alternate each cycle and send water up to the 22,000-gallon contact tank which gravity flows down to the Ski-Bowl 20HP booster pumps (2). The Ski-Bowl booster pumps feed zone A (Including zone A1-A2) and the Pegwood Pump station through a transmission main.

The Pegwood Pump Station gravity feeds to zone B, a single home on top of Pegwoood with a pressure tank, and then gravity flows to the Reservoir Pump Station.

The Reservoir Pump Station uses a 7HP pump to feed zones A and C while pumping through a transmission main to the Sunset Pump Station.

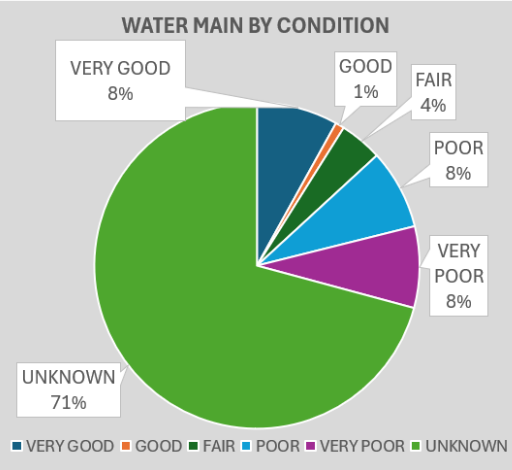
The Sunset Pump Station uses two alternating 10HP pumps to feed the Taylor Pump Station and zone A. This pump station is in very poor condition.

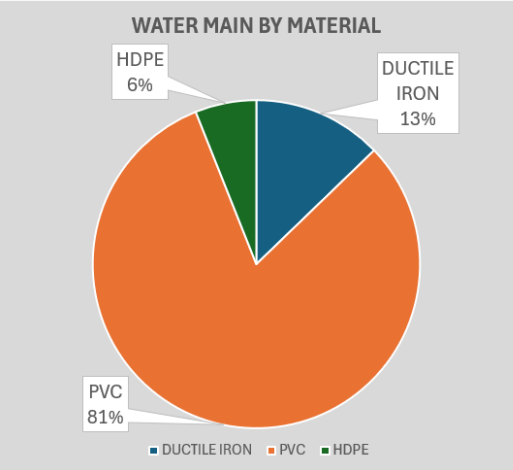
Finally, the Taylor Pump Station feeds zone D which only includes approximately 8 users.

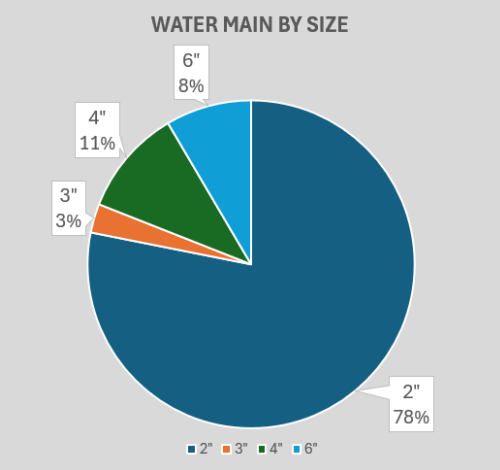
2.2.5 Watermain and Appurtenances

The WEVD distribution system consists of roughly 107,500 LF (20 miles) of distribution and transmission watermain. The water system is thought to have been first constructed in the 1980's and some of the original water main is still in use today. It includes PVC, HDPE, and Ductile Iron piping ranging in size from 2 to 6 inches in diameter. There are approximately 15 blowoffs, 17 gate valves, 23 PRV's throughout the system and there are no fire hydrants. The WEVD has no intention of upgrading the system for fire flow.

Piping: Water main age is largely unknown; therefore, The Village District should keep records of pipe condition during any repairs in the excel document that is provided with this water system improvement plan. The following figures illustrate the distribution by condition, material, and size.







Valves: The WEVD system includes approximately 17 known gate valves. Some of the gate valves that are used to isolate zones are still connected to offline water main and remain closed. These valves should be removed and the lines capped where necessary, or at a minimum, temporarily have the access boxes removed so operators cannot accidentally mix the zones and alter pressures.

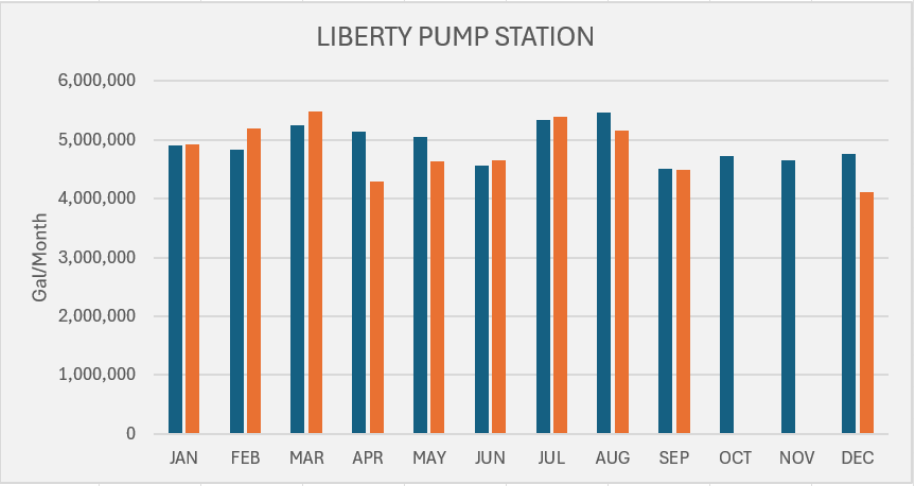
Meters: There are 8 meters within the WEVD system. Data collected from the Liberty, Reservoir and Sunset meters over the last two years was very consistent. However, the remaining meters showed large periods of time with no recordings. The most valuable meter is located at the Liberty pump station, the system source, which provides the total volume used.

The Liberty meter indicates consistent usage between 2023 and 2024, whereas Reservoir and Sunset show large variations in their usage. This is partially due to the smaller volumes being pumped through these locations, but it is also an indication of potential water losses and system problems in general.

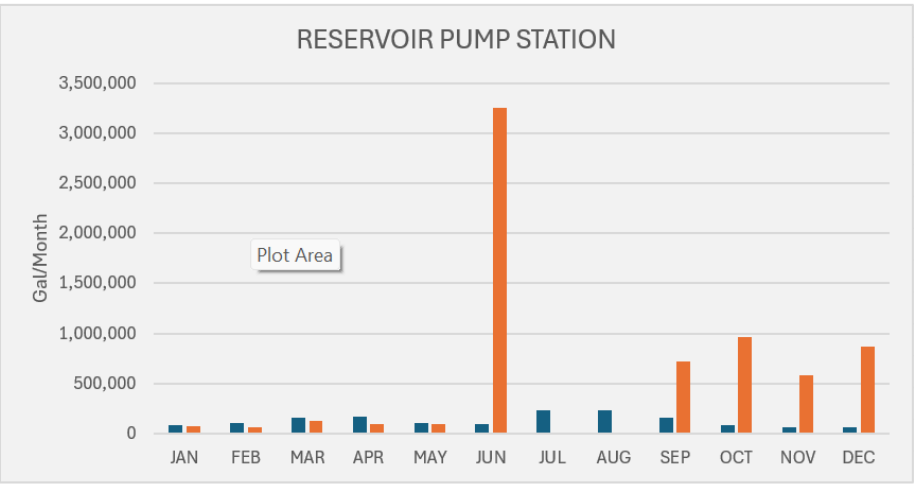
METER ID#	LOCATION	COND
1	BOULDER	FAILED
2	LIBERTY	WORKING
3	PEGWOOD FILL	FAILED
4	PEGWOOD MID	FAILED
5	RESERVOIR	WORKING
6	SUNSET/WANOSHA	FAILED
7	THORTON HODGEMAN	FAILED
8	SOUTH MTN	FAILED

Metered usage data is shown below for the two working meters as well as sunset which was working until July of 2024.

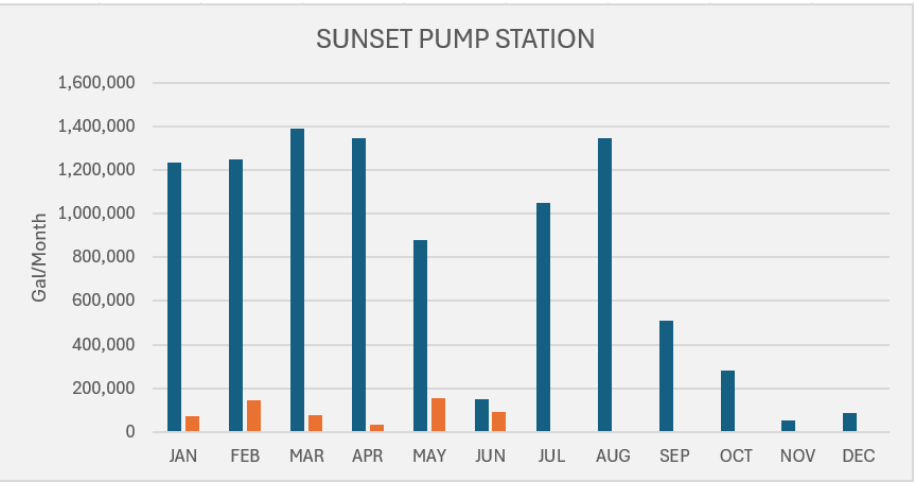
LIBERTY (Gal/Month)		
MONTH	2023	2024
JAN	4,898,881	4,925,500
FEB	4,829,050	5,192,525
MAR	5,251,075	5,484,125
APR	5,138,188	4,299,613
MAY	5,050,425	4,636,975
JUN	4,568,700	4,650,200
JUL	5,340,600	5,390,113
AUG	5,463,950	5,148,963
SEP	4,501,138	4,485,875
OCT	4,726,075	
NOV	4,651,738	
DEC	4,762,663	4,117,405
TOTAL	**59,182,482**	**48,331,294**



RESERVOIR (Gal/Month)		
MONTH	2023	2024
JAN	83,941	67,097
FEB	102,847	64,997
MAR	154,306	124,991
APR	162,659	90,181
MAY	107,419	96,594
JUN	92,544	3,255,597
JUL	226,088	
AUG	234,169	
SEP	158,544	713,956
OCT	83,359	959,694
NOV	66,094	584,588
DEC	59,778	868,050
TOTAL	**1,531,748**	**6,825,745**



SUNSET (Gal/Month)		
MONTH	2023	2024
JAN	1,236,563	71,022
FEB	1,251,191	144,534
MAR	1,391,281	78,606
APR	1,346,313	32,888
MAY	877,925	155,856
JUN	151,884	92,975
JUL	1,048,819	
AUG	1,347,644	
SEP	510,956	
OCT	281,163	
NOV	49,959	
DEC	84,266	
TOTAL	**9,577,964**	**575,881**



District users voted not to install individual meters for each customer in 2023. Therefore, there is currently no way to measure water loss without meters placed at all homes/users. Installing water meters at all user locations would resolve this issue and provide valuable data. Typically, a system with water meters would measure the following:

- Water Sold (Measured with residential meters at each house)
- Water Pumped (Measured at Liberty)
- Water Flushed (Estimated by Operator)
- Water Lost = Pumped – (Sold - Flushed)
- **Water Loss = Water Lost / Water Pumped**

2.3 Asset Valuation

The 2025 estimated replacement cost for the WEVD is $20.4 million. The table below represents an approximate value of the assets owned by the utility. Values are based on 2025 replacement costs. For a detailed breakdown of assets, see Appendix C.

WEVD - SYSTEM VALUATION (2025)			
COMPONENT	**DESCRIPTION**	**REPLACEMENT COST**	
WATER MAIN	107,500 LF	$	18,816,000.00
LIBERTY	PUMPHOUSE & WELLS	$	297,000.00
PEGWOOD	PUMP HOUSE & TANK	$	237,000.00
RESERVOIR	PUMP HOUSE	$	132,000.00
TAYLOR	PUMP HOUSE & TANK	$	128,000.00
SKI-BOWL	PUMP HOUSE & TANKS	$	308,000.00
SUNSET	PUMP HOUSE & TANK	$	217,000.00
PRV'S	23 VAULTS	$	230,000.00
SYSTEM VALUE	**$**		**20,365,000.00**

It should be noted that these unit costs are estimates and can vary greatly by the project size and other site-specific factors such as ledge, wetlands, work within state highways or railroads rights of way. These costs are intended for general budgeting guidance and as specific projects are developed an opinion of probable construction costs should be completed for the specific project scope.

3. Asset Management Strategy

3.1 General

Using the best available information from existing mapping, field observation and discussion with the water system operator, an inventory of the water system assets was developed, and the overall condition of system components quantified.

The water system assets that are included in this plan are as follows:

- Water distribution and transmission mains
- Blowoffs
- Water supply wells
- Pump Stations
- Water storage tanks
- Pressure reducing vaults

An excel spreadsheet was developed to summarize existing inventory, condition, installation date, useful life, and other data points. This inventory data was used to calculate the consequences of failure,

probability of failure and risk. The spreadsheet has been provided to the WEVD with the water system improvement plan.

The mapping of existing assets was previously completed and updated during this project. A map is provided in Appendix B.

3.2 Condition Assessment

As part of the inventory, the conditions of assets were determined based on the age of the component, physical inspection (if possible) and operator knowledge. They were placed in one of six categories as follows:

CONDITION	POF
VERY POOR	5
POOR	4
FAIR	3
GOOD	2
VERY GOOD	1
UNKNOWN	3

3.3 Risk Assessment

Risk is the product of the following two key factors:

1. **Probability of Failure** – the likelihood that an asset will fail

Probability of Failure (PoF) is based on the condition of the asset, estimated useful life, estimated remaining life, and operator knowledge. If an asset can provide the same or similar service as another asset, the consequence of failure is not as significant, and the life of an asset may also be extended. Probability of Failure is rated on a scale of 1 to 5 with 5 indicating certain failure. Probability of failure is directly based on the condition of an asset.

2. **Consequence of failure** – the impact a failed asset will have on the system and customer

Consequence of Failure (CoF) estimates the degree of impact on the utility service should the asset fail. It is rated on a scale of 1 to 5 as well with 5 indicating extreme consequences. Consequence of failure is based on operator knowledge and redundancy.

Risk is calculated by multiplying the probability of failure by the consequence of failure. The table below shows the risk category, score, and their required actions.

COF	COF VALUE	POF	POF VALUE	Risk Score	Risk Category	Response
VERY HIGH	5	VERY HIGH	5	21 to 25	Very High	Immediate Attention
HIGH	4	HIGH	4	16 to 20	High	Aggressive Monitoring
MEDIUM	3	MEDIUM	3	11 to 15	Medium	Monitoring
LOW	2	LOW	2	6 to 10	Low	Routine Maintenance
VERY LOW	1	VERY LOW	1	0 to 5	Very Low	Preventative Maintenance

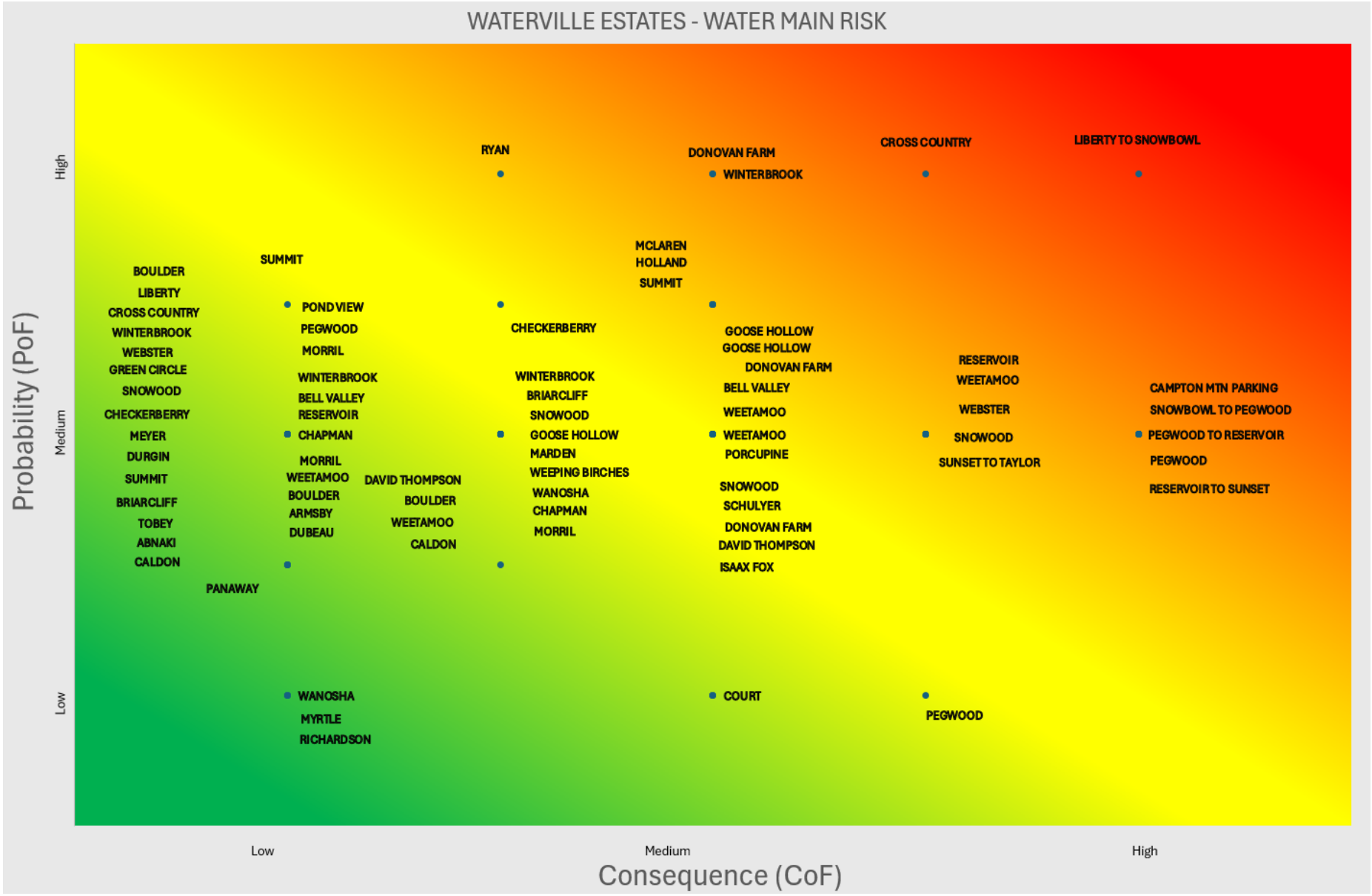
3.4 Summary of Critical Assets

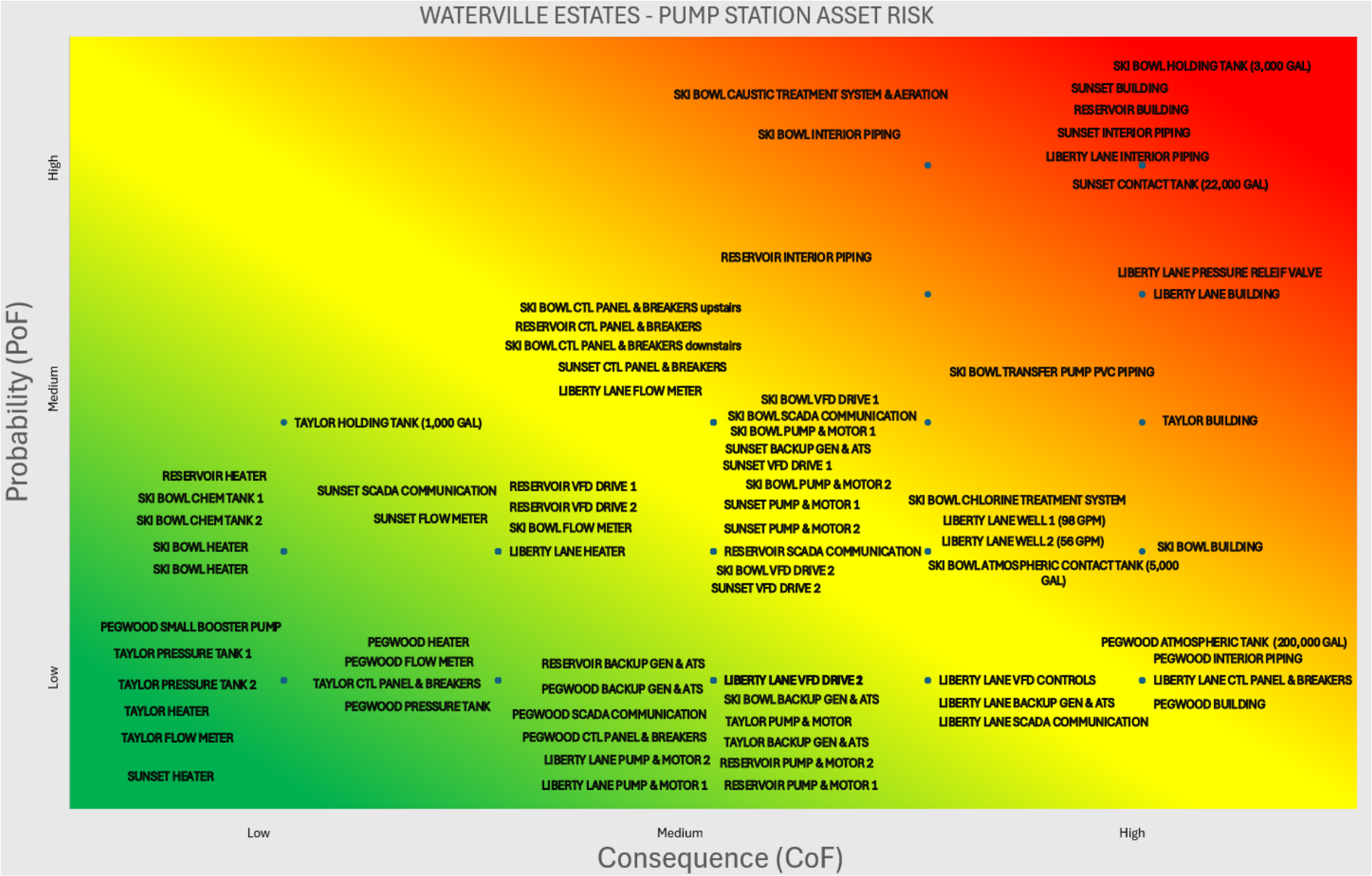
Some assets are more important than others in ensuring that customers receive safe drinking water. They may be important due to the social, economic, or environmental consequences should the asset fail.

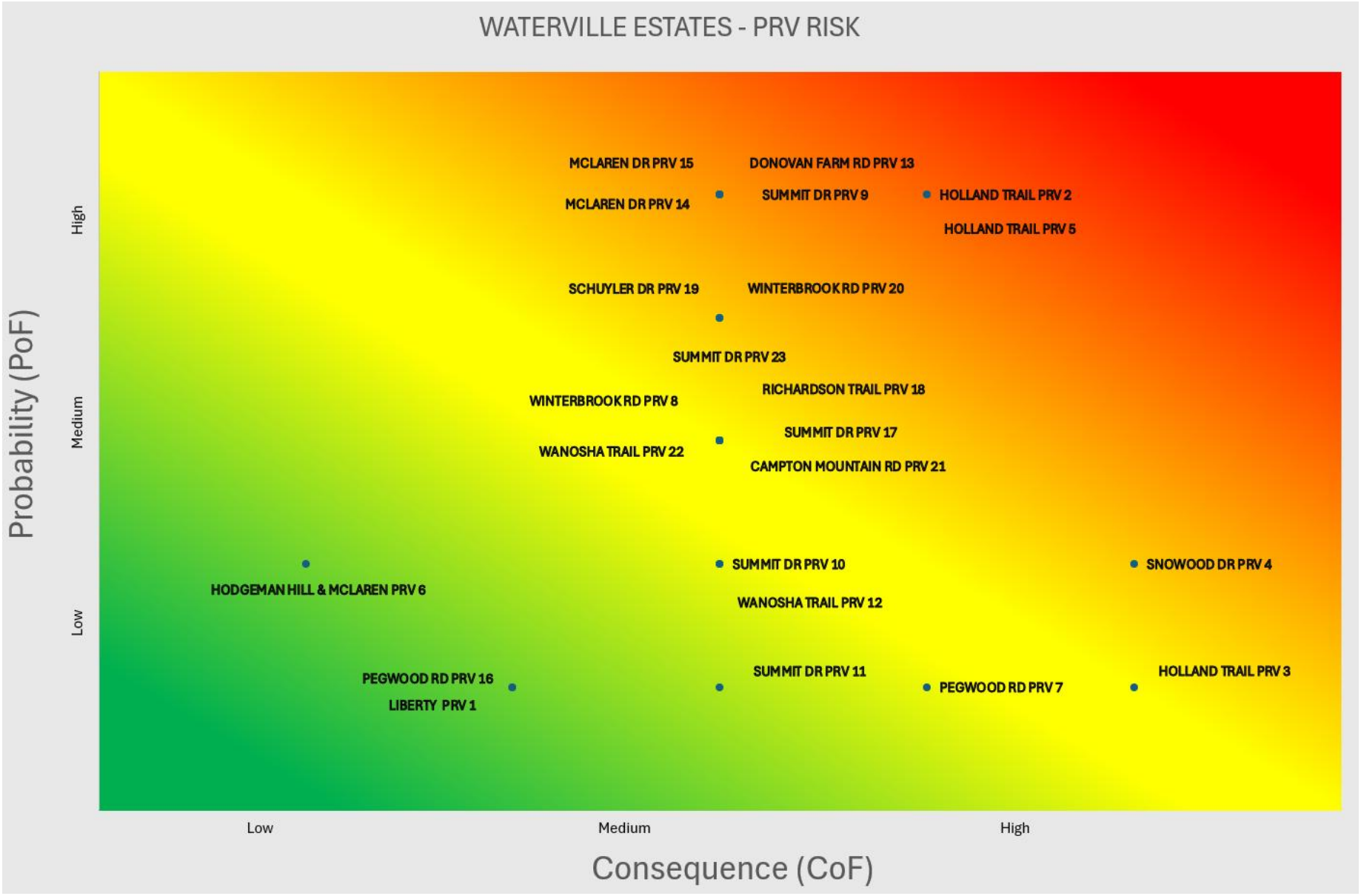
This risk assessment is used to identify the highest priority assets and set funding strategies accordingly. The table above identifies assets to consider for replacement during the 15-year planning period due to their estimated useful life, condition, and risk rating. The methods used to compute the risk scores above have a direct relationship to the accuracy of the input information. The high-risk items have been discussed with the WEVD to better refine the process of developing a capital improvement plan.

The following matrices illustrate the calculation of risk. The lower left quadrant of the matrix indicates assets that are low risk while the upper right quadrant indicates assets that are high risk. To better organize assets, three matrices were built, one for distribution piping, one for pump station components, and finally one for pressure reducing valves. The lower left quadrant data points may not have labels for readability purposes. The entire asset lists with associated risk scores can be found in Appendix A. The condition of each asset will change over time therefore it is important to review and adjust the risk assessment on a regular basis or as assets are replaced.

TYPE	LOCATION	DESCRIPTION	RISK SCORE	RISK
WATER MAIN	LIBERTY TO SNOWBOWL	PS1 TO PS2	25	Very High
PUMP STATION	LIBERTY LANE	LIBERTY LANE INTERIOR PIPING	25	Very High
PUMP STATION	RESERVOIR	RESERVOIR BUILDING	25	Very High
PUMP STATION	SKI BOWL	SKI BOWL HOLDING TANK (3,000 GAL)	25	Very High
PUMP STATION	SUNSET	SUNSET BUILDING	25	Very High
PUMP STATION	SUNSET	SUNSET CONTACT TANK (22,000 GAL)	25	Very High
PUMP STATION	SUNSET	SUNSET INTERIOR PIPING	25	Very High
WATER MAIN	CROSS COUNTRY	A11 TO A12	20	High
PUMP STATION	LIBERTY LANE	LIBERTY LANE BUILDING	20	High
PUMP STATION	LIBERTY LANE	LIBERTY LANE PRESSURE RELEIF VALVE	20	High
PUMP STATION	SKI BOWL	SKI BOWL INTERIOR PIPING	20	High
PUMP STATION	SKI BOWL	SKI BOWL CAUSTIC TREATMENT SYSTEM & AERATION	20	High
PRV	HOLLAND TRAIL	PRV 2	20	High
PRV	HOLLAND TRAIL	PRV 5	20	High
PUMP STATION	RESERVOIR	RESERVOIR INTERIOR PIPING	16	High
WATER MAIN	SNOWBOWL TO PEGWOOD	PS2 TO PS3	15	Medium
WATER MAIN	PEGWOOD TO RESERVOIR	PS3 TO PS4	15	Medium
WATER MAIN	RESERVOIR TO SUNSET	PS4 TO PS5	15	Medium
WATER MAIN	CAMPTON MTN PARKING	PS2 TO A1	15	Medium
WATER MAIN	WINTERBROOK	A27 TO A28	15	Medium
WATER MAIN	DONOVAN FARM	A28 TO A29	15	Medium
WATER MAIN	CROSS COUNTRY	PS4 TO D1	15	Medium
WATER MAIN	PEGWOOD	PS3 TO B1	15	Medium
WATER MAIN	PEGWOOD	B1 TO B2	15	Medium
PUMP STATION	TAYLOR	TAYLOR BUILDING	15	Medium
PRV	SUMMIT DR	PRV 9	15	Medium
PRV	DONOVAN FARM RD	PRV 13	15	Medium
PRV	MCLAREN DR	PRV 14	15	Medium
PRV	MCLAREN DR	PRV 15	15	Medium
WATER MAIN	SUNSET TO TAYLOR	PS5 TO PS6	12	Medium
WATER MAIN	CROSS COUNTRY	A1 TO A2	12	Medium
WATER MAIN	CROSS COUNTRY	A2 TO A3	12	Medium
WATER MAIN	SNOWOOD	A3 TO A4	12	Medium
WATER MAIN	HOLLAND	A5 TO A7	12	Medium
WATER MAIN	WEBSTER	A1 TO A11	12	Medium
WATER MAIN	SUMMIT	A20 TO A21	12	Medium
WATER MAIN	SUMMIT	A22 TO A25	12	Medium
WATER MAIN	CROSS COUNTRY	A30 TO PS4	12	Medium
WATER MAIN	WEETAMOO	A21 TO A31	12	Medium
WATER MAIN	RESERVOIR	PS4 TO A35	12	Medium
WATER MAIN	RESERVOIR	A35 TO A36	12	Medium
WATER MAIN	WEETAMOO	PS5 TO A31	12	Medium
WATER MAIN	MCLAREN	B4 TO B5	12	Medium
PUMP STATION	SKI BOWL	SKI BOWL TRANSFER PUMP PVC PIPING	12	Medium
PRV	SCHUYLER DR	PRV 19	12	Medium
PRV	WINTERBROOK RD	PRV 20	12	Medium


WATERVILLE ESTATES - WATER MAIN RISK
Probability (PoF)
High
Medium
Low
BOULDER
LIBERTY
CROSS COUNTRY
WINTERBROOK
WEBSTER
GREEN CIRCLE
SNOWOOD
CHECKERBERRY
MEYER
DURGIN
SUMMIT
BRIARCLIFF
TOBEY
ABNAKI
CALDON
PANAWAY
SUMMIT
POND VIEW
PEGWOOD
MORRIL
WINTERBROOK
BELL VALLEY
RESERVOIR
CHAPMAN
MORRIL
WEETAMOO
BOULDER
ARMSBY
DUBEAU
DAVID THOMPSON
BOULDER
WEETAMOO
CALDON
WANOSHA
MYRTLE
RICHARDSON
RYAN
CHECKERBERRY
WINTERBROOK
BRIARCLIFF
SNOWOOD
GOOSE HOLLOW
MARDEN
WEEPING BIRCHES
WANOSHA
CHAPMAN
MORRIL
MCLAREN
HOLLAND
SUMMIT
DONOVAN FARM
WINTERBROOK
GOOSE HOLLOW
GOOSE HOLLOW
DONOVAN FARM
BELL VALLEY
WEETAMOO
WEETAMOO
PORCUPINE
SNOWOOD
SCHULYER
DONOVAN FARM
DAVID THOMPSON
ISAAX FOX
COURT
CROSS COUNTRY
RESERVOIR
WEETAMOO
WEBSTER
SNOWOOD
SUNSET TO TAYLOR
PEGWOOD
LIBERTY TO SNOWBOWL
CAMPTON MTN PARKING
SNOWBOWL TO PEGWOOD
PEGWOOD TO RESERVOIR
PEGWOOD
RESERVOIR TO SUNSET
Low
Medium
High
Consequence (CoF)


WATERVILLE ESTATES - PUMP STATION ASSET RISK
Probability (PoF)
High
Medium
Low
SKI BOWL HOLDING TANK (3,000 GAL)
SUNSET BUILDING
RESERVOIR BUILDING
SUNSET INTERIOR PIPING
LIBERTY LANE INTERIOR PIPING
SUNSET CONTACT TANK (22,000 GAL)
SKI BOWL CAUSTIC TREATMENT SYSTEM & AERATION
SKI BOWL INTERIOR PIPING
RESERVOIR INTERIOR PIPING
LIBERTY LANE PRESSURE RELEIF VALVE
LIBERTY LANE BUILDING
SKI BOWL CTL PANEL & BREAKERS upstairs
RESERVOIR CTL PANEL & BREAKERS
SKI BOWL CTL PANEL & BREAKERS downstairs
SUNSET CTL PANEL & BREAKERS
LIBERTY LANE FLOW METER
SKI BOWL TRANSFER PUMP PVC PIPING
SKI BOWL VFD DRIVE 1
SKI BOWL SCADA COMMUNICATION
SKI BOWL PUMP & MOTOR 1
TAYLOR HOLDING TANK (1,000 GAL)
TAYLOR BUILDING
SUNSET BACKUP GEN & ATS
SUNSET VFD DRIVE 1
RESERVOIR HEATER
SKI BOWL CHEM TANK 1
SKI BOWL CHEM TANK 2
SUNSET SCADA COMMUNICATION
SUNSET FLOW METER
RESERVOIR VFD DRIVE 1
RESERVOIR VFD DRIVE 2
SKI BOWL FLOW METER
SKI BOWL PUMP & MOTOR 2
SUNSET PUMP & MOTOR 1
SKI BOWL CHLORINE TREATMENT SYSTEM
LIBERTY LANE WELL 1 (98 GPM)
SUNSET PUMP & MOTOR 2
LIBERTY LANE WELL 2 (56 GPM)
SKI BOWL HEATER
SKI BOWL HEATER
LIBERTY LANE HEATER
RESERVOIR SCADA COMMUNICATION
SKI BOWL BUILDING
SKI BOWL VFD DRIVE 2
SKI BOWL ATMOSPHERIC CONTACT TANK (5,000 GAL)
SUNSET VFD DRIVE 2
PEGWOOD SMALL BOOSTER PUMP
TAYLOR PRESSURE TANK 1
TAYLOR PRESSURE TANK 2
TAYLOR HEATER
TAYLOR FLOW METER
SUNSET HEATER
PEGWOOD HEATER
PEGWOOD FLOW METER
TAYLOR CTL PANEL & BREAKERS
PEGWOOD PRESSURE TANK
RESERVOIR BACKUP GEN & ATS
PEGWOOD BACKUP GEN & ATS
PEGWOOD SCADA COMMUNICATION
PEGWOOD CTL PANEL & BREAKERS
LIBERTY LANE PUMP & MOTOR 2
LIBERTY LANE PUMP & MOTOR 1
LIBERTY LANE VFD DRIVE 2
SKI BOWL BACKUP GEN & ATS
TAYLOR PUMP & MOTOR
TAYLOR BACKUP GEN & ATS
RESERVOIR PUMP & MOTOR 2
RESERVOIR PUMP & MOTOR 1
PEGWOOD ATMOSPHERIC TANK (200,000 GAL)
PEGWOOD INTERIOR PIPING
LIBERTY LANE VFD CONTROLS
LIBERTY LANE CTL PANEL & BREAKERS
LIBERTY LANE BACKUP GEN & ATS
PEGWOOD BUILDING
LIBERTY LANE SCADA COMMUNICATION
Low
Medium
High
Consequence (CoF)


WATERVILLE ESTATES - PRV RISK
Probability (PoF)
High
Medium
Low
MCLAREN DR PRV 15
DONOVAN FARM RD PRV 13
MCLAREN DR PRV 14
SUMMIT DR PRV 9
HOLLAND TRAIL PRV 2
HOLLAND TRAIL PRV 5
SCHUYLER DR PRV 19
WINTERBROOK RD PRV 20
SUMMIT DR PRV 23
WINTERBROOK RD PRV 8
RICHARDSON TRAIL PRV 18
SUMMIT DR PRV 17
WANOSHA TRAIL PRV 22
CAMPTON MOUNTAIN RD PRV 21
HODGEMAN HILL & MCLAREN PRV 6
SUMMIT DR PRV 10
SNOWOOD DR PRV 4
WANOSHA TRAIL PRV 12
PEGWOOD RD PRV 16
LIBERTY PRV 1
SUMMIT DR PRV 11
PEGWOOD RD PRV 7
HOLLAND TRAIL PRV 3
Low
Medium
High
Consequence (CoF)

4. Potential for Growth

4.1 Source Capacity

WEVD currently draws water from two gravel packed dug wells located within the same well field at the Liberty Pump Station. The production of these wells was assessed by Horizons Engineering in June of 2025. The report on the assessment is available in Appendix C.

4.1.1 Current Source Capacity

Based on the Well 1 and Well 2 rated capacities of approximately 95 gpm each and 172 gpm in tandem, the following conclusions have been reached:

NHDES requires that while measured water usage data may be used for well production and storage assessment for currently developed areas of the system, any projected system build-out must use NHDES water use estimates as provided in state regulations (by-rule usage).

Based on **by-rule usage**:

WATER SOURCE	PRODUCTION(GPM)	TANDEM PRODUCTION(GPM)	TANDEM PRODUCTION (GPD)	BY RULE USAGE (2023 & 2024) (GPD)
WELL 1	95	172	247,680	237,815
WELL 2	95			
BY RULE % OF CAPACITY USED	**LEFT OVER (GPD)**			
96%	9,865			
HOW MANY HOMES CAN BE ADDED TO THEY WEVD SYSTEM AT 100% WELL CAPACITY?	**16**			
ASSUME 4 BR HOUSES (GPD)	600			

- 16 four-bedroom houses could be added to the system before 100% of the well capacity is used based on the **by-rule usage**.
- The system is unable to add any more houses to the system as 80% capacity has already been surpassed based on the **by-rule usage**.

Once a system reaches 80% capacity of its production use it must plan for upgrades to accommodate proposed flows.

Based on **measured usage**:

WATER SOURCE	PRODUCTION(GPM)	TANDEM PRODUCTION(GPM)	TANDEM PRODUCTION (GPD)	MEASURED USE (2023 & 2024) (GPD)
WELL 1	95	172	247,680	162,750
WELL 2	95			
MEASURED % OF CAPACITY USED	**LEFT OVER (GPD)**			
66%	84,930			
HOW MANY HOMES CAN BE ADDED TO THEY WEVD SYSTEM AT 100% WELL CAPACITY?	**142**			
ASSUME 4 BR HOUSES (GPD)	600			
HOW MANY HOMES CAN BE ADDED TO THEY WEVD SYSTEM AT 80% WELL CAPACITY?	**59**			
ASSUME 4 BR HOUSES (GPD)	600			

- 142 four-bedroom houses could be added to the system before 100% of the well capacity is used based on the **measured usage**.
- 59 four-bedroom houses could be added to the system before 80% of the well capacity is used based on the **measured usage**.

4.1.2 Source Capacity Required For Full Build-Out

The well production required for full build-out was determined in the Water Source Assessment available in Appendix C. The required full build-out production was determined to be 407,000 GPD. This leaves a new well production need of 160,000 GPD to achieve full build-out.

ADDITIONAL REQUIRED WELL PRODUCTION FOR FULL BUILD-OUT	
PROJECTED FULL BUILD-OUT DESIGN FLOW (GPD)	407,000
WELL 1 & WELL 2 TANDEM PRODUCTION (GPD)	247,000
ADDITIONAL PRODUCTION NEEDED PER NHDES REGULATIONS (GPD)	**160,000**

4.2 Storage Capacity

WEVD currently has 240,000 gallons of atmospheric storage. Daily water demand and well production were used to determine the NHDES-required water storage capacity for the system.

4.2.1 Current Storage Capacity

Since the current design flow is 237,815 gpd, and the minimum flow from the smaller well is less than this, NHDES regulations require 100-percent of design flow available in atmospheric water storage capacity. This equates the current required water storage for WEVD at 237,815 gallons.

CURRENT ATMOSPHERIC STORAGE CAPACITY	
DESIGN FLOW (GPD)	237,815
SINGLE WELL MIN FLOW (GPD)	136,800
RATIO	**0.575237**
STORAGE REQUIRED=DESIGN FLOW	237,815
APPROX. CURRENT STORAGE	246,000
% CAPACITY USED	**97%**

Table 405-4: Requirement for Atmospheric Water Storage Capacity
For Water Systems That Have More Than One Source

Minimum groundwater source capacity with largest producing well out-of-service	Atmospheric water storage capacity required
Peak flow	none required
2.5 times the design flow	25 percent of design flow
1.5 times the design flow	50 percent of design flow
Design flow	75 percent of design flow
Less than design flow	100 percent of design flow

Because the WEVD system is at 97% of this storage capacity per NHDES rule, additional storage will soon be required.

4.2.2 Storage Capacity Required for Full Build-Out

The water storage required for full build-out was determined using NHDES water storage requirements for systems with multiple wells. The additional water source production required for full build-out was assumed to be coming from a single new well.

At full build-out, the well production was calculated to be 407,000 gpd. Since the minimum flow from the smaller well is less than this, NHDES requires 100-percent of the design flow available in atmospheric water storage capacity, or 407,000 gallons. With the capacity of the existing storage tanks, excluding the Sunset Drive 20,000-gallon storage tank because it is in poor condition and the operator would like it removed, an additional 181,000 gallons of water storage are required for full system build-out.

Table 405-4: Requirement for Atmospheric Water Storage Capacity
For Water Systems That Have More Than One Source

Minimum groundwater source capacity with largest producing well out-of-service	Atmospheric water storage capacity required
Peak flow	none required
2.5 times the design flow	25 percent of design flow
1.5 times the design flow	50 percent of design flow
Design flow	75 percent of design flow
Less than design flow	100 percent of design flow

ADDITIONAL REQUIRED WATER STORAGE FOR FULL BUILD-OUT	
PROJECTED FULL BUILD-OUT DESIGN FLOW (GPD) - ALSO REQUIRED WELL PRODUCTION (GPD)	407,000
FULL BUILD-OUT LARGEST PRODUCTING WELL (GPD)	160,000
WELL PRODUCTION WITH LARGEST PRODUCTING WELL OUT-OF-SERVICE (GPD)	247,000
STORAGE REQUIRED WHEN WELL PRODUCTION WITH LARGEST PRODUCTION WELL OUT-OF-SERVICE IS LESS THAN THE DESIGN FLOW PER NHDES REGULATIONS	100% OF ONE DAY'S DESIGN FLOW
FULL BUILD-OUT WATER STORAGE REQUIRED (GALLONS)	**407,000**
CURRENT PEGWOOD WATER STORAGE (GALLONS)	200,000
CURRENT SKI-BOWL CONTACT TANK (GALLONS)	22,000
CURRENT SKIBOWL HOLDING TANK (GALLONS)	3,000
CURRENT TAYLOR WATER STORAGE (GALLONS)	1,000
CURRENT SUNSET WATER STORAGE (GALLONS) - TO BE REMOVED	20,000
CURRENT WATER STORAGE EXCLUDING SUNSET DRIVE (GALLONS)	226,000
ADDITIONAL WATER STORAGE REQUIRED (GALLONS)	**181,000**

WEVD should review this plan annually as part of the effort to prepare the annual budget and to adjust the goals and objectives as projects are completed. This document is not just a plan but a program.

4.3 Recommended Asset Improvements

The following actions are recommended to improve the WEVD water infrastructure and prepare for further community build-out.

- **Add an additional water source.** Although the actual water usage indicates there is room for growth, another source should still be added to the system based on the by-rule usage and expected growth, which requires 140,000 gallons per day of additional water production.
- **Replace the Ski-bowl holding tank.** The steel holding tank is in very poor condition.
- **Replace or remove the Sunset Drive booster station and tank.** This pump station is in very poor condition. The WEVD operator expressed preference for its removal, if possible, which is evaluated in hydraulic model section of this report.
- **Expand storage at the Pegwood water tanks.** WEVD should consider expanding the storage at the system's high point while removing the Sunset Pump Station all together. With the capacity of the existing storage tanks, an additional 181,000 gallons of water storage are required for full system build-out. Per operator preference, it is suggested that another 200,000-gallon atmospheric tank be added at the Pegwood water storage location.
- **Install system water meters.** Water loss is a metric that describes the overall health of a water system and WEVD is unable to determine their water loss without meters at all user locations. It is recommended to not only install meters at user locations but also to install meters at all transmission line segments and isolated zones to determine where water loss is occurring.

5. Hydraulic Model

A water model for the Waterville Estates Village District water system was developed in WaterCAD, a definitive hydraulic model for pressurized-pipe networks. WaterCAD is owned and licensed by Bentley Systems. A copy of the calibrated model was provided with this report.

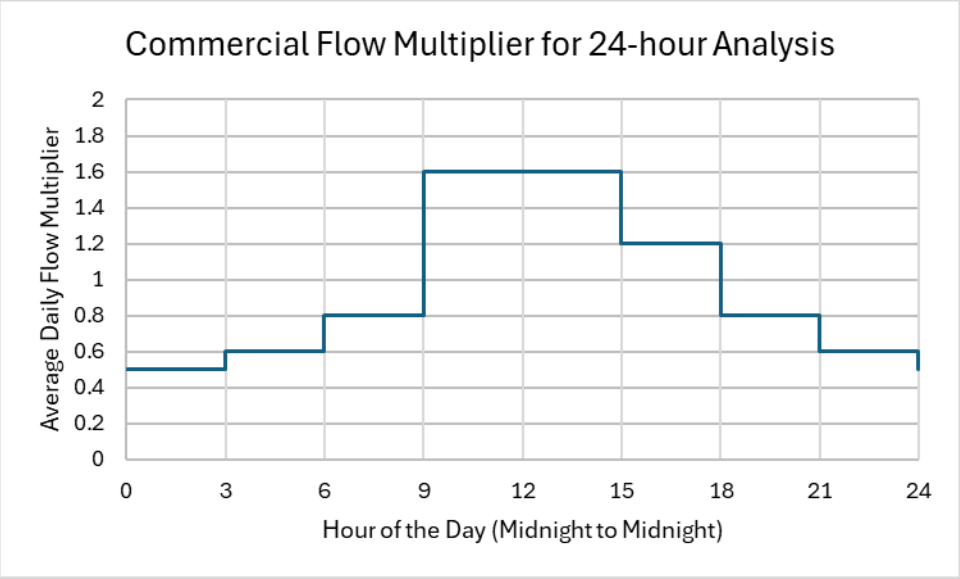
5.1 Model Development and Assumptions

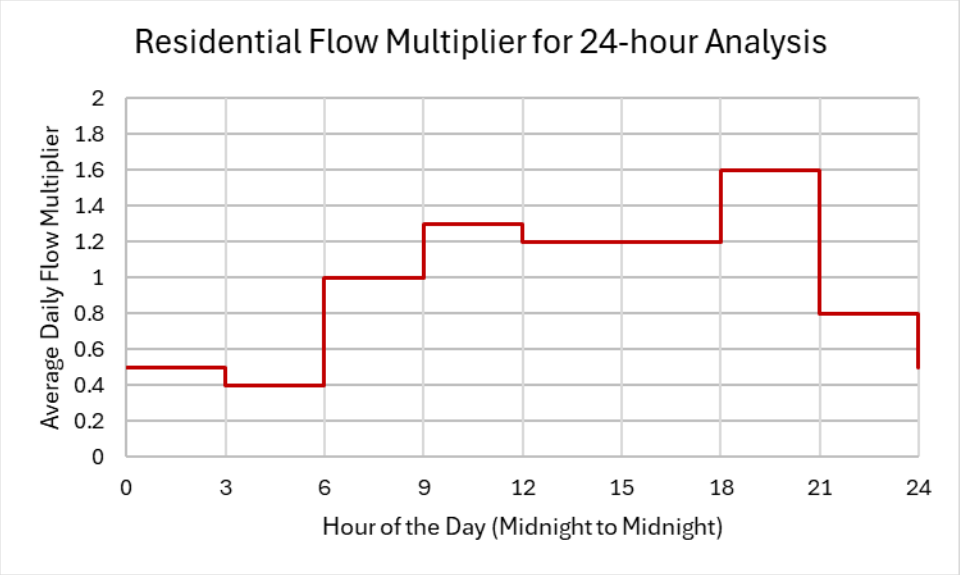
The water model was laid out according to the water distribution system map developed at the beginning of the project. Pipe diameters, material, and connections were all determined from mapping. Elevation data was taken from LiDAR for the area and from field survey. Water tank and pump model data was acquired from the operator. Average daily flow was derived from the daily flow data provided by the operator.

The following assumptions were made to create a working model:

Model Assumptions
All pipe roughnesses at model default
Water demand is distributed evenly throughout the system
Water demand follows a standard 24-hour peaking curve
Base water demand is average daily demand (162,000 GPD)
Only one pump was operating at each pump station
Elevation data from LiDAR and field survey
Five (5) feet of cover for all water main
PRVs of unknown pressure reduction operate at 20-95 PSI
All pumps are VFDs
Pumps operate to keep the tank above them at least 80% full
Initial tank water depths set to 1 foot below full

A 24-hour hydraulic analysis was computed for the system. Water demand was determined according to the following 24-hour flow demand multiplier step-wise defined functions. The flow multiplier was multiplied by the average daily flow to determine demand in the system at a given time in the 24-hour scenario.


Commercial Flow Multiplier for 24-hour Analysis
Average Daily Flow Multiplier
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
3
6
9
12
15
18
21
24
Hour of the Day (Midnight to Midnight)


Residential Flow Multiplier for 24-hour Analysis
Average Daily Flow Multiplier
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
3
6
9
12
15
18
21
24
Hour of the Day (Midnight to Midnight)

5.2 Model Calibration

The model was calibrated using the known pressure data from the PRVs listed below. PRVs that did not have known data were initially assumed to reduce pressure to 50 PSI. This pressure setting (Low Pressure) was adjusted based on the known condition of the surrounding PRVs so that PRVs with measured pressures were modeled accurately. The field-measured high PRV pressures and the modeled pressures are shown below together with the assigned reduced pressures.

Error was calculated using the difference between the field-measured high pressure at a PRV and the modeled high pressure. Error was calculated as:

Error = Measured High Pressure – Modeled High Pressure

Error as a percentage was calculated as:

% Error = Error / Measured High Pressure

This error percentage was used to assess the model accuracy. PRV locations are shown on the map in Appendix B.

Pressure Reducing Vaults - Model Calibration Points

PRV Name	Measured Low Pressure (PSI)	Assumed Low Pressure (PSI)	Measured High Pressure (PSI)	Modeled High Pressure (PSI)	Error (PSI)	Error (%)
PRV-1-Liberty	52	-	-	*Not considered	-	-
PRV-2-Holland	-	40	-	75	-	-
PRV-3-Holland	40	-	90	87	3	3%
PRV-4-Snowood	20	-	70	102	-32	46%
PRV-5-Holland	65	-	100	100	0	0%
PRV-6-Hodgeman	55	-	165	166	-1	1%
PRV-7-Pegwood	-	95	-	136	-	-
PRV-8-Winterbrook	-	50	-	97	-	-
PRV-9-Summit	-	50	-	*Not considered	-	-
PRV-10-Summit	-	20	-	126	-	-
PRV-11-Summit	40	-	50	51	-1	2%
PRV-12-Wanosha	50	-	80	77	3	4%
PRV-13-Donovan	-	20	-	181	-	-
PRV-14-Mclaren	-	50	-	99	-	-
PRV-15-Mclaren	-	50	-	104	-	-
PRV-16-Pegwood	45	-	100	103	-3	3%
PRV-17-Summit	75	-	110	122	-12	11%
PRV-18-Richardson	50	-	120	117	3	3%
PRV-19-Schuyler	-	50	-	125	-	-
PRV-20-Winterbrook	-	20	-	105	-	-
PRV-21-Campton	-	50	-	62	-	-
PRV-22-Wanosha	-	25	-	107	-	-
PRV-23-Summit	45	-	60	93	-33	55%
PRV-24-Skibowl	60	-	180	178	2	1%

*Believed to reduce pressure to a private service line.

The three yellow-highlighted PRVs in the table above each had a calculated modeled high-pressure error of greater than 5%. These differences could not be accounted for through modeling as these appear to be

elevation-driven pressure heads. This indicates that at these locations the modeled conditions are not accurately representing the field operating conditions. Further field investigation is required to identify the reasons for these discrepancies.

5.3 Model Results

The existing water distribution system has high-pressure conditions caused by the surrounding terrain. Some of these pressure conditions may be attributed to PRVs being set appropriately. Also, given some of the pipe sizes within WEVD, it is fair to assume that the demand conditions on these small-diameter pipes affect the pressure readings negatively.

5.3.1 Modeled Low Pressures

One area to examine for potential low pressure (less than 30 PSI) is:

- Upper Pegwood Hill Road near junction B2E

5.3.2 Modeled High Pressures

Some areas to note for potential high pressure (greater than 100 PSI) are:

- Goose Hollow Road near junction A24E
- McClaren Drive near junction B5
- Bell Valley Road near junction D2E
- Doe Run near junction A10E
- Donovan Farm Road below between junction A28 (prior to the closed valve) and junction A27
- Dubeau Circle near junction A28
- Isaac Fox Drive from junction A35 to A34
- Weetamoo Trail from junction A34 to PRV-17
- Briarcliff Circle from junction A17
- David Thompson Road, Bell Valley Road, Armsby Circle, and Tobey Road from junction D2
- Porcupine Drive from the Reservoir Road pump station
- Caldon Circle from junction A26 to junction A26E
- Snowood Drive from junction A8 to junction A10

5.3.3 Recommended PRV Action Items

The following actions are recommended to reduce extreme service pressures throughout WEVD. These actions should always be preceded by a check of the water service pressure to the surrounding homes to ensure that no homes will lose pressure due to the reduction (elevations at residences, and therefore final water pressure, will differ from the elevation of in-ground water main).

- Reduce pressure in PRV-7 to regulate pressure along Pegwood Hill Road from PRV-7 to B5 (Hodgeman Hill Road).
- Reduce pressure in PRV-11 to regulate pressure along Summit Drive from PRV-11 to PRV-10.
- Reduce pressure in PRV-17 and PRV-23 to regulate pressure to Donovan Farm Road and Caldon Circle.
- Reduce pressure in PRV-6 to 45 PSI and PRV-21 to regulate pressure along Morrill Circle.
- Add a PRV at A17 to regulate pressure to Briarcliff Circle.
- Add a PRV at B3 for Pegwood Road at B3 to regulate pressure along Pegwood Road.

- Add a PRV at D2 to regulate pressure to Bell Valley Road, David Thompson Drive, Armsby Circle, Schuyler Drive, and Tobey Road.
- Add a PRV at A24 to regulate pressure along northern Wanosha Trail.

5.4 Sunset Drive Booster Station Removal: Water Modeling Scenarios

The existing booster station (BS) and water storage tank at Sunset Drive are in very poor condition and must be replaced or removed. The operator expressed preference to remove this tank and pump station.

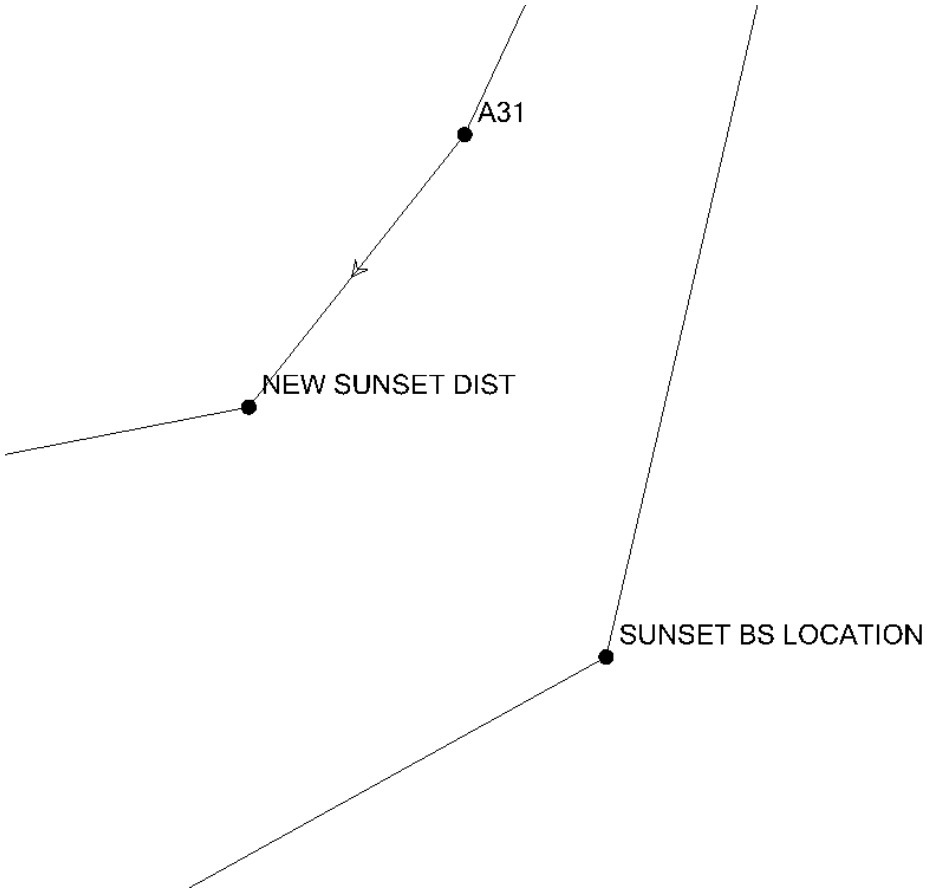
In addition to the potential loss of the Sunset Drive booster station and tank, 181,000 gallons of additional water storage are needed to achieve full build-out of WEVD. The operator expressed preference to meet this requirement by adding an additional 200,000 gallons of water storage at the Pegwood Storage Tank.

This was modeled to determine feasibility as described below.

5.4.1 Scenario 1: Increase Pegwood storage and remove Sunset Drive tank and pump

The following actions were considered in the water model:

- Increased water storage at the Pegwood Tank to 400,000 gallons (added 200,000 gallons)
- Removed the Sunset Drive tank and booster station
- Reconnected the high-pressure lines and distribution network such that the high-pressure line traveled directly from Reservoir Road BS to Taylor Drive BS with no interconnections to the system.

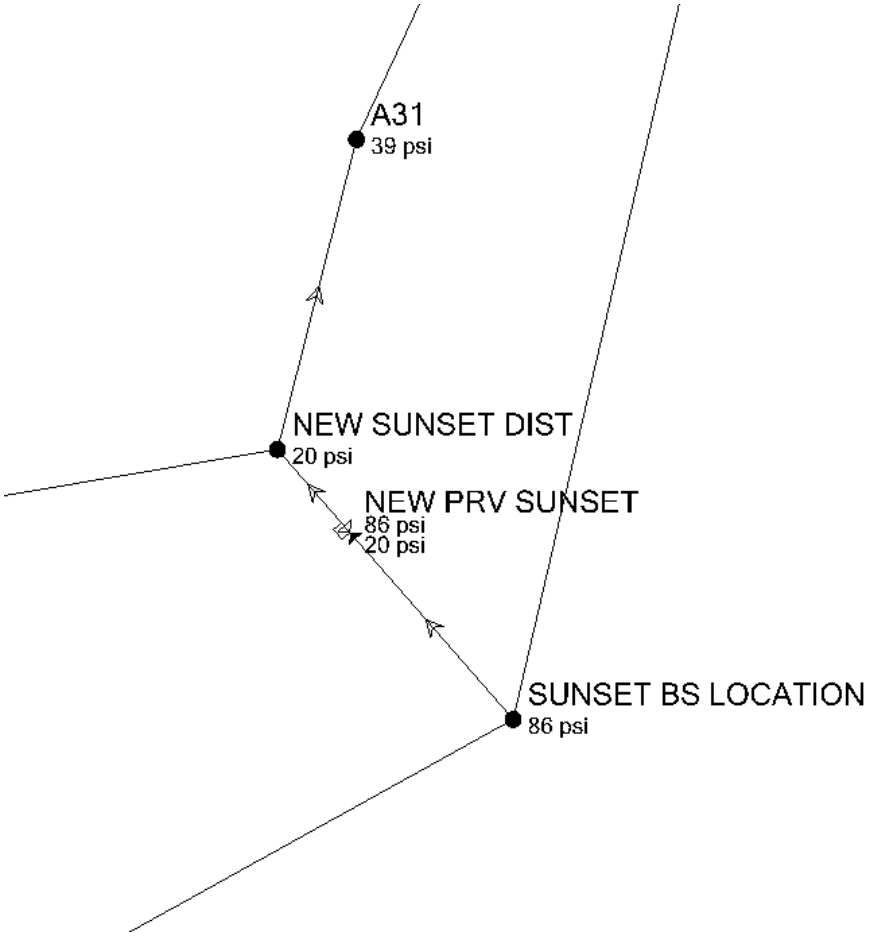


These actions led to service pressures below 0 PSI in the southeast portion of the system. Large sections of the system were without water. This scenario is therefore not feasible.

5.4.2 Scenario 2: Increase Pegwood storage, remove Sunset Drive tank and pump, and connect the distribution system to high pressure line at the old Sunset Booster Station.

Since Scenario 1 left sections of the WEVD system without pressure, alternatives were considered for the removal of the Sunset Drive booster station and tank. The following actions were considered in the water model:

- Increased storage at the Pegwood Tank to 400,000 gallons (added 200,000 gallons)
- Removed the Sunset Drive tank and booster station
- Reconnected the high-pressure lines and distribution network such that the high-pressure line traveled directly from Reservoir Road BS to Taylor Drive BS.
- Connected the distribution main into the high-pressure water line at the former Sunset Drive BS with a PRV set to 20 PSI.



This allowed sufficient pressure into the system but required operating pressures in the high-pressure line from the Reservoir booster station to the Sunset booster station to be approximately 280 PSI to generate

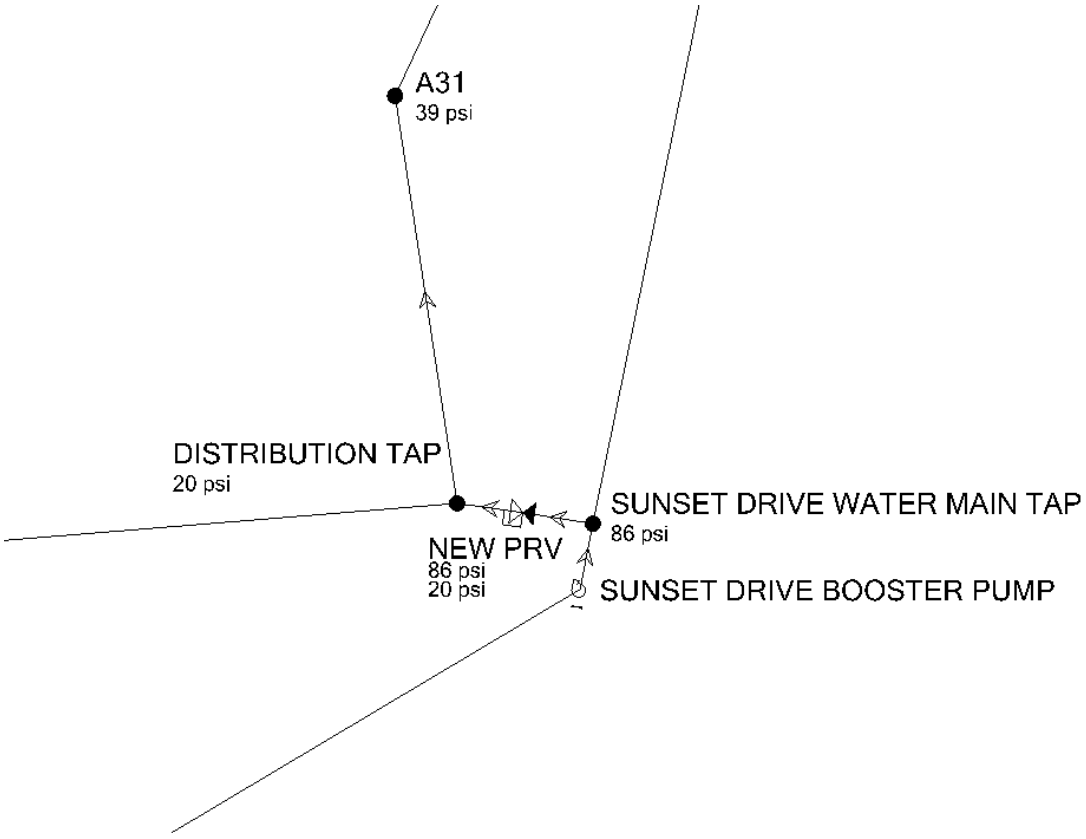
sufficient head to reach the tank at Taylor Drive. The existing water line for WEVD is not rated to withstand such high pressures, and as such this action is not feasible.

5.4.3 Scenario 3: Increase Pegwood storage, remove Sunset Drive tank, replace the Sunset Drive pump, and connect distribution system to the high pressure line at the old Sunset Booster Station

Since Scenario 2 showed that the Sunset Drive Booster Station is required to supply pressure head sufficient to transport water to the water tank at Taylor Drive, the pump station was replaced in the model and re-run.

The following actions were considered in the water model:

- Increased storage at the Pegwood Tank to 400,000 gallons (added 200,000 gallons)
- Removed the Sunset Drive water storage tank
- Replaced the Sunset Drive booster pump
- Reconnected the high-pressure lines and distribution network such that the high-pressure line traveled directly from Reservoir Road Booster Station to Taylor Drive Booster Station.
- Connected the distribution main into the high-pressure water line at the new Sunset Drive Booster Station with a PRV set to 20 PSI.



This scenario generated sufficient pressure in the system to supply homes. It also kept pressure in the high-pressure water main below the pressure rating for the existing water main.

Based on the modeled results, a booster pump is required at the Sunset Drive location, but the storage tank may be removed so long as sufficient storage is supplied at Pegwood Drive.

5.5 Modeling Conclusions and Recommendations

The existing water distribution system has high-pressure conditions caused by the surrounding terrain. Some of these pressure conditions may be attributed to PRVs being set inappropriately. Also, given some of the pipe sizes within WEVD, it is fair to assume that the demand conditions on these small-diameter pipes affect the pressure readings negatively.

The following actions, if taken, will allow for better modeling accuracy, system monitoring, and assist in overall system management.

- Install meters at key locations including pump stations and PRVs, and areas of concern such as those noted to have extremely high or low pressure. This will assist in leak detection and allow for better model calibration by providing a better understanding of demand distribution and potential water loss.
- Investigate the system conditions at PRV-4-Snowood, PRV-17-Summit, and PRV-23-Summit. Field investigation may yield information regarding why the calibrated model is providing significantly different results than the observed data. It is possible that the modeled conditions are not what is present in the field at these locations.

Regarding the replacement or removal of the Sunset Drive storage tank and booster station:

- System pressures do not allow the Sunset Drive booster pump to be removed. The elevation head required to transport water without an additional booster station from the Reservoir Road booster station directly to Taylor Drive booster station creates an operating pressure of 280 PSI which exceeds the pressure rating for the existing water pipe (240 PSI).
- The existing tank can be removed at Sunset Drive and the booster pump replaced. The water distribution system for Weetamoo Trail must be connected to the high-pressure line after the new booster station with a PRV to maintain useable pressure in the system.

6. Capital Improvement Program

The WEVD Water Improvement Plan describes future capital projects. Capital improvement projects generally create a new asset that previously did not exist, or they upgrade and improve the capacity of an existing asset. The projects can result from growth or environmental needs, such as:

1. Expenditure that purchases or creates a new asset or in any way improves an asset beyond its original design capacity
2. Upgrades that increase the capacity of the asset
3. Construction designed to produce an improvement in the standard operation of the asset beyond its present capacity

In addition to capital improvement projects, the asset management team has reviewed and is establishing a renewal (or rehabilitation) strategy. Renewal expenditures do not increase the asset's design capacity but restore an existing asset to its original capacity. Any improvement projects that require more than restoring an asset to its original capacity are deemed to be a renewal project, such as the following:

1. Activities that do not increase the capacity of the asset (i.e., upgrade and enhance the assets restoring them to their original size, condition, and capacity)
2. Rehabilitation involving improvements and realignment or restores the assets to a new or fresh condition

In making renewal decisions, the utility should consider several categories other than the normally recognized physical, failure or breakage. Such renewal decisions include the following:

1. Structural
2. Capacity
3. Level of service failures
4. Outdated functionality
5. Cost or economic impact

6.1 Capital Improvement Project Need and Justification

Although the Utility has made progress addressing the deficiencies of the system, there is still more to do.

Improvement projects can fall into the following categories:

Health and Sanitation

- Improve system reliability and security
- Reduce leakage
- Ensure adequate pump capacity
- Improve fire protection – undersized mains
- Protect well head areas

System O&M

- Detect and reduce sources of unaccounted for water
- Repair or replace nonfunctional valves
- Rehabilitate or replace obsolete pump houses
- Review rates annually – charge for cost of doing business

6.2 Capital Improvement Project List

The Waterville Estates Village District Capital Improvement Program describes anticipated and prioritized future capital projects. This is a working document dependent on available funding and any unanticipated events.

WATERVILLE ESTATES - IMPROVEMENT PLAN				
No.	**ITEM**	**NOTES**	**COST**	**PROJECT YEAR**
1	PURCHASE GIS SYSTEM	STEVE TO OPERATE GIS SYSTEM	$ 5,000.00	2025
2	REPLACE CAUSTIC SODA WITH SODA ASH	SAFER TREATMENT METHOD	$ 2,000.00	
3	INSTALL METERS AT ALL USERS	SYSTEM WATER LOSS	$ 560,000.00	2026
4	METER TRANSMISSION MAINS	WATER LOSS DETERMINATION	$ 40,000.00	
5	TREATMENT TRANSPORT TO SNOWBOWL IN WINTER	WINCH AND SLED	$ 10,000.00	
6	PROVIDE MORE STORAGE CAPACITY	NEW 200,000 GAL STORAGE TANK	$ 400,000.00	2027
7	PROVIDE MORE SOURCE CAPACITY (SNOWOOOD OPTION)	NEW WELL SOURCE	$ 1,000,000.00	
8	REMOVE AERATION SYSTEM AT SKI-BOWL	OUTDATED AND OBSOLETE	$ 20,000.00	2028
9	SCADA CONTROLLED TREATMENT FROM ANALYZERS	ELIMINATE NEED FOR MANUAL ADJUSTMENTS	$ 10,000.00	
10	REMOVE T-SECTION ON TRANSMISSION FROM LIBERTY TO SNOWBOWL	ELIMINATE POTENTIAL WL	$ 5,000.00	
11	REMOVE USERS FROM TRANSMISSION MAINS	2 KNOWN USERS SKIBOWL TO PEGWOOD	$ 20,000.00	2029
12	REMOVE SUNSET STORAGE TANK	PEGWOOD TO ADD STORAGE	$ 400,000.00	2030
13	NEW PRV LOCATIONS BASED ON ELEVATION ZONES (POST SUNSET REMOVAL)	AFTER SUNSET STORAGE REMOVED	$ 100,000.00	
14	UPSIZE TRANSMISSION MAINS TO 6" (LIBERTY TO SNOW BOWL)	REDUCE WATER VELOCITY & IMPROVE EFFICIENCY	$ 1,000,000.00	2032
15	REPLACE RESERVOIR BUILDING	VERY POOR CONDITION	$ 100,000.00	2034
16	INSTALL METERS IN HORIZONTAL ISOLATION ZONES	WATER LOSS DETERMINATION	$ 15,000.00	
17	REPLACE LIBERTY INTERIOR PIPING	VERY POOR CONDITION	$ 40,000.00	2036
18	REPLACE/LINE SKI-BOWL WATER HOLDING TANK	VERY POOR CONDITION	$ 50,000.00	2038
		TOTAL	**$ 3,777,000.00**	

The expected needs of the utility will change each year; therefore, this CIP plan should be updated to reflect those changes. These costs are intended for general budgeting guidance and as specific projects are developed an opinion of probable construction costs should be completed for the specific project scope.

7. Financial Management Strategy

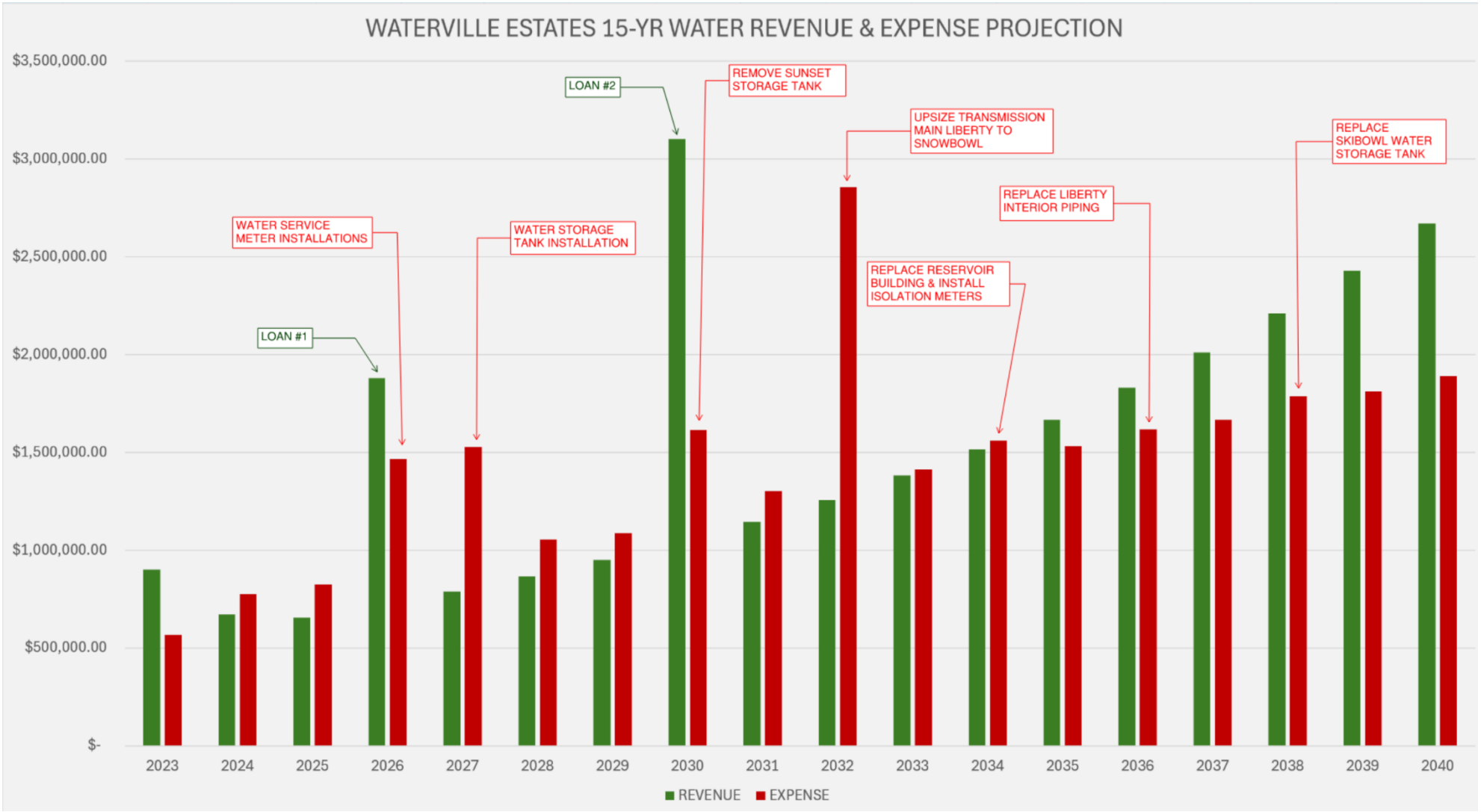
This section describes the WEVD's financial condition and its strategy for future financing. Capital costs are one-time expenses used to replace or upgrade a part of the utility. Capital costs do not include any O&M costs.

Costs for water are funded through user rates and fees. It is important to establish a rate structure by which the utility recovers the total cost of doing business. Short-term, external financing for capital expenses exceeding $50,000 should be financed through outside funding resources such as loans or grants. However, as WEVD plans for future improvements, the WEVD system should establish/continue funding a capital reserve fund to cover the costs of capital improvements necessary in 15 to 20 Years.

If large expenses are required for expansion or upgrades, the System should pay for improvements through user fees, grants, and loans. The utility should plan to spend approximately $3,777,000 on the water system over the next 15 years to accommodate system improvements and operations, compliance with state and federal regulations, and new drinking water requirements. Any profit is to be placed into the reserve fund. Every year a re-evaluation should take place and adjustments can be made based on actual revenues and expenses while taking into consideration the overall water system health and needs.

7.1 Financial Forecast

The Financial Forecast shows predicted revenues and expenses using the values provided in the financial history tables found in Appendix A. The projections are used to help the utility plan for and predict future expenses and revenue and how to better finance capital improvement projects through planned rate changes.


WATERVILLE ESTATES 15-YR WATER REVENUE & EXPENSE PROJECTION
$3,500,000.00
$3,000,000.00
$2,500,000.00
$2,000,000.00
$1,500,000.00
$1,000,000.00
$500,000.00
$-
LOAN #1
WATER SERVICE METER INSTALLATIONS
WATER STORAGE TANK INSTALLATION
LOAN #2
REMOVE SUNSET STORAGE TANK
UPSIZE TRANSMISSION MAIN LIBERTY TO SNOWBOWL
REPLACE RESERVOIR BUILDING & INSTALL ISOLATION METERS
REPLACE LIBERTY INTERIOR PIPING
REPLACE SKIBOWL WATER STORAGE TANK
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
REVENUE
EXPENSE

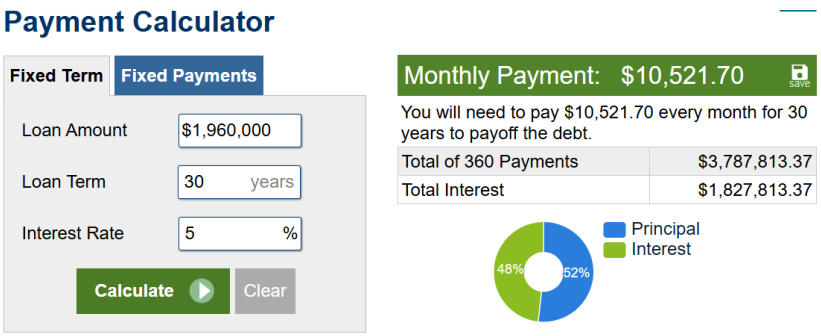
The figure above illustrates the forecasted financial needs for the next 15 years. It includes revenue, operational costs and proposed capital expenditures to develop the full cost of operating the system. The actual revenue and expenditure from 2023 through 2024 are shown for comparison.

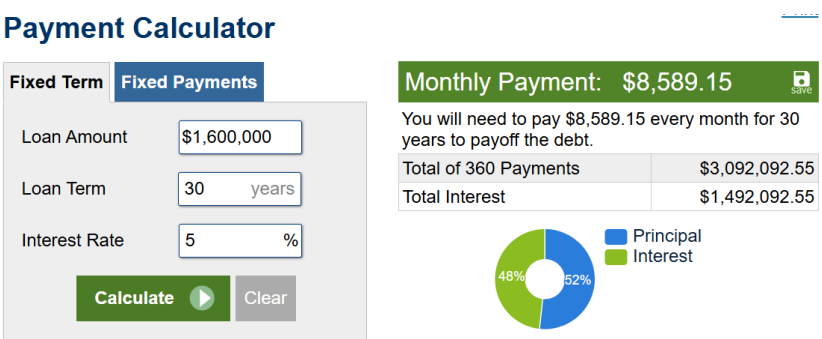
The plan calls for an investment of just under $3.8 million over fifteen years in 2025 dollars. The costs for each project were based on current estimates of 2025 construction costs. However, inflation is anticipated and when considering the financial feasibility of the plan an inflation factor needs to be incorporated. An inflation rate of 5% has been used in this 15-year projection on all expenditures. Prior to moving forward with construction projects, total project costs including engineering, easements, legal and administration as well as more detailed construction costs should be developed.

7.2 Total Expenditures

The following table was used to create the figure above. It includes revenue, operational costs and proposed capital expenditures along with water fee income. The forecasts are based on a combination of loan and grant funds to make the necessary capital improvements. There is also a 5% annual inflation rate for all expenditures. This table should be updated annually by WEVD as their goals and proposed projects may change from year to year. The cash on hand reserve fund is an important line item to focus on. The WEVD can plan for a reserve fund balance of approximately $250,000 in the year 2040 given the current proposed projects with the outlined rate increases.

Two loans were used in the 15-year forecast. One in 2026 and one in 2030 at an amount of $1,960,000 and $1,600,000 respectively. The Loan Payback calculations are below.





Customer growth was not included in the forecast because the growth is unknown and may not occur until additional storage and supply are added, and to provide a conservative outlook. The spreadsheet will be provided to WEVD and should be updated and adjusted annually to better account for actual customer growth.

WATERVILLE ESTATES VILLAGE DISTRICT
WATER SYSTEM IMPROVEMENT PLAN

SEPTEMBER-2025

		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
CASH SURPLUS / DEFICIT		$ (105,525.21)	$ (18,319.00)	$ 1,290,234.85	$ (1,563,538.08)	$ (173,291.27)	$ (130,006.83)	$ 1,021,609.14	$ (146,191.39)	$ (1,106,924.20)	$ (63,278.38)	$ (129,841.80)	$ 38,833.78	$ 58,235.67	$ 163,893.60	$ 186,383.22	$ 316,330.05	$ 404,413.55
NUMBER OF CUSTOMERS		530	541	551	562	574	585	597	609	621	633	646	659	672	686	699	713	728
CASH ON HAND/RESERVE FUND (END OF YR)		$ -	$ 50,000.00	$ 1,340,234.85	$ (223,303.23)	$ (396,594.51)	$ (526,601.34)	$ 495,007.80	$ 348,816.40	$ (758,107.80)	$ (821,386.18)	$ (951,227.98)	$ (912,394.19)	$ (854,158.52)	$ (690,264.92)	$ (503,881.70)	$ (187,551.65)	$ 216,861.90
INFLATION RATE																		
Income		$ 670,674.02	$ 624,182.00	$ 2,666,510.90	$ 761,303.77	$ 820,480.07	$ 884,390.48	$ 2,553,413.72	$ 1,027,958.81	$ 1,108,467.52	$ 1,195,416.92	$ 1,289,322.27	$ 1,390,740.05	$ 1,500,271.26	$ 1,618,564.96	$ 1,746,322.16	$ 1,884,299.93	$ 2,033,315.92
02.3401.520.001 REV - WATER FEES		$ 618,427.29	$ 602,582.00	$ 684,910.90	$ 739,703.77	$ 798,880.07	$ 862,790.48	$ 931,813.72	$ 1,006,358.81	$ 1,086,867.52	$ 1,173,816.92	$ 1,267,722.27	$ 1,369,140.05	$ 1,478,671.26	$ 1,596,964.96	$ 1,724,722.16	$ 1,862,699.93	$ 2,011,715.92
02.3401.520.002 REV - RETURNED CHECK FEES		$ 75.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
02.3401.520.003 REV - METER INCOME		$ 17,009.08																
02.3401.520.004 REV - FINANCE CHARGES		$ 1,937.66	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
02.3402.520.001 REV - CONNECT/DISCONNECT FEES		$ 7,700.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
02.3502.520.001 INT - INTEREST INCOME		$ 25,524.99	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00	$ 9,600.00
02.3502.520.002 INT - MISCELLANEOUS INCOME																		
02.3934.000.023 PROCEEDS FROM NH MUNICIPAL BOND BANK																		
Expense		$ 776,199.23	$ 642,501.00	$ 1,376,276.05	$ 2,324,841.85	$ 993,771.35	$ 1,014,397.31	$ 1,531,804.58	$ 1,174,150.21	$ 2,215,391.72	$ 1,258,695.30	$ 1,419,164.07	$ 1,351,906.27	$ 1,442,035.59	$ 1,454,671.36	$ 1,559,938.93	$ 1,567,969.88	$ 1,628,902.37
02.4331.001.220	WTR - PAYROLL TAXES	$ 6,573.87	$ 7,486.00	$ 7,860.30	$ 8,253.32	$ 8,665.98	$ 9,099.28	$ 9,554.24	$ 10,031.96	$ 10,533.55	$ 11,060.23	$ 11,613.24	$ 12,193.91	$ 12,803.60	$ 13,443.78	$ 14,115.97	$ 14,821.77	$ 15,562.86
02.4331.520.110	WTR - WAGES	$ 54,642.45	$ 66,362.00	$ 69,680.10	$ 73,164.11	$ 76,822.31	$ 80,663.43	$ 84,696.60	$ 88,931.43	$ 93,378.00	$ 98,046.90	$ 102,949.24	$ 108,096.71	$ 113,501.54	$ 119,176.62	$ 125,135.45	$ 131,392.22	$ 137,961.83
02.4331.520.111	WTR - WAGES ADMINISTRATION	$ 29,821.02	$ 31,491.00	$ 33,065.55	$ 34,718.83	$ 36,454.77	$ 38,277.51	$ 40,191.38	$ 42,200.95	$ 44,311.00	$ 46,526.55	$ 48,852.88	$ 51,295.52	$ 53,860.30	$ 56,553.31	$ 59,380.98	$ 62,350.03	$ 65,467.53
02.4331.520.119	WTR - WAGES - OVERTIME	$ 2,921.34	$ 5,600.00	$ 5,880.00	$ 6,174.00	$ 6,482.70	$ 6,806.84	$ 7,147.18	$ 7,504.54	$ 7,879.76	$ 8,273.75	$ 8,687.44	$ 9,121.81	$ 9,577.90	$ 10,056.80	$ 10,559.64	$ 11,087.62	$ 11,642.00
02.4331.520.210	WTR - HEALTH INSURANCE	$ 22,367.22	$ 23,795.00	$ 24,984.75	$ 26,233.99	$ 27,545.69	$ 28,922.97	$ 30,369.12	$ 31,887.58	$ 33,481.95	$ 35,156.05	$ 36,913.85	$ 38,759.55	$ 40,697.53	$ 42,732.40	$ 44,869.02	$ 47,112.47	$ 49,468.10
02.4331.520.211	WTR - DENTAL INSURANCE	$ 988.27	$ 955.00	$ 1,002.75	$ 1,052.89	$ 1,105.53	$ 1,160.81	$ 1,218.85	$ 1,279.79	$ 1,343.78	$ 1,410.97	$ 1,481.52	$ 1,555.59	$ 1,633.37	$ 1,715.04	$ 1,800.79	$ 1,890.83	$ 1,985.38
02.4331.520.230	WTR - RETIREMENT	$ 1,810.72	$ 13,240.00	$ 13,902.00	$ 14,597.10	$ 15,326.96	$ 16,093.30	$ 16,897.97	$ 17,742.87	$ 18,630.01	$ 19,561.51	$ 20,539.59	$ 21,566.56	$ 22,644.89	$ 23,777.14	$ 24,965.99	$ 26,214.29	$ 27,525.01
02.4331.520.240	WTR - EDUCATION	$ -	$ 1,500.00	$ 1,575.00	$ 1,653.75	$ 1,736.44	$ 1,823.26	$ 1,914.42	$ 2,010.14	$ 2,110.65	$ 2,216.18	$ 2,326.99	$ 2,443.34	$ 2,565.51	$ 2,693.78	$ 2,828.47	$ 2,969.90	$ 3,118.39
02.4331.520.260	WTR - WORKERS COMP INSURANCE	$ -	$ 1,576.00	$ 1,654.80	$ 1,737.54	$ 1,824.42	$ 1,915.64	$ 2,011.42	$ 2,111.99	$ 2,217.59	$ 2,328.47	$ 2,444.89	$ 2,567.14	$ 2,695.49	$ 2,830.27	$ 2,971.78	$ 3,120.37	$ 3,276.39
02.4331.520.261	WTR - PROPERTY & LIABILITY INSURANCE	$ 8,190.47	$ 9,200.00	$ 9,660.00	$ 10,143.00	$ 10,650.15	$ 11,182.66	$ 11,741.79	$ 12,328.88	$ 12,945.32	$ 13,592.59	$ 14,272.22	$ 14,985.83	$ 15,735.12	$ 16,521.88	$ 17,347.97	$ 18,215.37	$ 19,126.14
02.4331.520.301	WTR - ANNUAL AUDIT	$ 4,567.50	$ 4,000.00	$ 4,200.00	$ 4,410.00	$ 4,630.50	$ 4,862.03	$ 5,105.13	$ 5,360.38	$ 5,628.40	$ 5,909.82	$ 6,205.31	$ 6,515.58	$ 6,841.36	$ 7,183.43	$ 7,542.60	$ 7,919.73	$ 8,315.71
02.4331.520.305	WTR - ADVERTISING	$ 22.50	$ 100.00	$ 105.00	$ 110.25	$ 115.76	$ 121.55	$ 127.63	$ 134.01	$ 140.71	$ 147.75	$ 155.13	$ 162.89	$ 171.03	$ 179.59	$ 188.56	$ 197.99	$ 207.89
02.4331.520.320	WTR - LICENSES AND FEES	$ 2,642.04	$ 2,500.00	$ 2,625.00	$ 2,756.25	$ 2,894.06	$ 3,038.77	$ 3,190.70	$ 3,350.24	$ 3,517.75	$ 3,693.64	$ 3,878.32	$ 4,072.24	$ 4,275.85	$ 4,489.64	$ 4,714.12	$ 4,949.83	$ 5,197.32
02.4331.520.321	WTR - BAD DEBTS	$ 927.41	$ 500.00	$ 525.00	$ 551.25	$ 578.81	$ 607.75	$ 638.14	$ 670.05	$ 703.55	$ 738.73	$ 775.66	$ 814.45	$ 855.17	$ 897.93	$ 942.82	$ 989.97	$ 1,039.46
02.4331.520.323	WTR - LEGAL EXPENSES	$ 957.87	$ 7,500.00	$ 7,875.00	$ 8,268.75	$ 8,682.19	$ 9,116.30	$ 9,572.11	$ 10,050.72	$ 10,553.25	$ 11,080.92	$ 11,634.96	$ 12,216.71	$ 12,827.55	$ 13,468.92	$ 14,142.37	$ 14,849.49	$ 15,591.96
02.4331.520.340	WTR - ELECTRICITY	$ 84,726.75	$ 90,000.00	$ 94,500.00	$ 99,225.00	$ 104,186.25	$ 109,395.56	$ 114,865.34	$ 120,608.61	$ 126,639.04	$ 132,970.99	$ 139,619.54	$ 146,600.52	$ 153,930.54	$ 161,627.07	$ 169,708.42	$ 178,193.84	$ 187,103.54
02.4331.520.342	WTR - COMPUTER SUPPORT	$ 2,800.00	$ 2,800.00	$ 2,940.00	$ 3,087.00	$ 3,241.35	$ 3,403.42	$ 3,573.59	$ 3,752.27	$ 3,939.88	$ 4,136.88	$ 4,343.72	$ 4,560.90	$ 4,788.95	$ 5,028.40	$ 5,279.82	$ 5,543.81	$ 5,821.00
02.4331.520.350	WTR - TELEPHONE	$ 6,158.56	$ 5,000.00	$ 5,250.00	$ 5,512.50	$ 5,788.13	$ 6,077.53	$ 6,381.41	$ 6,700.48	$ 7,035.50	$ 7,387.28	$ 7,756.64	$ 8,144.47	$ 8,551.70	$ 8,979.28	$ 9,428.25	$ 9,899.66	$ 10,394.64
02.4331.520.351	WTR - CELL PHONE	$ 492.72	$ 900.00	$ 945.00	$ 992.25	$ 1,041.86	$ 1,093.96	$ 1,148.65	$ 1,206.09	$ 1,266.39	$ 1,329.71	$ 1,396.20	$ 1,466.01	$ 1,539.31	$ 1,616.27	$ 1,697.08	$ 1,781.94	$ 1,871.04
02.4331.520.390	WTR - CONSULTING	$ 6,280.00	$ 5,625.00	$ 5,906.25	$ 6,201.56	$ 6,511.64	$ 6,837.22	$ 7,179.08	$ 7,538.04	$ 7,914.94	$ 8,310.69	$ 8,726.22	$ 9,162.53	$ 9,620.66	$ 10,101.69	$ 10,606.78	$ 11,137.12	$ 11,693.97
02.4331.520.609	WTR - DEPT UNIFORMS	$ 604.88	$ 500.00	$ 525.00	$ 551.25	$ 578.81	$ 607.75	$ 638.14	$ 670.05	$ 703.55	$ 738.73	$ 775.66	$ 814.45	$ 855.17	$ 897.93	$ 942.82	$ 989.97	$ 1,039.46
02.4331.520.610	WTR - OFFICE SUPPLIES	$ 1,380.07	$ 2,500.00	$ 2,625.00	$ 2,756.25	$ 2,894.06	$ 3,038.77	$ 3,190.70	$ 3,350.24	$ 3,517.75	$ 3,693.64	$ 3,878.32	$ 4,072.24	$ 4,275.85	$ 4,489.64	$ 4,714.12	$ 4,949.83	$ 5,197.32
02.4331.520.611	WTR - TOOLS	$ 5,740.93	$ 7,000.00	$ 7,350.00	$ 7,717.50	$ 8,103.38	$ 8,508.54	$ 8,933.97	$ 9,380.67	$ 9,849.70	$ 10,342.19	$ 10,859.30	$ 11,402.26	$ 11,972.38	$ 12,570.99	$ 13,199.54	$ 13,859.52	$ 14,552.50
02.4331.520.618	WTR - COPIER LEASE	$ 1,715.83	$ 2,160.00	$ 2,268.00	$ 2,381.40	$ 2,500.47	$ 2,625.49	$ 2,756.77	$ 2,894.61	$ 3,039.34	$ 3,191.30	$ 3,350.87	$ 3,518.41	$ 3,694.33	$ 3,879.05	$ 4,073.00	$ 4,276.65	$ 4,490.48
02.4331.520.620	WTR - MISCELLANEOUS EXPENSE	$ 1,107.15	$ 500.00	$ 525.00	$ 551.25	$ 578.81	$ 607.75	$ 638.14	$ 670.05	$ 703.55	$ 738.73	$ 775.66	$ 814.45	$ 855.17	$ 897.93	$ 942.82	$ 989.97	$ 1,039.46
02.4331.520.625	WTR - POSTAGE	$ 2,391.80	$ 2,500.00	$ 2,625.00	$ 2,756.25	$ 2,894.06	$ 3,038.77	$ 3,190.70	$ 3,350.24	$ 3,517.75	$ 3,693.64	$ 3,878.32	$ 4,072.24	$ 4,275.85	$ 4,489.64	$ 4,714.12	$ 4,949.83	$ 5,197.32
02.4331.520.640	WTR - GENERATOR MAINTENANCE	$ -	$ 6,200.00	$ 6,510.00	$ 6,835.50	$ 7,177.28	$ 7,536.14	$ 7,912.95	$ 8,308.59	$ 8,724.02	$ 9,160.22	$ 9,618.23	$ 10,099.15	$ 10,604.10	$ 11,134.31	$ 11,691.02	$ 12,275.58	$ 12,889.35
02.4331.520.641	WTR - SYSTEM REPAIRS	$ 179,738.44	$ 110,000.00	$ 115,500.00	$ 121,275.00	$ 127,338.75	$ 133,705.69	$ 140,390.97	$ 147,410.52	$ 154,781.05	$ 162,520.10	$ 170,646.10	$ 179,178.41	$ 188,137.33	$ 197,544.20	$ 207,421.41	$ 217,792.48	$ 228,682.10
02.4331.520.670	WTR - SUBSCRIPTION & DUES	$ 1,089.25	$ 600.00	$ 630.00	$ 661.50	$ 694.58	$ 729.30	$ 765.77	$ 804.06	$ 844.26	$ 886.47	$ 930.80	$ 977.34	$ 1,026.20	$ 1,077.51	$ 1,131.39	$ 1,187.96	$ 1,247.36
02.4331.520.816	WTR - FEES	$ 60.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
02.4331.520.822	WTR - PROJECTS	$ 7,608.00	$ 1,030.00	$ 1,081.50	$ 1,135.58	$ 1,192.35	$ 1,251.97	$ 1,314.57	$ 1,380.30	$ 1,449.31	$ 1,521.78	$ 1,597.87	$ 1,677.76	$ 1,761.65	$ 1,849.73	$ 1,942.22	$ 2,039.33	$ 2,141.30
02.4331.520.823	WTR - VEHICLE FUEL	$ 5,675.28	$ 5,250.00	$ 5,512.50	$ 5,788.13	$ 6,077.53	$ 6,381.41	$ 6,700.48	$ 7,035.50	$ 7,387.28	$ 7,756.64	$ 8,144.47	$ 8,551.70	$ 8,979.28	$ 9,428.25	$ 9,899.66	$ 10,394.64	$ 10,914.37
02.4331.520.826	WTR - VEHICLE MAINTENANCE	$ 7,403.56	$ 3,500.00	$ 3,675.00	$ 3,858.75	$ 4,051.69	$ 4,254.27	$ 4,466.99	$ 4,690.33	$ 4,924.85	$ 5,171.09	$ 5,429.65	$ 5,701.13	$ 5,986.19	$ 6,285.50	$ 6,599.77	$ 6,929.76	$ 7,276.25
02.4331.520.860	WTR - WATER TESTING	$ 2,296.65	$ 3,000.00	$ 3,150.00	$ 3,307.50	$ 3,472.88	$ 3,646.52	$ 3,828.84	$ 4,020.29	$ 4,221.30	$ 4,432.37	$ 4,653.98	$ 4,886.68	$ 5,131.02	$ 5,387.57	$ 5,656.95	$ 5,939.79	$ 6,236.78
02.4331.520.861	WTR - LEAK REPAIRS	$ 42,590.98	$ 35,000.00	$ 36,750.00	$ 38,587.50	$ 40,516.88	$ 42,542.72	$ 44,669.85	$ 46,903.35	$ 49,248.51	$ 51,710.94	$ 54,296.49	$ 57,011.31	$ 59,861.88	$ 62,854.97	$ 65,997.72	$ 69,297.61	$ 72,762.49
02.4331.520.862	WTR - ENGINEERING	$ 980.00	$ 30,000.00	$ 31,500.00	$ 33,075.00	$ 34,728.75	$ 36,465.19	$ 38,288.45	$ 40,202.87	$ 42,213.01	$ 44,323.66	$ 46,539.85	$ 48,866.84	$ 51,310.18	$ 53,875.69	$ 56,569.47	$ 59,397.95	$ 62,367.85
02.4331.520.863	WTR - EQUIPMENT RENTAL	$ -	$ 3,000.00	$ 3,150.00	$ 3,307.50	$ 3,472.88	$ 3,646.52	$ 3,828.84	$ 4,020.29	$ 4,221.30	$ 4,432.37	$ 4,653.98	$ 4,886.68	$ 5,131.02	$ 5,387.57	$ 5,656.95	$ 5,939.79	$ 6,236.78
02.4331.520.864	WTR - TELEMETRY	$ 458.72	$ 5,000.00	$ 5,250.00	$ 5,512.50	$ 5,788.13	$ 6,077.53	$ 6,381.41	$ 6,700.48	$ 7,035.50	$ 7,387.28	$ 7,756.64	$ 8,144.47	$ 8,551.70	$ 8,979.28	$ 9,428.25	$ 9,899.66	$ 10,394.64
02.4331.520.865	WTR - CHEMICALS	$ 5,142.11	$ 13,000.00	$ 13,650.00	$ 14,332.50	$ 15,049.13	$ 15,801.58	$ 16,591.66	$ 17,421.24	$ 18,292.31	$ 19,206.92	$ 20,167.27	$ 21,175.63	$ 22,234.41	$ 23,346.13	$ 24,513.44	$ 25,739.11	$ 27,026.07
02.4712.520.001	WTR - BOND PAYMENT PRINCIPAL	$ 11,988.00	$ 11,988.00	$ 12,587.40	$ 13,216.77	$ 13,877.61	$ 14,571.49	$ 15,300.06	$ 16,065.07	$ 16,868.32	$ 17,711.74	$ 18,597.32	$ 19,527.19	$ 20,503.55	$ 21,528.73	$ 22,605.16	$ 23,735.42	$ 24,922.19
02.4721.520.001	DEBT - INTEREST PAYMENTS	$ 5,873.81	$ 11,943.00	$ 12,540.15	$ 13,167.16	$ 13,825.52	$ 14,516.79	$ 15,242.63	$ 16,004.76	$ 16,805.00	$ 17,645.25	$ 18,527.51	$ 19,453.89	$ 20,426.58	$ 21,447.91	$ 22,520.31	$ 23,646.32	$ 24,828.64
02.4903.023.002	**WATER MAIN - W A 2 2023 (+REPLACEMENT CONTINGENCY)**	$ 175,416.00	$ -	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00
02.4903.024.007	WELL CLEANING WA 7 2024	$ 16,675.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
02.4903.490.002	CAP - PUMP HOUSE PAINTING	$ -	$ 2,500.00	$ 2,625.00	$ 2,756.25	$ 2,894.06	$ 3,038.77	$ 3,190.70	$ 3,350.24	$ 3,517.75	$ 3,693.64	$ 3,878.32	$ 4,072.24	$ 4,275.85	$ 4,489.64	$ 4,714.12	$ 4,949.83	$ 5,197.32
02.4903.490.004	CAP - WATER METER UPGRADES	$ 47,514.70	$ 50,000.00	$ 52,500.00	$ 55,125.00	$ 57,881.25	$ 60,775.31	$ 63,814.08	$ 67,004.78	$ 70,355.02	$ 73,872.77	$ 77,566.41	$ 81,444.73	$ 85,516.97	$ 89,792.82	$ 94,282.46	$ 98,996.58	$ 103,946.41
02.4903.490.008	CAP - SKI BOWL TREATMENT BUILDING REPAIRS	$ -	$ 1,200.00	$ 1,260.00	$ 1,323.00	$ 1,389.15	$ 1,458.61	$ 1,531.54	$ 1,608.11	$ 1,688.52	$ 1,772.95	$ 1,861.59	$ 1,954.67	$ 2,052.41	$ 2,155.03	$ 2,262.78	$ 2,375.92	$ 2,494.71
02.4903.490.011	CAP - PUMP PHASE REPLACEMENT	$ 8,644.38	$ 20,000.00	$ 21,000.00	$ 22,050.00	$ 23,152.50	$ 24,310.13	$ 25,525.63	$ 26,801.91	$ 28,142.01	$ 29,549.11	$ 31,026.56	$ 32,577.89	$ 34,206.79	$ 35,917.13	$ 37,712.98	$ 39,598.63	$ 41,578.56
02.4903.490.012	CAP - PEGWOOD BACKUP GENERATOR	$ 7,212.98	$ 7,000.00	$ 7,350.00	$ 7,717.50	$ 8,103.38	$ 8,508.54	$ 8,933.97	$ 9,380.67	$ 9,849.70	$ 10,342.19	$ 10,859.30	$ 11,402.26	$ 11,972.38	$ 12,570.99	$ 13,199.54	$ 13,859.52	$ 14,552.50
02.4903.490.005	CAP - COMPUTER SOFTWARE UPDATES	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
LOAN 1 REPAYMENT (30 YR AMMORTIZATION @ 5%)					$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00	$ 126,252.00
LOAN 2 REPAYMENT (30 YR AMMORTIZATION @ 5%)									$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00	$ 103,068.00
PURCHASE GIS SYSTEM			$ 5,000.00															
REPLACE CAUSTIC SODA WITH SODA ASH			$ 2,000.00															
INSTALL METERS AT ALL USERS				$ 560,000.00														
METER TRANSMISSION MAINS				$ 40,000.00														
TREATMENT TO SNOWBOWL IN WINTER DESIGN				$ 10,000.00														
PROVIDE MORE STORAGE CAPACITY					$ 400,000.00													
PROVIDE MORE SOURCE CAPACITY					$ 1,000,000.00													
REMOVE AERATION SYSTEM AT SKI-BOWL						$ 20,000.00												
SCADA CONTROLLED TREATMENT FROM ANALYZERS						$ 10,000.00												
REMOVE T-SECTION ON TRANSMISSION FROM LIBERTY TO SNOWBOWL						$ 5,000.00												
REMOVE USERS FROM TRANSMISSION MAINS							$ 20,000.00											
REMOVE SUNSET STORAGE (PEGWOOD TO FEED SYSTEM EXCEPT FOR TAYLOR)								$ 400,000.00										
NEW PRV LOCATIONS BASED ON ELEVATION ZONES (POST SUNSET REMOVAL)								$ 100,000.00										
UPSIZE TRANSMISSION MAINS TO 6" (LIBERTY TO SNOW BOWL)										$ 1,000,000.00								
REPLACE RESERVOIR BUILDING												$ 100,000.00						
INSTALL METERS IN HORIZONTAL ISOLATION ZONES												$ 15,000.00						
REPLACE LIBERTY INTERIOR PIPING														$ 40,000.00				
REPLACE SKI-BOWL WATER HOLDING TANK																$ 50,000.00		
MINOR REPAIR CONTINGENCY			$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00
LOAN 1				**$ 1,960,000.00**														
LOAN 2								**$ 1,600,000.00**										

7.3 Funding Alternatives

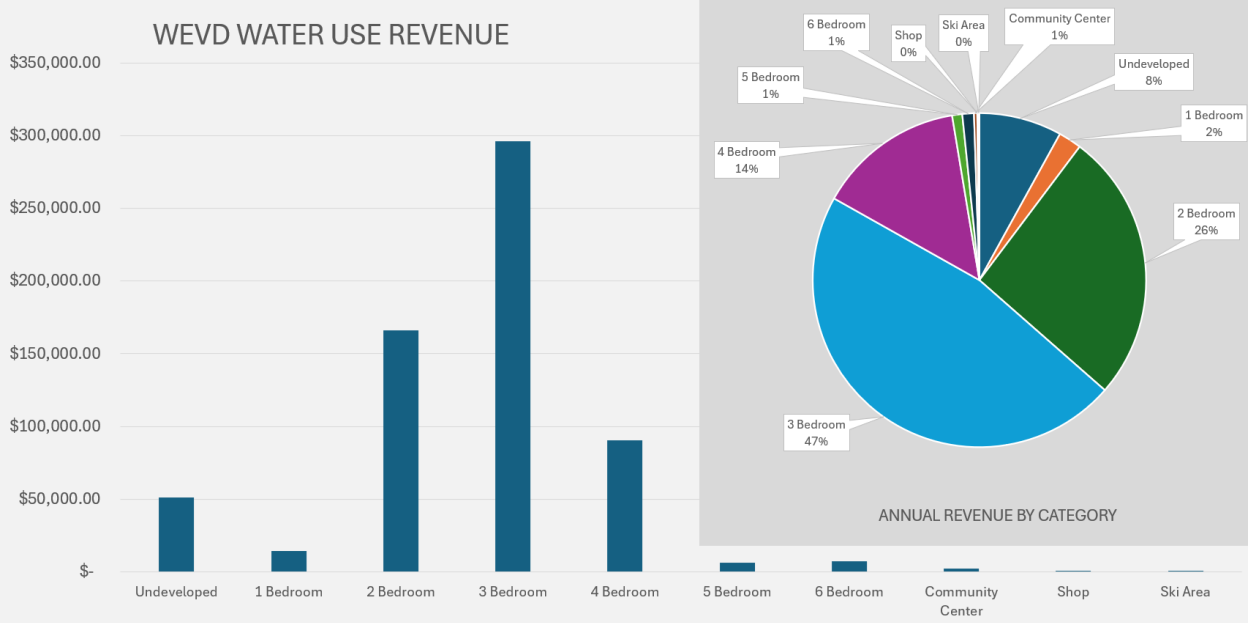
7.3.1 User Rates

In WEVD, water utility rates are a flat fee determined by the number of bedrooms in each house. The income earned by the Utility is typically used for repairs and management of the system, routine maintenance, and allocation to reserve funds. User rates should be adjusted in a manner that does not create extreme increases each year and should be reviewed on an annual basis. The table below illustrates the water revenue distribution within the WEVD customer base for this year.

RATE STRUCTURE		2025	
Category	**#Customers**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 192.17	$ 50,926.32
1 Bedroom	22	$ 646.46	$ 14,222.03
2 Bedroom	190	$ 873.60	$ 165,983.39
3 Bedroom	269	$ 1,100.74	$ 296,098.38
4 Bedroom	68	$ 1,327.88	$ 90,295.71
5 Bedroom	4	$ 1,555.02	$ 6,220.08
6 Bedroom	4	$ 1,782.16	$ 7,128.64
SUB-TOTAL		**$**	**630,874.55**
CC	1	$ 2,009.30	$ 2,009.30
Shop	1	$ 646.46	$ 646.46
Ski Area	1	$ 646.46	$ 646.46
SUB-TOTAL		**$**	**3,302.21**
TOTAL	**825**	**$**	**634,176.76**

Base rates are comprised of two parts: availability and usage. Both are flat rates but calculated separately. Availability accounts for 25% of what is billed and applies equally to all properties within the Estates that are eligible for billing according to section 22 of the ordinance. Usage accounts for 75% of what is billed and applies only to those accounts with structures. To determine what is billed to each account under usage, an occupancy estimate is calculated equal to the # of bedrooms plus 1. A total estimate is done for the whole community to determine the per occupant rate, and then that rate is multiplied by the individual property's estimated occupancy to establish the billed amount.

It is highly recommended that WEVD introduce water meters for all customers so charges can be based on usage. The introduction of meters for all system users will also help identify the health of the water system through water loss tracking.



The water rate growth is projected through 2040 using a 5% increase to account for inflation and an additional 3% to pay for capital projects and build the reserve funds, as shown in the tables below. This spreadsheet has been provided to WEVD and should be updated annually as their goals and project timelines change. It is also suggested that if meters are installed the rate structure includes a fee per 10,000 gallons in addition to a new base rate.

RATE STRUCTURE		2025		2026		2027	
Category	**#Customers**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 192.17	$ 50,926.32	$ 207.55	$ 55,000.42	$ 224.15	$ 59,400.45
1 Bedroom	22	$ 646.46	$ 14,222.03	$ 698.17	$ 15,359.80	$ 754.03	$ 16,588.58
2 Bedroom	190	$ 873.60	$ 165,983.39	$ 943.48	$ 179,262.06	$ 1,018.96	$ 193,603.03
3 Bedroom	269	$ 1,100.74	$ 296,098.38	$ 1,188.80	$ 319,786.25	$ 1,283.90	$ 345,369.15
4 Bedroom	68	$ 1,327.88	$ 90,295.71	$ 1,434.11	$ 97,519.37	$ 1,548.84	$ 105,320.92
5 Bedroom	4	$ 1,555.02	$ 6,220.08	$ 1,679.42	$ 6,717.68	$ 1,813.77	$ 7,255.10
6 Bedroom	4	$ 1,782.16	$ 7,128.64	$ 1,924.73	$ 7,698.93	$ 2,078.71	$ 8,314.84
SUB-TOTAL		**$**	**630,874.55**	**$**	**681,344.51**	**$**	**735,852.07**
CC	1	$ 2,009.30	$ 2,009.30	$ 2,170.04	$ 2,170.04	$ 2,343.65	$ 2,343.65
Shop	1	$ 646.46	$ 646.46	$ 698.17	$ 698.17	$ 754.03	$ 754.03
Ski Area	1	$ 646.46	$ 646.46	$ 698.17	$ 698.17	$ 754.03	$ 754.03
SUB-TOTAL		**$**	**3,302.21**	**$**	**3,566.39**	**$**	**3,851.70**
TOTAL	**825**	**$**	**634,176.76**	**$**	**684,910.90**	**$**	**739,703.77**

RATE STRUCTURE		2028		2029		2030	
Category	**#Customers**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 242.08	$ 64,152.49	$ 261.45	$ 69,284.69	$ 282.37	$ 74,827.47
1 Bedroom	22	$ 814.35	$ 17,915.67	$ 879.50	$ 19,348.92	$ 949.86	$ 20,896.83
2 Bedroom	190	$ 1,100.48	$ 209,091.27	$ 1,188.52	$ 225,818.57	$ 1,283.60	$ 243,884.06
3 Bedroom	269	$ 1,386.61	$ 372,998.68	$ 1,497.54	$ 402,838.57	$ 1,617.34	$ 435,065.66
4 Bedroom	68	$ 1,672.74	$ 113,746.59	$ 1,806.56	$ 122,846.32	$ 1,951.09	$ 132,674.03
5 Bedroom	4	$ 1,958.88	$ 7,835.50	$ 2,115.59	$ 8,462.34	$ 2,284.83	$ 9,139.33
6 Bedroom	4	$ 2,245.01	$ 8,980.03	$ 2,424.61	$ 9,698.43	$ 2,618.58	$ 10,474.31
SUB-TOTAL		**$**	**794,720.24**	**$**	**858,297.85**	**$**	**926,961.68**
CC	1	$ 2,531.14	$ 2,531.14	$ 2,733.63	$ 2,733.63	$ 2,952.32	$ 2,952.32
Shop	1	$ 814.35	$ 814.35	$ 879.50	$ 879.50	$ 949.86	$ 949.86
Ski Area	1	$ 814.35	$ 814.35	$ 879.50	$ 879.50	$ 949.86	$ 949.86
SUB-TOTAL		**$**	**4,159.84**	**$**	**4,492.62**	**$**	**4,852.03**
TOTAL	**825**	**$**	**798,880.07**	**$**	**862,790.48**	**$**	**931,813.72**

RATE STRUCTURE		2031		2032		2033	
Category	**#Customers**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 304.96	$ 80,813.66	$ 329.35	$ 87,278.76	$ 355.70	$ 94,261.06
1 Bedroom	22	$ 1,025.84	$ 22,568.58	$ 1,107.91	$ 24,374.07	$ 1,196.55	$ 26,323.99
2 Bedroom	190	$ 1,386.29	$ 263,394.78	$ 1,497.19	$ 284,466.36	$ 1,616.97	$ 307,223.67
3 Bedroom	269	$ 1,746.73	$ 469,870.91	$ 1,886.47	$ 507,460.59	$ 2,037.39	$ 548,057.43
4 Bedroom	68	$ 2,107.18	$ 143,287.95	$ 2,275.75	$ 154,750.98	$ 2,457.81	$ 167,131.06
5 Bedroom	4	$ 2,467.62	$ 9,870.48	$ 2,665.03	$ 10,660.12	$ 2,878.23	$ 11,512.93
6 Bedroom	4	$ 2,828.06	$ 11,312.25	$ 3,054.31	$ 12,217.23	$ 3,298.65	$ 13,194.61
SUB-TOTAL		**$**	**1,001,118.62**	**$**	**1,081,208.11**	**$**	**1,167,704.75**
CC	1	$ 3,188.51	$ 3,188.51	$ 3,443.59	$ 3,443.59	$ 3,719.07	$ 3,719.07
Shop	1	$ 1,025.84	$ 1,025.84	$ 1,107.91	$ 1,107.91	$ 1,196.55	$ 1,196.55
Ski Area	1	$ 1,025.84	$ 1,025.84	$ 1,107.91	$ 1,107.91	$ 1,196.55	$ 1,196.55
SUB-TOTAL		**$**	**5,240.20**	**$**	**5,659.41**	**$**	**6,112.16**
TOTAL	**825**	**$**	**1,006,358.81**	**$**	**1,086,867.52**	**$**	**1,173,816.92**

RATE STRUCTURE		2034		2035		2036	
Category	**#Customers**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 384.16	$ 101,801.94	$ 414.89	$ 109,946.10	$ 448.08	$ 118,741.78
1 Bedroom	22	$ 1,292.27	$ 28,429.91	$ 1,395.65	$ 30,704.31	$ 1,507.30	$ 33,160.65
2 Bedroom	190	$ 1,746.32	$ 331,801.57	$ 1,886.03	$ 358,345.69	$ 2,036.91	$ 387,013.35
3 Bedroom	269	$ 2,200.38	$ 591,902.03	$ 2,376.41	$ 639,254.19	$ 2,566.52	$ 690,394.53
4 Bedroom	68	$ 2,654.43	$ 180,501.55	$ 2,866.79	$ 194,941.67	$ 3,096.13	$ 210,537.01
5 Bedroom	4	$ 3,108.49	$ 12,433.96	$ 3,357.17	$ 13,428.68	$ 3,625.74	$ 14,502.97
6 Bedroom	4	$ 3,562.55	$ 14,250.18	$ 3,847.55	$ 15,390.19	$ 4,155.35	$ 16,621.41
SUB-TOTAL		**$**	**1,261,121.14**	**$**	**1,362,010.83**	**$**	**1,470,971.69**
CC	1	$ 4,016.60	$ 4,016.60	$ 4,337.93	$ 4,337.93	$ 4,684.96	$ 4,684.96
Shop	1	$ 1,292.27	$ 1,292.27	$ 1,395.65	$ 1,395.65	$ 1,507.30	$ 1,507.30
Ski Area	1	$ 1,292.27	$ 1,292.27	$ 1,395.65	$ 1,395.65	$ 1,507.30	$ 1,507.30
SUB-TOTAL		**$**	**6,601.14**	**$**	**7,129.23**	**$**	**7,699.57**
TOTAL	**825**	**$**	**1,267,722.27**	**$**	**1,369,140.05**	**$**	**1,478,671.26**

RATE STRUCTURE		2037		2038		2039	
Category	**#Customers**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 483.93	$ 128,241.13	$ 522.64	$ 138,500.42	$ 564.45	$ 149,580.45
1 Bedroom	22	$ 1,627.89	$ 35,813.50	$ 1,758.12	$ 38,678.58	$ 1,898.77	$ 41,772.87
2 Bedroom	190	$ 2,199.87	$ 417,974.41	$ 2,375.85	$ 451,412.37	$ 2,565.92	$ 487,525.36
3 Bedroom	269	$ 2,771.84	$ 745,626.09	$ 2,993.59	$ 805,276.17	$ 3,233.08	$ 869,698.27
4 Bedroom	68	$ 3,343.82	$ 227,379.97	$ 3,611.33	$ 245,570.36	$ 3,900.24	$ 265,215.99
5 Bedroom	4	$ 3,915.80	$ 15,663.21	$ 4,229.07	$ 16,916.26	$ 4,567.39	$ 18,269.57
6 Bedroom	4	$ 4,487.78	$ 17,951.12	$ 4,846.80	$ 19,387.21	$ 5,234.55	$ 20,938.19
SUB-TOTAL		**$**	**1,588,649.43**	**$**	**1,715,741.38**	**$**	**1,853,000.69**
CC	1	$ 5,059.76	$ 5,059.76	$ 5,464.54	$ 5,464.54	$ 5,901.70	$ 5,901.70
Shop	1	$ 1,627.89	$ 1,627.89	$ 1,758.12	$ 1,758.12	$ 1,898.77	$ 1,898.77
Ski Area	1	$ 1,627.89	$ 1,627.89	$ 1,758.12	$ 1,758.12	$ 1,898.77	$ 1,898.77
SUB-TOTAL		**$**	**8,315.53**	**$**	**8,980.78**	**$**	**9,699.24**
TOTAL	**825**	**$**	**1,596,964.96**	**$**	**1,724,722.16**	**$**	**1,862,699.93**

RATE STRUCTURE		2040	
Category	**#Customers**	**BASE RATE**	**REVENUE**
Undeveloped	265	$ 609.61	$ 161,546.88
1 Bedroom	22	$ 2,050.67	$ 45,114.70
2 Bedroom	190	$ 2,771.20	$ 526,527.39
3 Bedroom	269	$ 3,491.73	$ 939,274.13
4 Bedroom	68	$ 4,212.25	$ 286,433.27
5 Bedroom	4	$ 4,932.78	$ 19,731.13
6 Bedroom	4	$ 5,653.31	$ 22,613.25
SUB-TOTAL		**$**	**2,001,240.75**
CC	1	$ 6,373.84	$ 6,373.84
Shop	1	$ 2,050.67	$ 2,050.67
Ski Area	1	$ 2,050.67	$ 2,050.67
SUB-TOTAL		**$**	**10,475.18**
TOTAL	**825**	**$**	**2,011,715.92**

It is important to note that the above increases are a suggestion. Understandably, changes in water rates can be concerning to users, and these capital improvement recommendations aim to support the long-term reliability and quality of the water system. By gradually adjusting rates over time, WEVD can prepare for future maintenance and improvements, ensuring that the community continues to receive safe and dependable water service.

To give a sense of the value, the annual average water fee per household for 2025 in New Hampshire is $867.93 for 90,000 gallons of water. This water system, valued at approximately $20.4 million, includes five pump stations and over 100,000 linear feet of water main—resources that require attention and upkeep over the next two decades. By planning ahead and making incremental changes to rates, users can avoid large, sudden increases that are more difficult for everyone.

7.3.2 Outside Sources

Costs for water are typically funded through general rates and fees. If large expenses are required for expansion or upgrades, the System plans to pay for the improvements through user fees, grants, and loans.

User rates can be adjusted in the future to fund improvements and some of the future projects can be accomplished with a combination of capital reserve funds and outside funding resources such as those listed below.

Planning Funds:

USDA Rural Development SEARCH (Special Evaluation Assistance for Rural Communities and Households

- *Low income rural community (<80% of MHI of state) and population <2500*
- *$25,000 maximum with no match required*
- *Predevelopment feasibility studies, preliminary design and engineering analysis, development of implementation applications*
- *Water, sewer, solid waste, storm water, and other public improvements*

USDA Predevelopment Planning Grant (PPG)

- *Low income rural community with population <10,000*
- *Preliminary Engineering Report / system study and application package for implementation funds to USDA*
- *$30,000 maximum with 25% match (no in-kind)*

NHDES SRF Drinking Water Asset Management Grant

- *Water systems serving more than 200 customers*
- *Maximum grant and match varies*
- *Asset Inventory, Financial Review and long-term funding strategy, implementation plan and community outreach plan*
- *Typical annual applications due December*

Construction Funds

USDA Rural Development Water and Environmental Programs (WEP)

- *For Necessary and Inevitable Work related to drinking water, sanitary sewer, solid waste and storm drainage*
- *Population < 10,000*
- *Acquisition, construction or improvement of*
  - *Drinking water source, treatment, storage, distribution*
  - *Sewer Collection, transmission, treatment and disposal*
  - *Solid waste collection, disposal, closure*
  - *Stormwater collection, transmission and disposal*
  - *Including engineering, legal, interest cost during construction*
- *Loan with up to 40-year payback with fixed interest rates based on MHI*
- *Grant – Loan combination amount based on user rates and community demographics*
- *Applications due in December for state funds and April for national pool*
- *Town meeting bond vote required*

- *Preliminary Engineering Report is required*

NHDES Drinking Water SRF

- *Public water systems*
- *Uses include*
  - *Infrastructure improvement source development, distribution main rehab or replacement, treatment and storage facilities*
- *Pre-applications are competitively ranked*
  - *Based on violations, deficiencies, affordability, asset management in place etc*
- *Loan forgiveness for disadvantaged communities*
- *Competitive loan rates*
- *Typical projects are greater than $200,000*
- *Town bond vote required*

NHDES Drinking Water and Groundwater Trust Fund (DWGTF)

- *Public water systems*
- *Uses include*
  - *Planning, design, construction of aging water infrastructure*
  - *Treatment or replacement of water source*
  - *Extension of public water system*
  - *Permanent protection of water supply land*
- *Pre-application competitively ranked*
- *Long term loans with some principal forgiveness*
- *Planning grants available*
- *Town bond vote required*

Community Development Block Grant

- *All municipalities are eligible to apply*
- *Public Facilities and Economic Development Grants Available*
- *Up to $500,000 per year competitively scored*
- *Public Facilities – typically January and July applications – NHDES violation and low income benefit*
- *Economic Development – accepted year-round, must have business committed to creating jobs, 1:1 match required*
- *Feasibility Study up to $12,000 for preliminary design and income surveys, typically October and April Applications*

Northern Border Regional Commission

- *Purpose is to revitalize and modernize essential infrastructure in communities in support of economic development*
- *Eligible counties in NH include*
  - *Coos and Sullivan Counties up to 80% grant eligible*
  - *Grafton and Carroll Counties up to 50% grant eligible*
- *Uses include engineering and construction of infrastructure*
- *Typically, $250,000 award ($1,000,000 may be available in certain circumstances)*
- *Applications due in May or June of each year*

US Department of Commerce Economic Development Administration Public Works Program

- *Construction funds for infrastructure in support of economic development including road, water, sewer, electrical.*
- *Must have the likelihood of business growth*
- *1:1 match typically required*
- *Year-round applications*
- *Average awards are $1 million depending on benefits of project*

Municipal bond banks and traditional local banks are also a resource for capital improvement loans.

8. Public Outreach

The purpose of public outreach is for the WEVD to provide information on the operation of the water system to its customers to establish customer expectations and to allow the System to recover the costs associated with operating, maintaining, and upgrading the water system.

The Communication plan will provide the following information as part of the plan:

- Current and proposed rate structure/increases
- Condition of the system components
- Explanation of the true cost of operating and maintaining the water system including capital improvements to convey the important message that providing safe drinking water requires ongoing investment and care
- Status of meeting the goals

This information will be provided utilizing the following outlets:

- Public Informational Meetings
- Annual Meetings
- Board meetings open to the public
- Social media including Websites and Facebook

It is important to the customer and the commissioners that everyone understands the importance of maintaining and efficiently operating their $20.4 million shared system.

9. Conclusions and Recommendations

The System should plan for future improvements as follows:

- The current rate structure is based on the number of bedrooms in a house. The district had planned to install meters at each home. However, in 2023, a vote was held, and it was decided that meters would not be installed for customer usage. It is recommended that WEVD re-evaluate this decision and install meters for all users.
- Water loss is a metric that describes the overall health of a water system and WEVD is unable to determine their water loss without meters at all user locations. It is recommended to not only install meters at user locations but also to install meters at all transmission line segments and isolated zones to determine where water loss is occurring.
- Both increased storage and another water source are recommended before system expansion.
- Currently the water operator is working to track system component locations. A GIS mapping system that can be used during all repairs and construction would help with mapping confirmation. This mapping is important for WaterCAD modelling accuracy. It is recommended to purchase a tablet and GIS subscription.
- The treatment method for pH adjustment is currently caustic soda which is extremely corrosive and dangerous for operators to handle and mix. It is recommended that the caustic soda be replaced with soda ash, a much safer alternative for the operator to use. The system has also seen pH readings of up to 9, soda ash should maintain a slightly lower pH.
- The aeration system at ski-bowl is in poor condition and obsolete. It is recommended to eliminate the aeration process.
- The treatment system utilizes pH and chlorine analyzers. However, the operator still must manually adjust to meet water quality standards. Integrating controls within the SCADA system that enable flow pacing of feed pumps to operator-defined programmable setpoints is recommended.
- Since water main age is largely unknown, the Village District should keep records of pipe condition during any repairs in the excel document that is provided with this water system improvement plan.

This improvement plan should be used as a guide to keep water system improvements moving forward and to implement user rates at an appropriate level to complete necessary upgrades and maintenance rather than allowing components to outlive their useful life and fall into deferred maintenance. It is important to manage the system as a business that strives to satisfy its customers and implement rates that cover the true cost of operating the $20.4 million asset.

Appendices

Appendix A: Asset Data Tables

Location	START Node	End Node	Size	Material	Length (LF)	TYPE	Condition
LIBERTY TO SNOWBOWL	PS1	PS2	4	DI	3,847	TM	VERY POOR
SNOWBOWL TO PEGWOOD	PS2	PS3	6	DI	6,844	TM	UNKNOWN
PEGWOOD TO RESERVOIR	PS3	PS4	4	PVC	3,359	TM	FAIR
RESERVOIR TO SUNSET	PS4	PS5	3	DI	3,065	TM	UNKNOWN
SUNSET TO TAYLOR	PS5	PS6	2	PVC	3,158	TM	UNKNOWN
CAMPTON MTN PARKING	PS2	A1	2	PVC	946	WM	UNKNOWN
CROSS COUNTRY	A1	A2	2	PVC	400	WM	UNKNOWN
CROSS COUNTRY	A2	A2E1	2	PVC	806	WM	UNKNOWN
CROSS COUNTRY	A2	A2E2	2	PVC	1,231	WM	UNKNOWN
CROSS COUNTRY	A2	A3	2	PVC	426	WM	UNKNOWN
CROSS COUNTRY	A3	A3E	2	PVC	288	WM	UNKNOWN
SNOWOOD	A3	A4	2	PVC	1,469	WM	UNKNOWN
SNOWOOD	A4	A5	2	PVC	342	WM	UNKNOWN
WEEPING BIRCHES	A4	A6	4	HDPE	2,940	WM	UNKNOWN
SNOWOOD	A6	A6E	2	PVC	1,203	WM	UNKNOWN
SNOWOOD	A5	A6	2	PVC	837	WM	UNKNOWN
HOLLAND	A5	A7	2	PVC	2,790	WM	POOR
CHECKERBERRY	A7	A7E	2	PVC	605	WM	UNKNOWN
CHECKERBERRY	A7	A8	2	PVC	430	WM	POOR
CROSS COUNTRY	A8	A9	2	PVC	548	WM	UNKNOWN
LIBERTY	A9	A9E	2	PVC	599	WM	UNKNOWN
CROSS COUNTRY	A8	A10	2	PVC	563	WM	UNKNOWN
LIBERTY	A9	A10	2	PVC	254	WM	UNKNOWN
LIBERTY	A10	A10E	2	PVC	1,705	WM	UNKNOWN
WEBSTER	A1	A11	2	PVC	288	WM	UNKNOWN
WEBSTER	A11	A11E	2	PVC	157	WM	UNKNOWN
CROSS COUNTRY	A11	A12	2	PVC	946	WM	VERY POOR
DONOVAN FARM	A12	A13	2	PVC	681	WM	UNKNOWN
WINTERBROOK	A13	A13E1	2	PVC	495	WM	UNKNOWN
GREEN CIRCLE	A13	A13E2	2	PVC	1,956	WM	UNKNOWN
DONOVAN FARM	A13	A14	2	PVC	813	WM	UNKNOWN
GOOSE HOLLOW	AA14	A15	2	PVC	675	WM	UNKNOWN
MARDEN	AB14	A15	2	PVC	836	WM	UNKNOWN
GOOSE HOLLOW	A15	A16	2	PVC	215	WM	UNKNOWN
GOOSE HOLLOW	A16	A17	2	PVC	577	WM	UNKNOWN
BRIARCLIFF	A17	A18	2	PVC	715	WM	UNKNOWN
BRIARCLIFF	A18	A18E1	2	PVC	1,083	WM	UNKNOWN
MEYER	A18	A18E2	2	PVC	441	WM	UNKNOWN
SUMMIT	A16	A19	2	PVC	633	WM	UNKNOWN
DURGIN	A19	A19E	2	PVC	490	WM	UNKNOWN
SUMMIT	A19	A20	2	PVC	319	WM	UNKNOWN
RYAN	A17	A20	2	PVC	938	WM	VERY POOR

Location	START Node	End Node	Size	Material	Length (LF)	TYPE	Condition
SUMMIT	A20	A21	2	PVC	1,472	WM	POOR
SUMMIT	A21	A22	2	PVC	863	WM	UNKNOWN
WANOSHA	A22	A23	2	PVC	1,174	WM	UNKNOWN
WANOSHA	A23	A23E	2	PVC	307	WM	VERY GOOD
CHAPMAN	A23	A24	2	PVC	337	WM	UNKNOWN
CHAPMAN	A24	A24E2	2	PVC	363	WM	UNKNOWN
CROSS COUNTRY	A24	A24E1	2	PVC	936	WM	UNKNOWN
SUMMIT	A22	A25	2	PVC	389	WM	POOR
CALDON	A25	A26	2	PVC	358	WM	UNKNOWN
CALDON	A26	A26E1	2	PVC	190	WM	UNKNOWN
CALDON	A26	A26E2	2	PVC	367	WM	UNKNOWN
SUMMIT	A25	A27	2	PVC	866	WM	POOR
WINTERBROOK	A27	A28	2	PVC	2,181	WM	VERY POOR
DUBEAU	A28	A28E	2	PVC	725	WM	UNKNOWN
DONOVAN FARM	A28	A29	2	PVC	775	WM	VERY POOR
BELL VALLEY	A29	A30	2	PVC	1,756	WM	UNKNOWN
POND VIEW	A30	A30E	2	PVC	801	WM	UNKNOWN
CROSS COUNTRY	A30	PS4	2	PVC	3,327	WM	UNKNOWN
WEETAMOO	A21	A31	2	PVC	1,897	WM	UNKNOWN
WEETAMOO	A32	A32E	2	PVC	838	WM	UNKNOWN
BOULDER	A32	A33	2	PVC	366	WM	UNKNOWN
BOULDER	A33	A33E1	2	PVC	451	WM	UNKNOWN
BOULDER	A33	A33E2	2	PVC	525	WM	UNKNOWN
BOULDER	A33	A34	2	PVC	224	WM	UNKNOWN
WEETAMOO	A27	A34	2	PVC	306	WM	UNKNOWN
WEETAMOO	A34	A34E	2	PVC	181	WM	UNKNOWN
ISAAX FOX	A34	A35	2	PVC	2,600	WM	UNKNOWN
RESERVOIR	PS4	A35	2	PVC	648	WM	UNKNOWN
RESERVOIR	A35	A36	2	PVC	2,531	WM	UNKNOWN
RESERVOIR	A36	A36E1	2	PVC	1,151	WM	UNKNOWN
ABNAKI	A36	A36E2	2	PVC	806	WM	UNKNOWN
WEETAMOO	PS5	A31	2	PVC	201	WM	UNKNOWN
PORCUPINE	PS4	C1E	4	PVC	1,192	WM	FAIR
CROSS COUNTRY	D1	D1A	2	PVC	98	WM	UNKNOWN
DAVID THOMPSON	D2	D2E	2	PVC	933	WM	UNKNOWN
COURT	D2	D3	2	PVC	846	WM	UNKNOWN
COURT	D3	D4	6	HDPE	389	WM	VERY GOOD
COURT	D4	D5	2	PVC	104	WM	GOOD
COURT	D5	D5E	2	PVC	235	WM	GOOD
PANAWAY	D5	D6	2	PVC	144	WM	GOOD
PANAWAY	D6	D6E1	2	PVC	90	WM	GOOD
PANAWAY	D6	D6E2	2	PVC	374	WM	GOOD
RICHARDSON	D4	D4E	6	HDPE	1,889	WM	VERY GOOD

Location	START Node	End Node	Size	Material	Length (LF)	TYPE	Condition
DAVID THOMPSON	D2	D7	2	PVC	1,749	WM	UNKNOWN
ARMSBY	D7	D7E	2	HDPE	503	WM	UNKNOWN
SCHULYER	D7	D8	2	PVC	1,675	WM	UNKNOWN
TOBEY	D8	D8E	2	PVC	1,166	WM	UNKNOWN
WINTERBROOK	D8	D9	2	PVC	1,369	WM	UNKNOWN
WINTERBROOK	D9	D9E1	2	PVC	159	WM	UNKNOWN
MYRTLE	D9	D9E2	2	HDPE	778	WM	VERY GOOD
PEGWOOD	PS3	B1	2	PVC	1,460	WM	UNKNOWN
PEGWOOD	B1	B1E	2	PVC	212	WM	UNKNOWN
PEGWOOD	B1	B2	2	PVC	830	WM	UNKNOWN
PEGWOOD	B2	B2E	2	PVC	834	WM	UNKNOWN
PEGWOOD	B2	B3	2	PVC	860	WM	VERY GOOD
PEGWOOD	B3	B4	2	PVC	1,009	WM	VERY GOOD
PEGWOOD	B4	B4E	2	PVC	291	WM	UNKNOWN
MCLAREN	B4	B5	2	PVC	2,571	WM	POOR
PEGWOOD	B3	B5	2	PVC	3,449	WM	VERY GOOD
MORRIL	B5	B6	2	PVC	987	WM	UNKNOWN
MORRIL	B6	B6E2	2	PVC	417	WM	UNKNOWN
MORRIL	B6	B6E2	2	PVC	82	WM	UNKNOWN

Location	ASSET	COND	INSTALLATION
PS1 Liberty Lane 240 PSI ELEV: 730.4 (SOURCE)	BUILDING	POOR	1990
	WELL 1 (98 GPM)	GOOD	1990
	WELL 2 (56 GPM)	GOOD	1990
	VFD DRIVE 1	VERY GOOD	2005
	VFD DRIVE 2	VERY GOOD	2005
	PUMP & MOTOR 1	VERY GOOD	2020
	PUMP & MOTOR 2	VERY GOOD	2010
	VFD CONTROLS	VERY GOOD	2005
	CTL PANEL & BREAKERS	VERY GOOD	2005
	SCADA COMMUNICATION	VERY GOOD	2020
	BACKUP GEN & ATS	VERY GOOD	2015
	HEATER	GOOD	2022
	FLOW METER	FAIR	2015
	PRESSURE RELEIF VALVE	POOR	1990
	INTERIOR PIPING	VERY POOR	1990
PS3 Pegwood 60 PSI ELEV: 1631 (GRAVITY & TANK)	BUILDING	VERY GOOD	2006
	ATMOSPHERIC TANK (200,000 GAL)	VERY GOOD	2006
	CTL PANEL & BREAKERS	VERY GOOD	2006
	SCADA COMMUNICATION	VERY GOOD	2020
	BACKUP GEN & ATS	VERY GOOD	2024
	HEATER	VERY GOOD	2024
	Small booster pump for 1 home	VERY GOOD	2022
	FLOW METER	VERY GOOD	2015
	PRESSURE TANK	VERY GOOD	2022
	INTERIOR PIPING	VERY GOOD	2006
PS4 Reservoir 200 PSI ELEV: 1182 (BOOSTER)	BUILDING	VERY POOR	1970
	CTL PANEL & BREAKERS	FAIR	2015
	SCADA COMMUNICATION	GOOD	2020
	BACKUP GEN & ATS	VERY GOOD	2015
	HEATER	GOOD	2025
	VFD DRIVE 1	GOOD	2015
	VFD DRIVE 2	GOOD	2015
	INTERIOR PIPING	POOR	1970
	PUMP & MOTOR 1	VERY GOOD	2015
	PUMP & MOTOR 2	VERY GOOD	2015

Location	ASSET	COND	INSTALLATION
PS6 Taylor 60 PSI ELEV: 1814 (PUMP STATION & TANK)	BUILDING	FAIR	2005
	HOLDING TANK (1,000 GAL)	FAIR	2005
	PRESSURE TANK 1	VERY GOOD	2005
	PRESSURE TANK 2	VERY GOOD	2005
	CTL PANEL & BREAKERS	VERY GOOD	2005
	BACKUP GEN & ATS	VERY GOOD	2005
	HEATER	VERY GOOD	2005
	FLOW METER	VERY GOOD	2005
	PUMP & MOTOR	VERY GOOD	2005
PS2 Ski Bowl 210 PSI ELEV: 1218 (PUMP STATION, TREATMENT & TANK)	BUILDING	GOOD	2010
	HOLDING TANK (3,000 GAL)	VERY POOR	1980
	ATMOSPHERIC CONTACT TANK (22,000 GAL)	GOOD	1980
	CTL PANEL & BREAKERS upstairs	FAIR	2024
	CTL PANEL & BREAKERS downstairs	FAIR	2010
	SCADA COMMUNICATION	GOOD	2020
	BACKUP GEN & ATS	VERY GOOD	2015
	HEATER	GOOD	2020
	HEATER	GOOD	2020
	FLOW METER	GOOD	2015
	VFD DRIVE 1	GOOD	2012
	VFD DRIVE 2	GOOD	2012
	TRANSFER PUMP PVC PIPING	FAIR	2012
	INTERIOR PIPING	VERY POOR	1980
	PUMP & MOTOR 1	GOOD	2019
	PUMP & MOTOR 2	GOOD	2016
	CHLORINE TREATMENT SYSTEM	GOOD	2015
	CAUSTIC TREATMENT SYSTEM & AERATION	VERY POOR	2015
	CHEM TANK 1	GOOD	2015
	CHEM TANK 2	GOOD	2015
PS5 SUNSET 140 PSI ELEV: 1660 (PUMP STATION & TANK)	BUILDING	VERY POOR	1980
	PNEUMATIC HOLDING TANK (20,000 GAL)	VERY POOR	1980
	CTL PANEL & BREAKERS	FAIR	1980
	SCADA COMMUNICATION	GOOD	2020
	BACKUP GEN & ATS	GOOD	2015
	HEATER	VERY GOOD	2025
	FLOW METER	GOOD	2015
	VFD DRIVE 1	GOOD	2010
	VFD DRIVE 2	GOOD	2025
	INTERIOR PIPING	VERY POOR	1980
	PUMP & MOTOR 1	GOOD	2010
	PUMP & MOTOR 2	GOOD	2025

PRV ID#	LOCATION	COND	LIDAR ELEV	GPS ELEV	HIGH PRESSURE	LOW PRESSURE
1	LIBERTY	VERY GOOD	867	875	X	52
2	HOLLAND TRAIL	VERY POOR	1080	1085	X	X
3	HOLLAND TRAIL	VERY GOOD	1161	1175	90	40
4	SNOWOOD DR	GOOD	1152	1156	70	20
5	HOLLAND TRAIL	VERY POOR	940	943	100	65
6	HODGEMAN HILL & MCLAREN	GOOD	1024	1046	165	55
7	PEGWOOD RD	VERY GOOD	1180	1182	X	X
8	WINTERBROOK RD	FAIR	1145	1147	X	X
9	SUMMIT DR	VERY POOR	1250	1252	X	X
10	SUMMIT DR	GOOD	1330	1335	X	X
11	SUMMIT DR	VERY GOOD	1512	1513	50	40
12	WANOSHA TRAIL	GOOD	1267	1272	80	50
13	DONOVAN FARM RD	VERY POOR	1216	1212	X	X
14	MCLAREN DR	VERY POOR	1139	1126	X	X
15	MCLAREN DR	VERY POOR	1260	1241	X	X
16	PEGWOOD RD	VERY GOOD	1390	1428	100	45
17	SUMMIT DR	FAIR	1376	1386	110	75
18	RICHARDSON TRAIL	FAIR	1337	1346	120	50
19	SCHUYLER DR	POOR	1175	1183	X	X
20	WINTERBROOK RD	POOR	1065	1055	X	X
21	CAMPTON MOUNTAIN RD	FAIR	1010	1019	X	X
22	WANOSHA TRAIL	FAIR	1382	1390	X	X
23	SUMMIT DR	FAIR	1410	1414	60	45
24	SKIBOWL				180	60

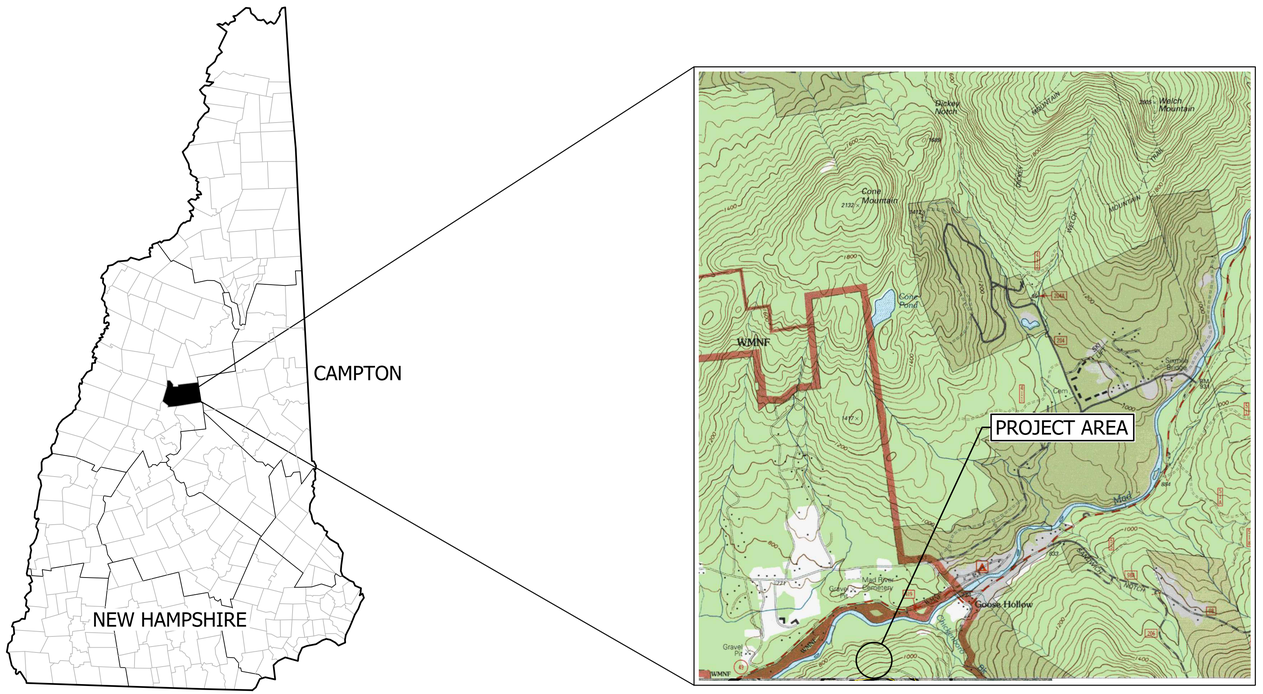
Appendix B: System Mapping

WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

JULY 2025



LOCATION PLAN

SCALE: 1" = 2000'

OWNER:

WATERVILLE ESTATES
562 WINTERBROOK RD
CAMPTON, NH 03223
(603) 726 3082

ENGINEER:

horizons Engineering

34 SCHOOL STREET
LITTLETON, NH 03561
(603) 444-4111

SHEET INDEX

	COVER
SHEET 1A	OVERALL (AERIAL)
SHEET 1B	OVERALL (TOPOGRAPHY)
SHEET 2	ISOLATED ZONES
SHEET 3	REPAIR HISTORY
SHEET 4	SYSTEM ELEVATION VIEW
SHEET 5	PUMP STATION SCHEMATICS

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PLAN REFERENCE

(A) WATER MAIN LOCATIONS ARE BASED ON GPS POINTS RECEIVED FROM WATERVILLE ESTATES.
(B) PUMP STATION, PRV, AND GATE VALVE LOCATIONS ARE BASED ON GPS POINTS TAKEN WITH A ZENO IN MARCH OF 2025.

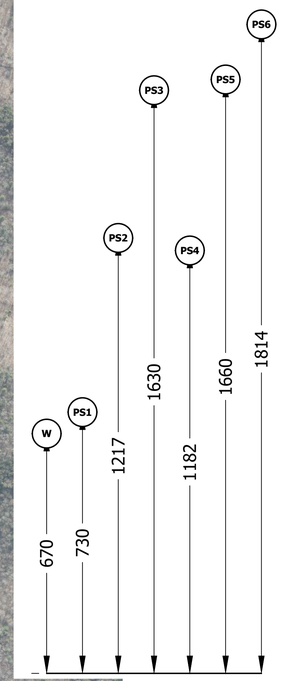
GRID

BRIARCLIFF CIRCLE
GOOSE HOLLOW RD
SUMMIT DR
DURGIN CIRCLE
CHAPMAN CIRCLE
MARDEN DR
WANOSHA TRAIL
TAYLOR DR
ABNAKY TRAIL
WEETAMOO TRAIL
BOULDER DR
CALDON CIRCLE
RESERVOIR RD
WINTERBROOK RD
GREEN CIRCLE
WEEPING BIRCHES
HOLLAND TRAIL
SNOWOOD DR
HODGEMAN HILL RD
DONOVAN FARM RD
ISAAX FOX DR
PORCUPINE DR
PARKER RD
CAMPTON MOUNTAIN RD
PEGWOOD RD
MCLAREN DR
MORRILL CIRCLE
DOE RUN
POND RD
LIBERTY LN
CHECKERBERRY RIDGE
BELL VALLEY RD
BELL VALLEY
COURT ST
DAVID THOMPSON
PANAWAY DR
RICHARDSON TRAIL
ARMSBY CI
SCHUYLER DR
TOBEY RD
MYRTLE ST
POND VIEW

CHICKENBORO BROOK RESERVOIR
WATERVILLE ESTATES COMMUNITY CENTER
CLOSED GATE VALVE
REVERSE OPERATING GATE VALVE
PRV-2 HOLLAND TRAIL
PRV-3 HOLLAND TRAIL
PRV-4 SNOWOOD DR
PRV-5 HOLLAND TRAIL
PRV-6 HODGEMAN & MCLAREN
PRV-6 WINTERBROOK RD
PRV-7 PEGWOOD RD
PRV-8 WINTERBROOK RD
PRV-9 SUMMIT DR
PRV-10 SUMMIT DR
PRV-11 SUMMIT DR
PRV-12 WANOSHA TRAIL
PRV-13 DONOVAN FARM RD
PRV-14 MCLAREN DR
PRV-15 MCLAREN DR
PRV-16 PEGWOOD RD
PRV-17 SUMMIT DR
PRV-18 RICHARDSON TRAIL
PRV-19 SCHUYLER DR
PRV-20 WINTERBROOK RD
PRV-22
PRV-23
PRV-24
PEGWOOD MID METER
SUNSET/WINOSHA METER
BOULDER METER
SOUTH MTN METER
RESERVOIR METER
RESERVOIR RD PUMP STATION
THORTON/HODGEMAN METER
PEGWOOD FILL METER
SUNSET PUMP STATION (20,000 GAL PNEUMATIC WATER TANK)
TAYLOR DR PUMP STATION (5,000 GAL HOLDING TANK)
PEGWOOD PUMP STATION & ATMOSPHERIC WATER TANK
SKI BOWL CONTACT TANK (22,000 GAL)
SKI BOWL PUMP STATION (3,000 GAL TRANSFER TANK)
CAMPTON MOUNTAIN SNOWMAKING WELL (40 GPM) (550' DEEP)
LIBERTY PUMP STATION (SOURCE)
LIBERTY (SOURCE) METER
GRAVEL PACKED DUG WELL 2 (56 GMP) (20' DEEP)
GRAVEL PACKED DUG WELL 1 (98 GMP) (19' DEEP)
"SOUTH MOUNTAIN PIT"
1680'

WATER MAIN LEGEND

- PVC
- DUCTILE IRON
- HDPE
- INACTIVE
- UNKNOWN
- TRANSMISSION
- (A1) INTERCONNECTION
- (PS) PUMP STATION
- OPEN GATE VALVE
- CLOSED GATE VALVE



PUMP STATION ELEVATION VIEW

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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

OVERALL (AERIAL)

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: JULY 2025	PROJECT #: 240609
ENGIN'D BY: HEI	DRAWN BY: JCH
CHECK'D BY: MLB	ARCHIVE #: H-___

SHEET 1A

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PLAN REFERENCE

(A) WATER MAIN LOCATIONS ARE BASED ON GPS POINTS RECEIVED FROM WATERVILLE ESTATES.
(B) PUMP STATION, PRV, AND GATE VALVE LOCATIONS ARE BASED ON GPS POINTS TAKEN WITH A ZENO IN MARCH OF 2025.

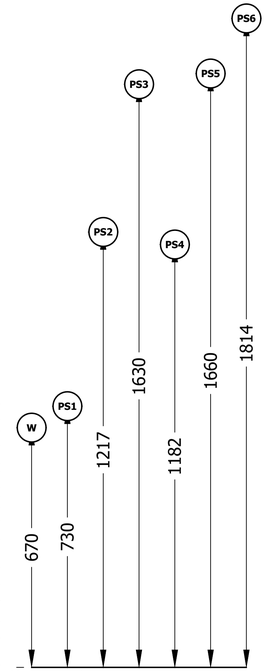
GRID

WATER MAIN LEGEND

- PVC
- DUCTILE IRON
- HDPE
- INACTIVE
- UNKNOWN
- TRANSMISSION
- A1 INTERCONNECTION
- PS PUMP STATION
- OPEN GATE VALVE
- CLOSED GATE VALVE

BRIARCLIFF CIRCLE
GOOSE HOLLOW RD
PRV-9 SUMMIT DR
PRV-10 SUMMIT DR
SUMMIT DR
DURGIN CIRCLE
CHAPMAN CIRCLE
MARDEN DR
SUNSET/WINONSHA METER
PRV-11 SUMMIT DR
TAYLOR DR
TAYLOR DR PUMP STATION (5,000 GAL HOLDING TANK)
ABNAKY TRAIL
CLOSED GATE VALVE
CHICKENBORO BROOK RESERVOIR
PRV-22
SUNSET PUMP STATION (20,000 GAL PNEUMATIC WATER TANK)
BOULDER METER
WEETAMOO TRAIL
RESERVOIR RD
WATERVILLE ESTATES COMMUNITY CENTER
WANOSHA TRAIL
PRV-12 WANOSHA TRAIL
PRV-23
PRV-3 HOLLAND TRAIL
WEEPING BIRCHES
GREEN CIRCLE
WINTERBROOK RD
CALDON CIRCLE
BOULDER DR
PEGWOOD MID METER
PRV-8 WINTERBROOK RD
PRV-13 DONOVAN FARM RD
PRV-17 SUMMIT DR
HOLLAND TRAIL
SNOWOOD DR
REVERSE OPERATING GATE VALVE
HODGEMAN HILL RD
DONOVAN FARM RD
CLOSED GATE VALVE
ISAAX FOX DR
RESERVOIR METER
RESERVOIR RD PUMP STATION
PRV-2 HOLLAND TRAIL
PARKER RD
PORCUPINE DR
SKI BOWL CONTACT TANK (22,000 GAL)
CAMPTON MOUNTAIN SNOWMAKING WELL (40 GPM) (550' DEEP)
POND VIEW
PRV-4 SNOWOOD DR
THORTON/HODGEMAN METER
SKI BOWL PUMP STATION (3,000 GAL TRANSFER TANK)
CLOSED GATE VALVE
BELL VALLEY RD
CLOSED GATE VALVE
BELL VALLEY
SOUTH MTN METER
PRV-5 HOLLAND TRAIL
CAMPTON MOUNTAIN RD
PRV-21
PEGWOOD RD
PRV-7 PEGWOOD RD
PRV-18 RICHARDSON TRAIL
PEGWOOD PUMP STATION & ATMOSPHERIC WATER TANK
COURT ST
DAVID THOMPSON
DANAWAY DR
WINTERBROOK RD
PRV-20 WINTERBROOK RD
PRV-1 LIBERTY
LIBERTY LN
CHECKERBERRY RIDGE
CLOSED GATE VALVE
MCLAREN DR
HODGEMAN HILL RD
PEGWOOD FILL METER
PRV-16 PEGWOOD RD
"SOUTH MOUNTAIN PIT"
PRV-6 HODGEMAN & MCLAREN
PRV-15 MCLAREN DR
PRV-14 MCLAREN DR
ARNISBY CT
SCHUYLER DR
PRV-19 SCHUYLER DR
TOBEY RD
MORRILL CIRCLE
DOE RUN
RICHARDSON TRAIL
MYRTLE ST
POND RD
LIBERTY PUMP STATION (SOURCE)
LIBERTY (SOURCE) METER
GRAVEL PACKED DUG WELL 2 (56 GMP) (20' DEEP)
GRAVEL PACKED DUG WELL 1 (98 GMP) (19' DEEP)

PUMP STATION ELEVATION VIEW



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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

OVERALL (TOPOGRAPHY)

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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CHECK'D BY: MLB	ARCHIVE #: H-___

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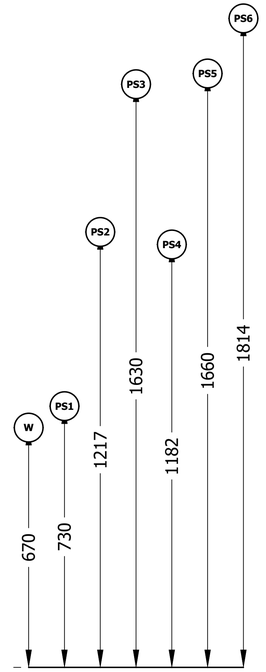
GRID

SYSTEM ISOLATED ZONES

- ZONE A1-A2
- ZONE A
- ZONE B
- ZONE C
- ZONE D
- ZONE E
- TRANSMISSION

BRIARCLIFF CIRCLE
GOOSE HOLLOW RD
PRV-9 SUMMIT DR
PRV-10 SUMMIT DR
SUMMIT DR
DURGIN CIRCLE
SUNSET/WINOOSHA METER
PRV-11 SUMMIT DR
TAYLOR DR
TAYLOR DR PUMP STATION (5,000 GAL HOLDING TANK)
CHICKENBORO BROOK RESERVOIR
MARDEN DR
CHAPMAN CIRCLE
PRV-22
WANOSHA TRAIL
PRV-12 WANOSHA TRAIL
PRV-23
SUNSET PUMP STATION (20,000 GAL PNEUMATIC WATER TANK)
BOULDER METER
WEETAMOO TRAIL
ABNAKY TRAIL
RESERVOIR RD
WATERVILLE ESTATES COMMUNITY CENTER
PRV-3 HOLLAND TRAIL
WEEPING BIRCHES
GREEN CIRCLE
WINTERBROOK RD
CALDON CIRCLE
BOULDER DR
PRV-17 SUMMIT DR
PEGWOOD MID METER
PRV-13 DONOVAN FARM RD
HOCKEMAN HILL RD
PRV-8 WINTERBROOK RD
DONOVAN FARM RD
ISAAX FOX DR
PORCUPINE DR
RESERVOIR METER
RESERVOIR RD PUMP STATION
SNOWOOD DR
HOLLAND TRAIL
PRV-2 HOLLAND TRAIL
PARKER RD
SKI BOWL CONTACT TANK (22,000 GAL)
CAMPTON MOUNTAIN SNOWMAKING WELL (40 GPM) (550' DEEP)
HODGEMAN HILL RD
CAMPTON MOUNTAIN LOOP
PRV-4 SNOWOOD DR
THORTON/HODGEMAN METER
SKI BOWL PUMP STATION (3,000 GAL TRANSFER TANK)
POND VIEW
BELL VALLEY RD
PRV-7 PEGWOOD RD
PEGWOOD RD
PRV-18 RICHARDSON TRAIL
PEGWOOD PUMP STATION & ATMOSPHERIC WATER TANK
SOUTH MTN METER
COURT ST
DAVID THOMPSON
BELL VALLEY
PANAWAY DR
WINTERBROOK RD
PRV-20 WINTERBROOK RD
SNOWOOD DR
PRV-5 HOLLAND TRAIL
PRV-21
CAMPTON MOUNTAIN RD
PRV-1 LIBERTY
LIBERTY LN
CHECKERBERRY RIDGE
HODGEMAN HILL RD
MCLAREN DR
PRV-6 HODGEMAN & MCLAREN
PRV-16 PEGWOOD RD
PRV-15 MCLAREN DR
PRV-14 MCLAREN DR
PEGWOOD FILL METER
1600
"SOUTH MOUNTAIN PIT"
ARMSBY CI
SCHUYLER DR
PRV-19 SCHUYLER DR
TOBEY RD
MORRILL CIRCLE
DOE RUN
POND RD
LIBERTY PUMP STATION (SOURCE)
LIBERTY (SOURCE) METER
GRAVEL PACKED DUG WELL 2 (56 GMP) (20' DEEP)
GRAVEL PACKED DUG WELL 1 (98 GMP) (19' DEEP)
RICHARDSON TRAIL
MYRTLE ST

PUMP STATION ELEVATION VIEW



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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

ISOLATED ZONES

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GRID

WATER MAIN LEGEND

- PVC
- DUCTILE IRON
- HDPE
- INACTIVE
- UNKNOWN
- TRANSMISSION
- A1 INTERCONNECTION
- PS PUMP STATION
- OPEN GATE VALVE
- CLOSED GATE VALVE

BRIARCLIFF CIRCLE
GOOSE HOLLOW RD
PRV-9 SUMMIT DR
PRV-10 SUMMIT DR
SUMMIT DR
DURGIN CIRCLE
SUNSET/WINOOSHA METER
PRV-11 SUMMIT DR
TAYLOR DR
TAYLOR DR PUMP STATION (5,000 GAL HOLDING TANK)
PROPOSED REMOVAL OF SUNSET PUMP STATION
SUNSET PUMP STATION (20,000 GAL PNEUMATIC WATER TANK)
BOULDER METER
ABNAKY TRAIL
RESERVOIR RD
WEETAMOO TRAIL
BOULDER DR
PRV-17 SUMMIT DR
PRV-23
PRV-22
CHAPMAN CIRCLE
WANOSHA TRAIL
PRV-12 WANOSHA TRAIL
CALDON CIRCLE
CLOSED GATE VALVE
CHICKENBORO BROOK RESERVOIR
WATERVILLE ESTATES COMMUNITY CENTER
MARDEN DR
GREEN CIRCLE
WINTERBROOK RD
PRV-8 WINTERBROOK RD
HODGEMAN HILL RD
PEGWOOD MID METER
THIS AREA NEEDS INVESTIGATION
PRV-13 DONOVAN FARM RD
DONOVAN FARM RD
CLOSED GATE VALVE
SNOWMOBILE TRAIL BREAK HISTORY
REPLACE/REMOVE PRV-13
PARKER RD
ISAAX FOX DR
PORCUPINE DR
RESERVOIR METER
RESERVOIR RD PUMP STATION
PRV-3 HOLLAND TRAIL
WEEPING BIRCHES
HOLLAND TRAIL
SNOWOOD DR
REVERSE OPERATING GATE VALVE
PRV-2 HOLLAND TRAIL
PROPOSED WELL LOCATION
HODGEMAN HILL RD
PRV-4 SNOWOOD DR
CAMPTON MOUNTAIN LOOP
SKI BOWL CONTACT TANK (22,000 GAL)
CAMPTON MOUNTAIN SNOWMAKING WELL (40 GPM) (550' DEEP)
SKI BOWL PUMP STATION (3,000 GAL TRANSFER TANK)
THORTON/HODGEMAN METER
POND VIEW
BELL VALLEY RD
CLOSED GATE VALVE
DISCONNECT FROM TRANSMISSION MAIN
SOUTH MTN METER
COURT ST
PANAWAY DR
DAVID THOMPSON
BELL VALLEY
WINTERBROOK RD
PRV-20 WINTERBROOK RD
PRV-18 RICHARDSON TRAIL
PEGWOOD PUMP STATION & ATMOSPHERIC WATER TANK
PROPOSED ADDITIONAL 200,000 GAL STORAGE TANK
"SOUTH MOUNTAIN PIT"
RICHARDSON TRAIL
ARMSBY CT
SCHUYLER DR
PRV-19 SCHUYLER DR
TOBEY RD
MYRTLE ST
USER ONLY HAS MYPSI
SNOWOOD DR
PRV-5 HOLLAND TRAIL
PRV-1 LIBERTY
LIBERTY LN
CHECKERBERRY RIDGE
CAMPTON MOUNTAIN RD
PRV-21
CLOSED GATE VALVE
PEGWOOD RD
PRV-7 PEGWOOD RD
REMOVE TEE SECTION AND SEPARATE DEAD WATER MAIN
CLOSED GATE VALVE
OFFLINE PRV TO BE REMOVED
PRV-16 PEGWOOD RD
PEGWOOD FILL METER
1600
PRV-15 MCLAREN DR
PRV-14 MCLAREN DR
MCLAREN DR
HODGEMAN HILL RD
PRV-6 HODGEMAN & MCLAREN
MORRILL CIRCLE
REPLACE/REMOVE PRV-14
THIS SECTION OF PIPE IS AN UNKNOWN. WATER SURFACES FROM THE GROUND HERE. EXCAVATE TO DETERMINE IF THIS EXISTS.
DOE RUN
POND RD
LIBERTY PUMP STATION (SOURCE)
LIBERTY (SOURCE) METER
GRAVEL PACKED DUG WELL 2 (56 GMP) (20' DEEP)
GRAVEL PACKED DUG WELL 1 (98 GMP) (19' DEEP)

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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

REPAIR HISTORY & PROPOSED WORK

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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CHECK'D BY: MLB	ARCHIVE #: H-___

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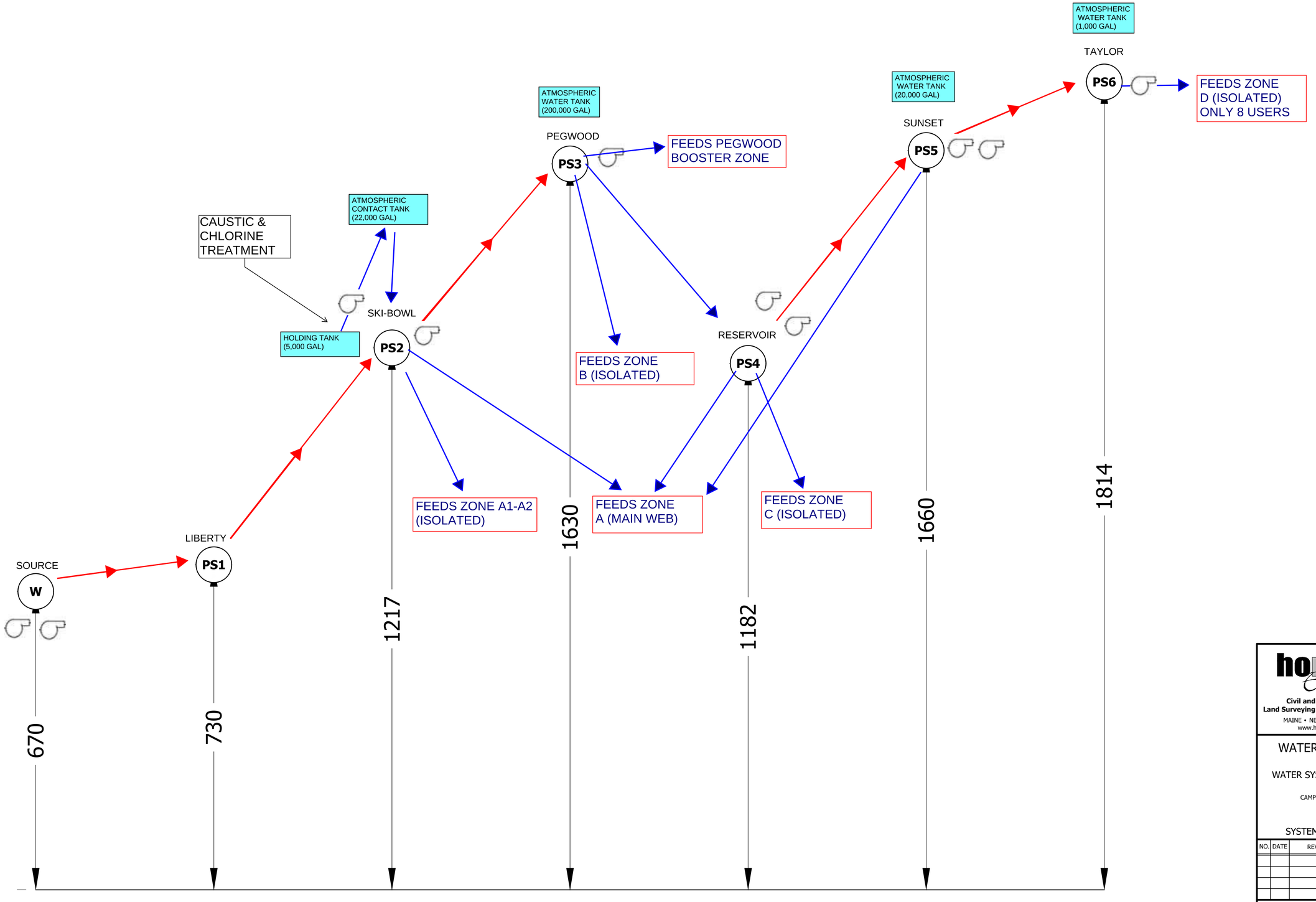

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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

SYSTEM ELEVATION VIEW

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: JULY 2025	PROJECT #: 240609
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CHECK'D BY: MLB	ARCHIVE #: H-___

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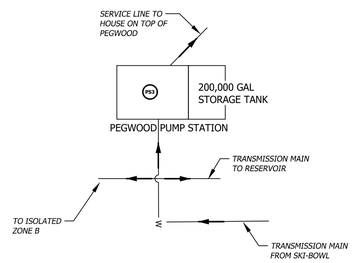
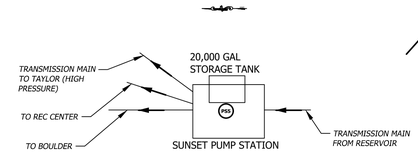
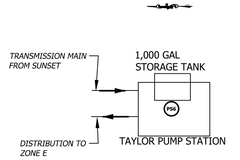


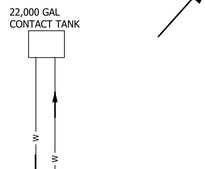
PEGWOOD SCHEMATIC



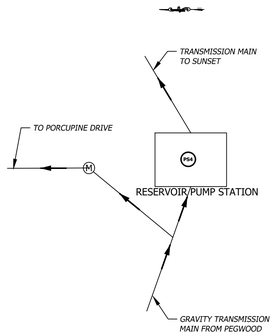
SUNSET SCHEMATIC



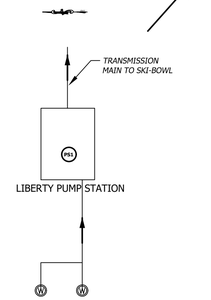
TAYLOR SCHEMATIC



SKI BOWL SCHEMATIC



RESERVOIR SCHEMATIC



LIBERTY SCHEMATIC

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WATERVILLE ESTATES

WATER SYSTEM IMPROVEMENTS

CAMPTON, NEW HAMPSHIRE

PUMP STATION SCHEMATICS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: JULY 2025	PROJECT #: 240609
ENGIN'D BY: HEI	DRAWN BY: JCH
CHECK'D BY: MLB	ARCHIVE #: H-___

SHEET 5

Z:\proj_2024\240609 Waterville Estates - Road and Water Master Services\Internal\Civil\Final\240609_Design.dwg, SKIBOWL, 7/29/2025 2:16:45 PM, JoeRaw

Appendix C: Water Source Assessment

Introduction

The Waterville Estates Village District (WEVD) owns and operates a large community water system, PWS ID #0341030. The water system serves approximately 560 residential units with growth potential for an additional 65 to 200. Waterville Estates contains a mix of permanently and seasonally occupied homes, some of which are made available by their owners as short-term rentals. Water for the system is produced from one well site via two T-wells in shallow sand and gravel adjacent to the Mad River. Non-residential water users for the system include a ski lodge and office building.

Horizons Engineering, Inc, a Verdantas company, has been retained to review the existing water sources and make recommendations for future water sources as part of an effort to plan for the future of the system. Information for this assessment came from a site visit on June 6, 2025, records of previous exploration and testing, and discussion with the operator.

Current System Sources

The system currently relies on two T-wells constructed approximately 50 feet apart. The wells parallel the course of the Mad River and are approximately 180 feet from the top of the bank. Test pits in the vicinity indicated suitable material for a collector well at depths of 15-18 feet, with dense sediments below. The T-wells were constructed with the collectors at a depth of 16 (Well #1) and 18 (Well #2) feet to intersect the most productive interval. Construction of the T-wells was completed in 1992 with pump testing shortly thereafter. The wells are currently reported to be capable of producing 95 GPM individually and 172 GPM when run simultaneously. A line of three monitoring wells parallel with the Mad River and to the west of the two production wells was accessed during the site visit on June 6, 2025. Location, water level and total depth was recorded at each of the three wells. At least two more monitoring wells were installed for the 1992 pumping test on an axis perpendicular to the course of the river and intersecting the well field. These wells were not found during the site visit. Water levels in the wells that were able to accessed are summarized in the table below-

Monitoring Well	Water Level (feet bgs)	Total Depth (feet bgs)
2-92	11.16	13.89
4-92	11.65	16.74
6-92	12.12	14.85

Historically, the yield from these wells has remained stable. Water quality, specifically bacterial issues and surface water contamination indicators have been an issue at the well site since the wells' construction, from coliform detections shortly after construction to a boil order in 2010. This is likely due to the proximity of the Mad River, shallow depth of the aquifer, and design of the wells. Significant efforts to rectify the water quality issues have been made (fencing installed encompassing the collector area, 4-log disinfection protocols). Review of the construction plans and logs indicate no obvious deficiencies in the construction of the wells. However, the collectors are shallow, and even with a correctly installed and functional surface seal remain vulnerable to contamination. Potential sources of contamination for the wells include the Mad River, animal excrement, and drainage from the terraces upgradient of the wells. Additionally, while the wells are not located within a special flood hazard zone, the collector area is surrounded by flood risk areas in the 1-.2% yearly range.

Liberty Lane Well Maps are attached in **Appendix A**

Several bedrock wells are present throughout the Estates serving individual homes that were not serviceable/opted out of service from the public water system. Review of available information from the

water well records in the area indicates that the majority of the bedrock wells in the area have low (<10 gpm) yields, with a handful in the 20-30gpm range. This includes the current water source for snowmaking, a bedrock well reported to be capable of producing in excess of 30 gpm when installed but currently being utilized at a rate of 20 gpm due to sedimentation issues.

Water Use

Current measured water use is 162,000 gallons per day on average (vs 247,000 gpd available flow from the wells), with the average monthly use peaks in February/March and July/August. A water shortage was reported during a time period when potable water was being used for snow making, coinciding with a large number of users staying at seasonal homes/short term rentals.

Projected future water use for full buildout varies between approximately 250,000 GPD (projected from historical use, assuming each new connection at full buildout would use a similar amount of water to the current connections) and 407,000 GPD (calculated daily demand per NHDES regulations). This would require a minimum of 3,000 gpd and up to 160,000 GPD new capacity to be developed for full build out.

New Bedrock Well Source Assessment

Existing Wells/Conversions

While several existing bedrock wells may theoretically be available for use, the relatively low yield of the majority of the wells in the area and sanitary protective area requirements for public water supply wells indicate this approach is unfeasible.

One exception is the current snowmaking well. The well is reported to be a reliable producer, and a 200-ft SPA would appear to fit within the ski resort property. Waivers for the presence of ski lifts and snowmaking appurtenances within the SPA would likely be required. Additionally, it is reported that NHDES has voiced some concerns about contamination of the well after the use of treated drinking water for snow making operations. The sedimentation issue would need to be addressed and the long term yield of the well verified before attempting to permit the well as a public water supply source.

New Bedrock Wells

Several properties owned by the Estates have the potential to fit 200-ft SPAs within them and would not require waivers. While it is possible that a sufficiently productive bedrock well could be sited on one of these parcels, the overall low yields of the bedrock wells in the development area could potentially require numerous wells in order to provide the source capacity necessary for full build out. Before proceeding with new bedrock well installation, a fracture trace analysis and in-depth study of the location and depths of the higher yielding wells in the area should be undertaken in order to rank the sites with the highest potential.

New Overburden Well Source Assessment

Given the limited useable aquifer depth at the Liberty Lane well site, the focus for new overburden well assessment is on the Snowood Village parcel. While limited area for the siting of a new large groundwater withdrawal is available within the parcel, an easement for the sanitary protective area has been granted by the adjoining parcel to the east.

New Overburden Wells (Floodplain)

Previous exploration has focused in the low-lying abandoned stream bed above the current bank elevation of the Mad River. Two test wells have been installed below the Snowood Village Condominiums. During the site visit, both were located but neither could be opened. Logs for the wells have not been located, though in one email TW-07-01 is noted to be 26' to refusal and screened from 15-21'. At one point it appears one of the wells was vandalized with the addition of an unknown petroleum substance.

During the site visit, the terrain was consistent with an intermittently active flood plain, with clean gravel bars and sand spits meandering in the general downstream flow direction. The site is within a special flood hazard zone, and in 2011, the area flooded after a hurricane. Given the uneven nature of the ground surface, it is possible that an area with better aquifer material at greater depth is available within the floodplain. It is possible that a standard, drilled sand and gravel well of sufficient size (or multiple wells) could produce enough water to satisfy the future needs of the WEVD. However, access to the floodplain is likely to be extremely difficult. The grade from the closest road is extremely steep. A wetlands permit was obtained for the construction of an access road but construction was cancelled. Access along the river bottom is similarly difficult, requiring at multiple stream crossings and construction of an access road parallel to the river through the floodplain.

In order to install potential wells at this location, the road will have to be completed, likely at significant expense. The design of the road may need to be changed in order to ensure access, and in the floodplain it will also need to protected against potential flooding. Before construction of the road, the feasibility of a sand and gravel well in the available area should be assessed. While it is possible that a more in-depth field visit would help narrow down the areas to be tested, a geophysical survey with resistivity equipment would help map subsurface materials and depth to bedrock in the available area. This could be conducted before any improvements are to be made and would help guide future drilling and cost/benefit analysis for the construction of the road.

After the survey results are analyzed, a test drilling program with a track rig should be designed and carried out. The test well installations would assess the areas identified as potential well sites during the resistivity surveys, provide data on subsurface materials and yield, and provide monitoring wells for the pumping test if a production well is to be installed. A short pumping test would provide more data after the drilling program.

If a suitable site for a production well is found, the access road would need to be to the site before a truck-mounted rig could be mobilized for construction of the well or wells. A preliminary large groundwater withdrawal permit application would need to be prepared and approved by NHDES, a regulatory pumping test conducted, and the final report prepared and approved.

New Overburden Wells (Terrace)

While previous exploration efforts have focused on the floodplain, some of the available area for the Snowood Village parcel overlaps the terraces that are interpreted to represent the previous banks of the Mad River before the base elevation dropped. Limited information is available for the subsurface materials on these terraces. However, drillers logs from bedrock wells along the terrace indicate areas with 60-170 feet of overburden above the bedrock surface (bedrock depths are shown on the attached map). In a conversation with Capital Well, who installed several wells on the terrace, it was reported that a package of gravel perhaps 10-20 feet thick was encountered at the base of the overburden. Due to the drilling method used, it is not possible to ascertain from the log whether the gravel was part of a dense till or clean, water bearing gravel. If the gravel is water bearing, access would be significantly easier than down into the flood plain. The site would also be outside of the floodplain, and likely a deeper well and thus more protected from contamination. A single test well would likely be sufficient to confirm whether

or not the gravel is present and whether or not it represents a potential site for production. If so, more monitoring wells would be installed and the same construction and permitting process followed as indicated for the floodplain site.

Snowood Village Well Exploration Maps are attached in **Appendix B**

CONCLUSIONS AND RECOMMENDATIONS

After review of available information on the current sources, previous exploration efforts, and observations made during the field visit, HEI offers the following conclusions and recommendations:

-Yield from the two T-wells has remained stable, but contamination risks are high. Yield has been insufficient for the demand from snow making and water users in the past. Future buildout will require more capacity.

-New bedrock wells are not recommended for the system. Conversion of the snow making well into a public water supply well should be considered

-A new sand and gravel well may be able to be developed on the floodplain below Snowood Village. Costs will likely be high for access road construction, geophysical surveys and test wells should be considered before construction of a road

-A basal gravel layer may be present in the overburden on the terraces above the floodplain. Test well installation should be considered to determine the overburden lithology.

If you have any questions or desire more information, do not hesitate to contact the undersigned. We appreciate the opportunity to work further with the WEVD.

Best,



Ethan Jennings

Geologist

Horizons Engineering (a Verdantas Company)

TW-07-2

TW-07-1

Bedrock depth increasing towards Snowood Village

BDKD 170

BDKD 60

BDKD 124

BDKD 132

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Legend

- Wells
- Snowood Village Parcel
- Snowood New Well Area

Snowood Village Well Exploration Map
Waterville Estates Village District
Thornton, NH

0 100 200 ft

N

Appendix A – Liberty Lane Well Maps

National Flood Hazard Layer FIRMette

FEMA

71°37'35"W 43°52'29"N



71°36'57"W 43°52'3"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/2/2025 at 8:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix B – Snowood Village Well Exploration Map

6-92

4-92

T-Well 2

T-Well 1

2-92

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Legend

Wells

Liberty Lane
T-Wells
Waterville Estates
Village District
Thornton, NH

0 50 100 ft

N

National Flood Hazard Layer FIRMette

FEMA

71°36'49"W 43°52'57"N



71°36'11"W 43°52'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

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- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
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MAP PANELS
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- No Digital Data Available
- Unmapped

N

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This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/8/2025 at 3:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

May 13, 2025

Board of Commissioners
Waterville Estates Village District
Campton, NH 03223-9704
Via email: maureen@waterville-estates.com

Subject: Waterville Estates Village District, PWS 0341030
Sanitary Survey 2025

Dear Members of the Board:

On March 25, 2025, the New Hampshire Department of Environmental Services (NHDES) Drinking Water and Groundwater Bureau (DWGB) conducted a sanitary survey on the drinking water system served by Waterville Estates Village District (WEVD). The purpose of the survey was to review the capacity of the water system's sources, treatment, distribution, and management to continually produce safe drinking water. I would like to thank Steve Baert, primary operator, and Ron Beard, general manager, for their assistance in conducting this survey.

SUMMARY

Water system staff interviewed as part of this survey were knowledgeable about the water system and approach their jobs in a professional manner. Water quality monitoring records show that the system is in compliance with current standards and the system is working proactively to update and maintain the system under the guidance of the current operator and new leadership that was in place in 2021. However, there have been singular lead samples that have required follow-up action since the last survey, as detailed in this letter.

This sanitary survey did not identify any significant deficiencies. The following is a list of items that we recommend the managers of the water system consider to maintain compliance, and continue to provide an acceptable level of service to the system's customers:

1. Submit a design for NHDES review for any upcoming changes to the treatment system.
2. Schedule a cybersecurity assessment of your system. Free services are being offered for a limited time.
3. Complete, maintain, and use your Asset Management Program (AMP) for achieving and maintaining the desired level of service at the lowest appropriate cost to customers.
4. Maintain corrosion control water quality monitoring and prepare for the 2027 requirements of the Lead and Copper Rule Improvements (LCRI) including:
   a. updated service line inventories, or "baseline inventories",
   b. service lines replacement plan for any lead piping or galvanized piping requiring replacement,
   c. 24-hour public notification of any lead sample exceedance incorporated into your Emergency Response Plan,
   d. "find and fix" rules for all sample sites exceeding 10 parts per billion (ppb) of lead.
5. Continue moving forward in finding and developing an additional source of drinking water.

6. Install new service meters, zone meters, and perform leak detection for water conservation and rate setting.
7. Consider installing a fence around Pegwood tank.
8. Complete storage analysis for determination on the future of the smaller steel tanks, which are past due for inspection.
9. Complete hydraulic analysis and plan for system upgrades to reduce excessive pressures.
10. Obtain licensing for a backup operator.

A more descriptive discussion on each of these items is included below under "Recommendations".

SYSTEM DESCRIPTION

General

The WEVD water system currently serves approximately 555 residential units, including condominiums and detached residences, plus recreational facilities such as the Community Center and Campton Mountain Ski Area. Population and water demand vary widely with the seasons and vacation schedules, with the estimated population served by the drinking water system of 1500. It is estimated that about one-third of the remaining 200 unbuilt upon lots are actually buildable and represent future water demand.

In general, the water system is comprised of two gravel packed wells, one well station, one combined water treatment plant (WTP) and booster pump station (BPS), five atmospheric storage tanks with three in combination with integrated BPS's and pressure tanks, one additional stand-alone BPS, approximately 26 distribution pressure reducing valve (PRV) pits, and associated piping and appurtenances.

Water Sources

The average daily demand was as low as 90,000 gallons per day (gpd) in 2018 and 100,000 gpd in 2017. After a spike to 160,000 gpd over the next five years (with the exception of 2021), the ADD was 140,000 gpd in 2024.

The water sources are summarized as follows:

Source	DES Data Base 0341030	Well Type	Well Depth (feet)	Existing Yield (gpm / gpd)
GPW 1	001	Gravel well	17	95 / 136,800
GPW 2	002	Gravel well	19	95 / 136,800

The WEVD is served by two gravel packed 'T' wells located off Liberty Lane and about 150 feet from the bank of the Mad River. The wells are equipped with well level transducers and variable speed drives. Recent work includes security fencing replaced around the wells, new pump and motor for GPW 1, and having GPW 2 cleaned. The wells can pump singly at approximately 95 gpm, but at only approximately 172 gpm (approximately 250,000 gpd) in tandem. Based on numbers previously reported by WEVD for maximum day demand, it is unclear if the WEVD, if the wells pumped continuously, can meet peak day demand.

Treatment

Water from the Liberty Lane wells is pumped to the Ski Bowl pumping station via a dedicated 4-inch line. Treatment at Ski Bowl includes aeration and injection of sodium hydroxide (NaOH) for pH elevation, and injection of sodium hypochlorite (NaOCl) for disinfection after a 5,000-gallon steel transfer tank. The WEVD is required to demonstrate a minimum of 4-log (99.99%) disinfection of viruses prior to the first customer through monthly reporting. The data is collected by SCADA and an online analyzer. The station also has an online pH analyzer connected to SCADA. The operator takes daily readings for backup to the SCADA system, which has failed in the past. A 0.9 mg/L chlorine residual is required to maintain the 4-log disinfection level and the operator's treatment goal is 1.4 mg/L. This corresponds to a chlorine residual of approximately 1.1 mg/L at the end of the distribution system.

Chemicals are not currently flow-paced but adjusted manually. The chemical feed pumps are only supplied with power when the transfer pumps to the contact tank are running. The WEVD is currently preparing a change from NaOH to soda ash in 2025. Existing chemical treatment systems for the system are as follows:

Chemical	Purpose	Bulk Storage (gal)	Day Storage (gal)
NaOH (25%)	pH adjustment	450	50
NaOCl (12.5%)	4-log disinfection of viruses	450	50

A design should be submitted to NHDES DWGB with storage and proper containment prior to switchover.

Distribution System

Hydraulic pressure zones are significantly complicated by the extreme variation in terrain covered by the WEVD system. From the primary pressure zones defined by the storage tanks and BPS's, approximately 26 PRV pits are used in locations throughout the system to create secondary zones with pressure acceptable for domestic use. A maximum system pressure of 240 psi was previously observed leaving the Reservoir Road BPS and going uphill into Sunset Tank and the high-pressure zone. Also , approximately 210 psi was observed leaving the Ski Bowl BPS.

The distribution system is comprised primarily of PVC pipe, with a small amount of HDPE and ductile iron pipe, from 2 to 6 inches in diameter and totaling approximately 24 miles. Some recent piping replacements and extensions are constructed of polyethylene. The WEVD has distribution system maps that show the location of piping, valves, many of the PRVs (not all), and curb stops, which are recorded electronically on a Cartographic Associates digital platform.

The WEVD is mainly a residential system with one community center containing various amenities. There are currently no individual customer meters, even though these meters were approved by a 2022 WEVD vote. A majority vote against installation of residential meters was held at the annual 2023 meeting. The WEVD water system is supported primarily by property tax revenue. In 2022, the WEVD began installing distribution zone meters to help identify areas of greater water use and system leaks.

A connection for snow making was recently discontinued as this process now uses a dedicated well. The WEVD maintains cross-connection control plan on file with NHDES.

Finished Water Storage

Water storage tanks and their associated pressure zones are summarized as follows:

Tank	Zone	El. (ft)	Zone Charged By	Construction (year)	Capacity (gal)	Last Inspected
Ski Bowl	Main	1210	Liberty Lane Wells	Steel (pre-2000)	5,000	never
Snow Bowl	Main	1235	Liberty Lane Wells	Buried Steel	22,000	2022
Pegwood	Main	1625	Ski Bowl BPS	Concrete (2008)	200,000	2022
Sunset	High	1580	Ski Bowl or Reservoir Rd	Steel (1993)	20,000	2017
Hilltop	Hilltop	1825	Reservoir Road BPS	Plastic (2006)	1,000	regularly
Pegwood BPS	Pegwood	1625	Pegwood BPS	Hydro (2019)	50	-
Sunset BPS	Sunset	1571	Sunset BPS	Hydro	50	-
Hilltop BPS	Hilltop	1825	Hilltop BPS	Hydro	50	-

For clarification, the Snow Bowl is a tank only, while the Ski Bowl is the WTP and BPS with a smaller 5,000 gallon tank used for aeration/pH adjustment of the water. These assets are all at the same location. A security fence was recently installed around the Snow Bowl tank. The Ski Bowl tank is under consideration for removal. This tank needs to be removed or professionally inspected.

The Sunset tank is also under consideration for removal. An engineer has been hired to determine if any system upgrades are necessary prior to its removal. This tank also needs to be removed or professionally inspected.

The Hilltop tank, which is a non-pressurized plastic tank that serves eight houses, is externally and internally inspected by the operators regularly. Total system storage is approximately 250,000 gallons.

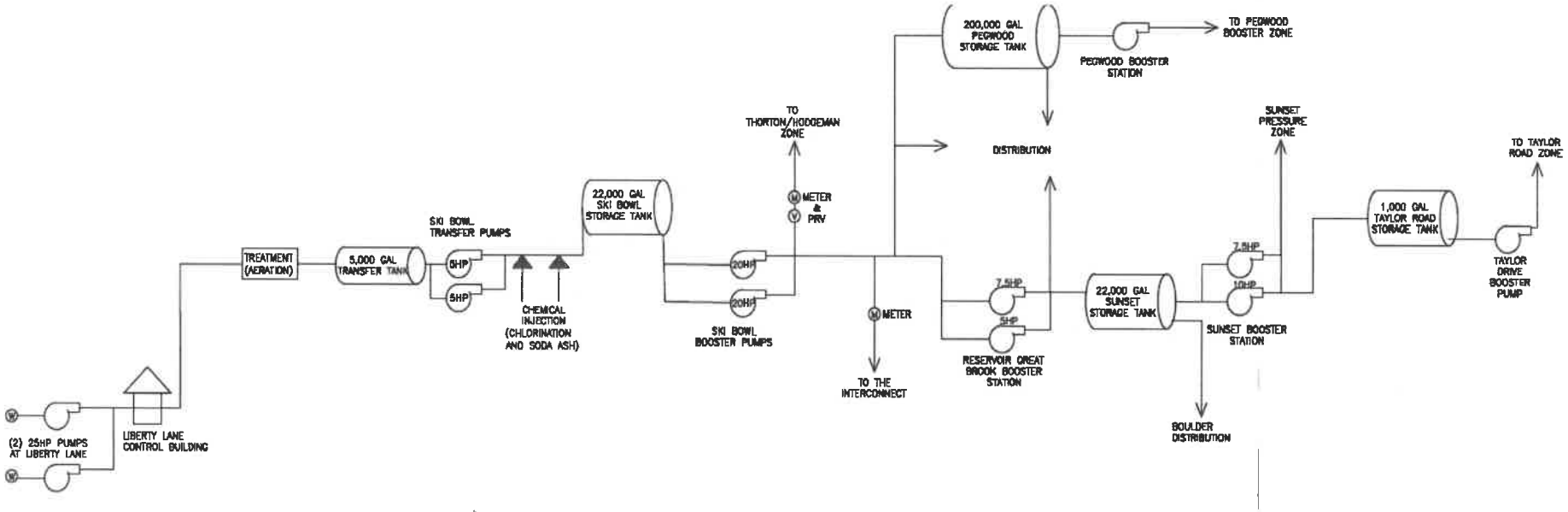
Pumps, Pump Facilities, and Controls

Water is pumped from the well through the Liberty Lane BPS and on to the Ski Bowl. Liberty Lane stores a spare pump and motor to serve as spare parts in the event of a well pump or motor fails. Following chemical treatment at Ski Bowl, water is pumped from the 5,000 gallon transfer tank to a slightly higher-elevation 22,000 steel storage tank. Water is then pumped to the distribution system and a 200,000-gallon Pegwood tank via dual booster pumps. A few homes around the Pegwood tank are fed from a booster pump and hydropneumatics tank inside the Pegwood tank BPS, which also houses an emergency generator.

Water pumped to higher pressure zones is controlled by the Sunset tank (20,000 gallons) from the Ski Bowl BPS when operating, or from the Pegwood tank via the Reservoir Road BPS when the Ski bowl BPS is not operating. The Sunset tank BPS can further boost pressure to the 1,000 gallon plastic storage tank at the Hilltop pumphouse, from which pressure is again boosted to the Hilltop development.

A schematic of the system is shown in Figure 1.

Figure 1: System Schematic



The WEVD has a SCADA system based at the Community Center by which the operator oversees pump status, tank levels, and alarm conditions. Alarms also call out to the operator's cell phone. Automatic cycling of the Liberty Lane wells is based on the water level in the 22,000-gallon tank at Snow Bowl. The Ski Bowl boosters operate based on the water level at Pegwood tank. The Reservoir Road BPS is coordinated with water level at Sunset, and the Sunset BPS operates based on the needs of the Hilltop tank.

Monitoring, Reporting, and Data Verification

Water quality monitoring records show that the system is in compliance with current standards. However, an exceedance of the 90th percentile for lead was issued in 2023 and action was required. Addition sample exceedances were discovered in 2025. The 90th percentile exceedance required the WEVD to reduce the time between all samples to every six months until enough compliant samples demonstrate reverting to (annual) reduced sampling. In addition, samples for corrosion control parameters are now required at the entry point to distribution on a bi-weekly basis and within distribution monthly. This information is reported until such time that reporting is no longer needed but sample data must still be recorded and maintained by the system. For reference, the maximum contaminant level goal for lead is zero as there is no safe level of exposure to lead.

As previously mentioned with regard to maintaining sufficient chlorine levels, daily grab samples are required if either the online chlorine analyzer or the SCADA system were to malfunction. The SCADA system has been relocated to a more secure and locked room along with PLC upgrades and putting SCADA on its own server.

Water System Management and Operation

Residential water meters were planned for installation in 2022, but this was never implemented. The WEVD has decided to switch paths to install zone meters instead. Along with recent and upcoming leak detection surveys, new mag meters were recently installed at Pegwood and Sunset Tanks/BPSs to help with water auditing. A new billing software was also purchased.

The WEVD obtained grant funding from and submitted an AMP to NHDES in April 2022.

The WEVD has continued to provide training to the system operators. This is a great way to protect the future of the water system by spreading knowledge. New management began in 2021 with the designation of a water board to work on a system plan, and the hiring of a general manager.

Staffing and Operator Certification

The WEVD is required to have operators on staff certified at the grade 1 treatment and grade 1 distribution level. The system meets this requirement. The following operator is currently listed:

Operator	Certificate No.	Treatment Level	Distribution Level
Steven Baert	3920	I	I

LRW Water Service, Inc. also provides backup operational services on an as-need basis, and other WEVD employees are currently being trained and being encouraged to obtain licensing for drinking water operations.

ACKNOWLEDGMENTS

We commend the WEVD for continuing to make many important improvements to maintain the system. These include but are not limited to:

1. Not only has the SCADA system been moved to a more secure location in its own room, put on its own server, and had its PLC upgraded, but security locks have been installed at every building. We would like to thank WEVD for taking both physical and cyber security seriously.

2. Approximately 3,300 linear feet of 4-inch water main around Pegwood was recently replaced and two new PRVs installed.

3. Efforts continue to locate buried PRV valves and install in underground structures for better access. This is important for current and future system maintenance. It is also allowing for the installation of the distribution meters which will be a great benefit in determine high water usage and/or system leaks.

RECOMMENDATIONS

Below are areas where improvements or operating adjustments are recommended, some of which could lead to significant deficiencies in the future if not addressed:

Treatment

1. RSA 485:8 states that no new construction, addition, or alteration involving the source, treatment, distribution, or storage of water in any public water system or privately owned redistribution system shall be commenced until the plans and specifications have been submitted to and approved in accordance with rules adopted by the department; except, if such construction, addition, or alteration is exempted by the department because it will have no effect on public health or welfare, then such submission and approval is not required. The WEVD shall submit a design for any upcoming changes mentioned above including switchover of chemicals.

Water System Management and Operation

2. Under the Water System Management and Operation element of the sanitary survey, NHDES requires systems to have a cybersecurity assessment performed regularly. NHDES DWGB is not privy to the results of the assessment but will ask the system to confirm if the provided recommendations are implemented. Cybersecurity risks are a substantial threat to both public health and the system's financial assets. Most importantly, the **risks are real** for <u>any size</u> system.

   We recommend the following potential (free) services (presented with contact information or links) for your system to maintain compliance with Cybersecurity requirements:

   a) CISA (Cybersecurity & Infrastructure Security Agency) offers a free physical and cyber assessment of your site against deep, comprehensive standards. Contact Rick Rossi to schedule this assessment. mailto:richard.rossi@cisa.dhs.gov

b) The Overwatch Foundation offers a free broad assessment which will determine what free services and equipment you are eligible to receive upon completion. The free follow-up services may include equipment and upgrades that would be performed alongside your SCADA integrator or IT department.
c) EPA offers free assessments for drinking water system and *Primex* insurance also offers a high-level assessment that focuses more on your organization. The Atom Group also provides cybersecurity services and can be hired to perform a custom review. NHDES is not involved with these other programs, but they could be available and viable opportunities for your system.

If you are not sure which approach you would like to take or would like more information on any of the opportunities presented, please contact Brenda Leonard at mailto:brenda.j.leonard@des.nh.gov or tel:+6032710867.

3. NHDES recommends completion of your asset management plan (AMP) to help you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary. Asset management helps a system make critical decisions about how to achieve and maintain the desired level of service at the lowest appropriate cost to customers. In addition, an AMP grant from NHDES can be used to convert paper drawing to electronic format. Contact Kaitlin Curits at mailto:kaitlin.e.curtis@des.nh.gov or tel:+16032712472 for more information about asset management and the NHDES AMP grant program.

Monitoring, Reporting, and Data Verification

4. Corrosion control sampling, lead sampling, and lead notifications were reviewed during this survey. Alkalinity and pH levels are required to be reported by WEVD twice per week and at two sites within distribution quarterly. Once reporting is no longer required, sampling must continue and records kept onsite. As we transition into the new 2021 federal Lead and Copper Rule Revisions (LCRR) and most recent Lead and Copper Rule Improvements (LCRI), additional action must be taken when lead samples exceed the 10 parts per billion (ppb) action level and system-wide 24-hour notification if more than 10% of samples taken exceed the limit of 15 ppb.

   NHDES assisted water systems to complete the Lead Service Line Inventory (LSLI) as part of the LCRR by the October 16, 2024 deadline. The LSLI effort consists of three parts: Inventory, Replacement Plan, and Sampling Plan. NHDES has assigned a consulting firm (Arcadis) to the WEVD to help facilitate the three-part submittals. We commend the WEVD for your efforts in completing the first task of inventory and recommend maintaining momentum to continue to identify any unknown service line materials and plan for the removal of lead components. The LCRI requires compliance of all three phases by November 1, 2027, the identification of all unknowns by 2034, and replacement of all lead and galvanized requiring replacement by 2037. There is a history of elevated lead samples at the WEVD, so the locations of lead couplings on galvanized pipe, lead services, and lead goosenecks should be identified and removed. The removal of lead in drinking water is a high priority, especially for children ages 0-6 years old who should be consuming water with non-detect levels of lead. We urge the WEVD to continue to investigate possible sources of lead and continue to update and rotate lead and copper sample locations so there is a wider range of samples throughout the distribution system.

Water Sources

5. The previously reported peak day demand (approximately 330,000 gallons in 2019 and again in 2020) exceeds the currently well pumping capacity. Maximum day demands are no longer reported, so it is unclear if that volume has been reduced through leak repair and/or other water conservation efforts. Additionally, with the largest source taken offline, a single well pump (reported capacity of 136,800 gpd) cannot meet the average day demand (140,000 gpd in 2024). The system has taken significant steps in developing a new source through the hiring of an engineering firm and obtaining land easements. We recommend that the managers of the water system continue working with their engineer toward development of another source of drinking water, which may soon be required based on existing capacity versus demand.

Distribution System

6. NHDES recommends that a system as large as the WEVD have working service meters for every service line. For WEVD, individual meters provide the opportunity to help promote water conservation by the users and may actually lead to having sufficient water supply with the existing wells if water demand can be reduced. Additionally, accurate service meters have many benefits for both the water system and customers.
   - Accurate service meters allow for better water balance calculations, which compares the water entering the distribution system with water being used by customers. The difference is water losses, such as leaks.
   - New meter technology allows water users to receive an alarm when there is a suspected leak in the vicinity or within the home. By having accurate metering, the water system can determine the amount of water that is lost and try to reduce lost water within a home through homeowner education or the lost water (and revenue) within distribution through repairs.
   - Water rates also can be more fairly distributed when they are based on water use instead of a flat rate. This can help reduce demand through customer water conservation.

   An alternative to individual water meters are zone meters. This is not as effective overall but has helped with finding system leaks for some systems. NHDES has an annual leak detection grant program that is recommended to complement your water conservation efforts. Information on this program can be found on our Water Conservation Webpage.

Finished Water Storage

7. The WEVD should consider installing a fence around the Pegwood tank to help keep animals off its roof.

8. The WEVD has two water storage tanks that require inspections which do not meet the requirement of inspection every five years. These tanks need to be removed from operation or professionally inspected. The Ski Bowl has a 5,000 gallon steel tank that is more than 20 years old and is currently used for aeration treatment for radionuclides and pH adjustment. Removal of this tank may require separate or modified existing treatment for radionuclides that have been found in the raw well water.

   The 20,000 gallon steel Sunset tank installed in 1993 is under analysis to determine if the tank can be eliminated from the system through existing booster pumping or upgrades at Reservoir Road. If the tank is determined to be needed, either replacement or professional internal and external inspected is required.

Pumps, Pump Facilities, and Controls

9. The WEVD is also considering the elimination of the Reservoir Road BPS. A hydraulic study is being engineered to determine impacts. NHDES has previously recommended possible system upgrades to reduce system pressures as a maximum system pressure of 240 psi was previously observed leaving the Reservoir Road BPS to feed Sunset Tank and the high-pressure zone. Additionally, approximately 210 psi was observed leaving the Ski Bowl BPS. These pressures are excessive, well above the maximum 100 psi standard in the Recommended Standards for Water Works referenced in rule, and a danger to the safety of those who work on the water mains. NHDES recommends the hydraulic study be analyzed for potential system upgrades that reduce pressures. Any planned upgrades that impact system hydraulics will require pressure reduction.

Staffing and Operator Certification

10. A backup operator is important to fill gaps in coverage and system knowledge. NHDES encouraged certification of existing employees and maintaining a backup operator so the District has seamless coverage of the system at all times.

If you have any questions please contact me at mailto:Randal.A.Suozzo@des.nh.gov or tel:+16032711746.

Sincerely,

Randal A. Suozzo

Randal A. Suozzo, P.E.
Drinking Water and Groundwater Bureau

ec. Steve Baert, Ron Beard; WEVD

Waterville Estates Village District Water Master Plan
Advisory Committee Draft Minutes
June 22, 2020
9:00 am

A meeting of the Waterville Estates Water Master Plan Committee was held at 5-1 Carey Circle, Thornton NH on June 22, 2020. The meeting was called to order by member Terry Bennett at 9:04 am. The meeting was opened with the Pledge of Allegiance.

Members Present: Stan Bujalski, John Herlihy, Terry Bennett
Members Absent: Ned McElroy (member who resigned)
Public Present: Arnold Goodman, Carey Circle Thornton NH.

Item 1: Review of Proposals submitted for the WEVD Master Plan

General Comments by the Committee members:

All firms submitting proposals have a 4 point rating with the New Hampshire Department of Environmental Services/ Water Division. A 4 point rating is the highest rating for doing work in water systems. All 5 Companies are qualified to do the work.

There was limited point evaluation differential between firms. The rate on the basic evaluation ranged from 108 to 121.

Fee schedules are listed in various ways, thus making comparisons unequal. Many had contingencies, raising actual costs by adding phased work and additional costs for mileage , public meetings, travel and testing.

Commissioners should have interviewed firms clarify actual scope of work and costs in the interview process.

Contacts should be made to Client references and concentrate on the most recent projects similar to WEVD. Also lead team project manager references should be checked. One source of interview questions should be used for a consistent response. (that way less subjective than multiple folks doing it)

Liability Insurance of firms and all subcontractors should evaluated. Be careful of limited to cost of contract insurance plans. Prior to any work started firms should submit Liability inclusive of the WEVD. The general This needs to be discussed at interview process. PL insurance should be provided at a reasonable value well in excess of the value of the contract. Although the initial master plan may not exceed 55,000 for example, the engineering studies and conclusions will lead to further work. If those studies and conclusions prove to be in error, omissions and error may lead to additional WEVD liability down the road.

Discussion of the Firms:

DuBois and King Inc.

- Nice Community Approach which includes community input.
- Stated Master Plan Development Experience
- Successful experience with securing Federal and State Grants
- Project lead worked with Campton/ familiar with area.
- Most comprehensive master plan approach compared to other bidders. Also well resourced in- house.
- Statement of Standing from State needs administrative update.
- 45,000 to 55,000 needs clarification. Noted that additional cost for some testing not included.

Horizons Engineering

- Statement did not include very recent work with WEVD in work identifying water leaks in the system/ oversite.
- Firm has experience with variable water flow needs of resort communities.
- Mentioned Snowmaking from talking with Cory, Committee feels that previous 1990's study should be interfaced separately with needed updates to the previous study.
- Team seems strong with lots of in house expertise. Well resourced with in-house diagnostics and resources.
- Task/ Cost breakdown was good. No detailed timeline for work, so needs clarification.
- Indicated Grant procurement experience.
- Confirm electrical experience for Pump Evaluation.

Jones and Beach Engineering Inc.

Seems more focused on wells vs. distribution infrastructure systems loss/ metering.
Limited Master Plan Development experience listed.
Was firm that talked about Connection to Campton System
Subcontractors are used for parts of project.
Noted that are extra costs related to time and materials are not reflected in the price. Those costs could be significant.
Noted that LIABILITY insurance would be based on the contract value. This is a big problem for the Committee. An error in in plan judgement could cost more to fix than the value of the contract, thus putting WEVD at financial/ liability risk.
Certificate of Good Standing needs administrative update.

Tata and Howard Engineering

Uses Nobis as a subcontractor.
Unclear who is the lead in this proposal. Is it Nobis or Tata and Howard? Troubling as to who interfaces with WEVD.
Talks about a phase 1 cost. Need clarification on what is Phase 1. There is reference to a Phase 2 Project with no clarification or cost relationship to Master Plan Development. Lots of questions here.
Use of a fair number of sub-contractors. Liability insurance needs to be submitted from all of them with WEVD listed as a beneficiary. (in addition to getting if from Tata and Howard)

Underwood Engineers

Includes PNL Insurance Certificate.
Knowledge of financing and grants
Mentions Phase 1 costs = 29,000. What does that really include? What is Phase 2? Cost? Lots of uncertain costs.
RFQ seemed incomplete, as included sample draft statement from another communities project unrelated to WEVD.
Positive note talked about need for operational assessment and best practices policy plan.

Committee Recommendation to the Commissioners:

The Committee recommends the Commissioners interview not more than 3 firms. The Committee recommends the following three firms.

Dubis and King
Horizons Engineeering
Tata and Howard (Conditioned on clarification of team lead.)

Motion by member Bujalski, seconded by member Herlihy to adjourn the meeting at 10:45 am.

Motion carried.

Meeting was adjourned at 10:45 am.

Minutes Respectfully submitted as Draft Minutes by member Bennett.

Waterville Estates Village District Water Master Plan
Advisory Committee Draft Minutes
July 22, 2020
1:00 pm

A meeting of the Waterville Estates Water Master Plan Advisory Committee was held at The Waterville Estates Community Center, 562 Winterbrook, Campton NH on July 22, 2020. The meeting was called to order by Commissioner Herlihy at 1:00 pm.

Members Present: Stan Bujalski, John Herlihy, Terry Bennett
Members Absent: Ned McElroy (member who resigned), Sean Tole
Public Present: Harry Bertino, Jim Murphy, Cory Smith (1:25 pm)

Motion by Commissioner Herlihy, second by Mr. Bujalski to approve the minutes of July 8, 2020.

Motion carried by all members present.

Item 1: Review the 3 Finalists phone interviews with Tata and Howard, Horizon Engineers and Du Bois and King Engineers as related to the proposals submitted for the WEVD Master Plan.

General Comments from the Committee Members:

Commissioner Herlihy asked member Bujalski to review the process. Mr. Bujalski indicated that two firms were contacted by phone on Thursday 7/16/20 and one on 7/17/20. A standard set of 8 questions was asked of each firm. All firms interviewed were well qualified to do the work. If a point scale had been used the difference in points would have been very small. After the phone interview two strong firms emerged. Horizon Engineers and DuBois and King.

He indicated that a part of the RFP related to Leak Detection. Mr. Smith indicated to the committee that due to Covid causing a opening to work on this issue, a firm was hired to do three phases of leak detection. Mr. Smith is waiting for the final report. An indication was made to the three firms that this assessment may have been completed. Member Bujalski

mentioned it was important to try to negotiate this cost out of the submittals.

Member Bujalski indicated in his opinion both firms are about equal and qualified. His impression of the process was the Committee would make recommendations to the Commission and they would ultimately decide.

Mr. Bujalski felt strongly some additional negotiations should be discussed with the Firms to see if additional cost reductions, ie leak detection work could be found. Mr Smith expressed alot of information about the system is present and will help he believes to reduce some of the investigation costs

Member Bennett indicated her opinion of the firm differed slightly. Her first choice was Du Bois and King for the following reasons. She felt the submittal was the most comprehensive. They where proposing a complete review of all the structure and assets of the WEVD. including, as example bringing in their own mechanical and electrical engineers to review condition of things like pumping stations. The expressed they would be producing an asset management plan, Capital Improvement Plan, create a Hydraulic model. They indicated on the phone interview they had experience with communities with full and part time residents. Also they had done work with several ski areas/ resorts related to making snow. They mentioned Killington and two others. They have the ability to use the Hydraulic modeling to assist with understanding new development impact on water pressures.

Ms Bennett mentioned Horizons also was well qualified. They too had a strong understanding of the project.

Tata and Howard was a strong contender as related to including Jim Vernon from Novbis group as a contractor. However, Terry felt that their phased approach did not give a sense of the costs of the project overall and the proposal directed at phase 1 work and not necessarily the remaining scope of the project which would be determined later.

Additional information indicated that both Horizons and DuBois and King would write a not to exceed contract. Both Companies seemed

knowledgable on loan and grant programs. Both assisted with writing applications without fee, except for the Federal Programs had much larger grant application requirements and included needs for engineering plans to be included.

Commissioner Herlihy suggested that a motion include both firms, and then some additional discussion occurred related to what is it the Commissioners expect.

There was general discussion on how the Commissioners would proceed with two recommendations and the time expectation for that. Mr. Smith felt that the Commissioners would receive a dual recommendation but then direct additional questions to the committee related to each firm. That ultimately they would be looking for the committee to make a single recommendation.

Commissioner Herlihy indicated that Commissioners would move forward on the recommendation of the Committee. They are confident in the work the committee has done to review the RFP's and follow-up. He would like a recommendation to to forward for consideration for the August 1 2020 Commissioners meeting.

Motion by Commissioner Herlihy, Second by Ms.Bennett to recommend that the Water Master Plan Development be awarded to DuBois and King Engineers, and further that the recommendation move to the Commissioners at the August 1 2020 meeting for consideration.

Motion carried by all members present .

An additional discussion ensued related to the benefit of involving Jim Vernon from Novbis in the process of reviewing the hydrological work he has already done for the WEVD. It was felt by all members that this would be an important. He has done well evaluation, and done some site investigation for additional wells. This could reduce again the scope of new work.

Stan questioned need to go back and renegotiate the contract costs at this time. Mr. Smith and Commissioner Herlihy indicated that could wait until a later contract negotiation time. Commissioner Herlihy volunteered to help with that part of the process.

Mr. Harry Bertino asked " Who is Jim Vernon?" He asked if he was present at the meeting related to snow and water. Mr Smith indicated that he was. He is a hydrogeologist that has worked for the WEVD. Mr. Bertino indicated that we use new vendors.
Ms. Bennett added further information to clarify the process for Mr. Bertino. Mr Vernon a hydrogeologist has done quite a bit of contract work to determine things like condition of the wells, assisting in evaluating potential sites for new wells. Mr. Vernon would be asked to review his findings with the firm getting the contract, at which point the firms hydrogeologist would review and determine if this information met the needs or additional recommendations would be made in the master plan. Mr. Bertino was concerned about the relationship this had to leak detection. It was explained that Mr. Vernon was not related to that process.

Motion by member Herlihy, seconded by member Bujalski to adjourn the meeting at 1:45 pm.

Motion carried. by all member present

Meeting was adjourned at 1:45 pm.

Minutes Respectfully submitted as Draft Minutes by member Bennett.

Posted: On Board at Community Center
On page WEVD WEB page
Constant Comment Communication

Waterville Estates Village District Water Master Plan
Advisory Committee Minutes
Preliminary Contract Meeting With DuBois and King
August 20, 2020
9:00 am

A meeting of the Waterville Estates Water Master Plan Advisory Committee was held at 562 Winterbrook Rd, Campton NH 03223 on August 20, 2020. The meeting was called to order by Chairman John Herlihy at 9:03 am.

Members Present:	Stan Bujalski, John Herlihy, Terry Bennett, Jaime Oldmixon, Matt Smith.
Members Absent:	Ned McElroy (member who resigned), Sean Tole.
Others Absent:	Cory Smith, Karen Waters
Public Present:	Nicholas Sceggell, DuBois and King Chuck Goodling, DuBois and King

Item 1: Introductions

Chairman Herlihy asked each member present to do a brief introduction. Nicholas Sceggell is the project manager for DuBois and KIng. Chuck Goodling will be in charge of contract management for DuBois and King.

Chairman Herlihy indicated he has appointed two new members to the Water Master Plan Committee. Mr. Jaime Oldmixon, resident and Mr. Matt Smith, resident.

Item 2: Knowledge Transfer

Members of the Committee expressed the need to involve Cory Smith, General Manager in the knowledge transfer. Recently, leak detection and repair has been done through a Horizon referred vendor. A full report should have been received by Mr. Smith. In addition, the WEVD District has recently updated water system map (CAD). It was completed in the spring. There is additional water information on the software monitoring system. Mr. Smith has indicated to the committee that WEVD has considerable historical information. DuBois and King will need information related to total number of homes currently build, those in process and the final build out number for the WEVD community.

The Committee recommended that DuBois and King consider working with James Vernon, of Nobis-Group, a Senior Hydrogeologist who has done a great deal of contract work for WEVD. Mr. Sceggell indicated they would contact Mr. Vernon and see what arrangements could be made.

Item 3: Critical Interests

Line Repairs: Chairman Herlihy indicated a vendor has recently completed a water line leak review. Numerous repairs have been made and the system is showing an improved water use number. It has been thought that as as much as 55% of water was being lost to leaks. Discussion related to not only loss of water but the cost and stress on the system long term. Non revenue water leaks equal extra support pumps and related electrical systems to run them. All pumping stations will be physically evaluated by DuBois And King.

New Build Outs: It was acknowledged by all that an accurate number of total lots for build out be considered. It was noted that water pressure fluctuates with the increase in the number of homes occupied by part time residents. A notable example being the Fourth of July holiday. We must be able to supply water during those high use times with adequate pressure. A long term plan must be put into place that accounts for residential build out and increases in rental market in WEVD.

In addition, Member Bujalski expressed the need for a guiding document that will direct new development needs and standards for the extension of water lines to support new development. Often pipe sizing may have impacted the service to existing and future residents.

A policy for buildable areas and new single family individual home connections to the water system must be put in place. Some residential homes have private wells.

The Committee agrees that a better communication must be made with the towns of Campton , Thornton, and the WEVD HOA prior to issuance of building permit. The availability of water to the desired location and responsibility for the cost to get that water to the building site must be understood. The impact and true cost to the system must be evaluated.

Extensions of the pipe infrastructure for individual and multiple home developments over the years may not have sized water service to accommodate future development down the line.

Mr. Sceggell indicated that there are Asset Management Grants and State Grants that they can recommend and assist with toward some of these goals.

Low Pressures: Continued discussion occurred related to needs of this Part/ Full time communities needs.

Impact of Snow Making Using the Public Water System: The Committee indicated that a snowmaking study was done in the 1990's and again in 2004. This information should be reviewed when looking at the impact on the public water system. Information was shared about the recent donation of a Snow Gun and how best to support that activity. Commissioner Herlihy indicated that Hodgeman Hill well, is a currently inactive well that contains a non-potable water source. Perhaps investigation could be done to see if this might be a source for this use.

Item 4: Contract Terms

A contract will be written for a not exceed amount of 51,700. This represents a maximum number of hours of work to develop the WEVD Master Water Plan. Hours will be billed monthly not to exceed contract amount. The final total may be less depending on the base information that WEVD has to provide DuBois and King. The standard contract will be forwarded to Chairman Herlihy. A review will be done by WEVD attorney. The contract will be signed by Chairman Herlihy and Treasurer Waters. Assuming this process moves quickly, the plan is proposed to be completed in March of 2021. About a 180 day process. This timeline will allow for getting additional data on the peaks and low of water use during high use occupancy. Christmas vacation holidays, ski season, mid winter breaks, etc. The 20 year Asset management plan will be written.

Item 5: Moratorium

A question was raised on whether or not a building moratorium should be in place until answers to critical questions on the water system were understood.

Item 6: Grant Funding Targets

Asset Management Grants timeline March 1. DuBois and King will work to keep in mind potential grant opportunity deadlines to support the WEVD as they work thru out the Master Plan process.

Item 7: Adjournment

Motion by member Herlihy, seconded by member Bujalski to adjourn the meeting at 10:38 am.

Motion carried by all members present.

Meeting was adjourned at 10:38 am.

Minutes Respectfully submitted as Draft Minutes by Member Bennett.

Posted: WEVD Posting Board.
On page WEVD WEB page
Constant Comment Communication

Waterville Estates Village District Water Master Plan
Draft Advisory Committee Minutes
November 4, 2020
10:30 am

A meeting of the Waterville Estates Water Master Plan Advisory Committee was held at the Waterville Estates Community Center, 562 Winterbrook Rd., Campton NY 03223. The meeting was called to order by Chairman Herlihy at 10:31 am.

Members Present: Stan Bujalski, John Herlihy, Terry Bennett, Jaime Oldmixon, Matt Smith (left meeting 11:22)

Others Present: WEVD General Manager Cory Smith, and Nick Sceggell representing DuBois and King Inc., Mike Herring, WE HOA President,Gerry Pawuczak, Ryan Timms, Steve Baert.

Agenda:

Motion by Mr. Oldmixon, supported by Ms. Bennett to accept the agenda as presented by Chairman Herlihy. Motion carried unanimously.

Approval of Minutes:

Motion by Chairman Herlihy, supported by Mr. Bujalski to approve the minutes of 09/17/2020 as presented. Motion carried unanimously.

Item 1: Review of Dubois and King's Water Modeling/ Recommendations.

Mr. Sceggell spoke to the process. A Review of the assets has been done in-house. In addition, an asset inventory has been begun. Visits to each location and asset was completed by Mr. Sceggell and a second Dubois and King Engineer. They will be returning on one area to confirm information they have which conflicts with records. On-line research is in process for determining the pump curve standards for each of the types of pumps in the pumping stations. This plus the flow data from the main

line will = actual pump curve. Lack of metering or accurate meter information makes it challenging to get an accurate picture of the system. Taylor Dr area has very limited information. Liberty Station has a new back up pump/head located at the Station. There is a need to confirm the new one is the same pump that is in the well currently. It was noted that Smith Pump installed the current pump and Lakes Region Water (Peter) ordered the back up pump.

Elevations and distribution mapping is being worked on.

PRV's were discussed at length. A few are located in a colder, others are underground several inches. Replacement to a corrugated fit has occurred as repairs have been made. Mr .Sceggell indicated that some should be high PVR's and others low PRV's depending on elevation and pressure issues. This information related the PRV's needs to be affirmed and a put into the developing model. He was surprised at the number of PRV's located in the WEVD. Mr. Smith indicated some were used to change the pressure in the system when a needs was noted. Size of service lines and flow may need to be updated to improve the system long term. It was noted that restriction of water movement by use of PRV's may cause additional wear on the pumps and higher energy costs related to static in the system. Mr. Smith indicated he would research energy cost increases over the last several years and and submit a report to Mr. Sceggell for review. Electric cost have spiked over the last few years. It is undetermined at this time if the spike is related to efficiency, or leaks in the system. This is a question to look at. Rate change would not account for the increased cost variable. Mr. Bujalski asked if the electrical metering was a demand meter that would result in paying peak usage for full monthly period. Mr. Smith will look into this.

Pegwood booster is not currently turned on. Mr. Herring lives on Pegwood and indicated normally he has 20/22 lbs of pressure at his home. He has not added a booster to his line at this time. New Homes are being built above him that most likely will create a pressure issue. Mr. Sceggell indicated that what he would have normally seen, was an independent zone created with its own booster. The pipe sizing for this scenario would need to be larger than 2 inches.

The bottom line is Dubois and King needs to work with the General Manager Mr. Smith and Mr. Baert to gain additional information about several areas in the system.

Item 2: Discussion of Metering Considerations.

Mr. Smith presented some preliminary price quotes for additional metering/ electrical additions to the system. The purpose being to give the WEVD more accurate information on water flow in the system. Metering can assist in identifying flow issues/ leaks and broken lines. It will give better data on how lines in the system are handling flow.

The quotes were discussed and questions related to isolation valves and by pass options were brought to the table. Mr. Smith outlined the locations of the meters and suggested that the placement would cover MOST of the water lines and felt confident this was what would assist us in high flow areas. Some of the smaller lines would not have meters.

Continued discussion ensued related to sizes of the meter as related to the pending final water master plan. Pros and cons of doing this improvement prior to the final plan were discussed. It was generally agreed doing this now would help avoid serious issues. It is necessary the meters be tied to the software program and accessible by users who maintain the system daily and in an emergency situation.

Chairman Herlihy suggested that some additional information be added to the quotes. He asked Mr. Smith to go back to the vendors and ask for by pass options around the meter .
chairman Herlihy is looking for options to replace or maintain the meters without shutting down the related water line. He also asked Mr. Smith to confirm with the Treasurer funds available for this purchase and the account information. Chairman Herlihy requested Mr. Smith to try to be prepared to have this ready for approval or consideration at the next 11/14 Commission meeting.

Mr. Bujalski noted spool pieces could be made available for quick replacement and putting system back on line should a meter need to be removed or replaced.

The next asset management grant is due December 4, 2020. Mr Sceggell indicated there would not be a problem in preparing a grant application. He would prepare and have a submittal ready for WEVD in time for the deadline.

Motion by Chairman Herlihy, supported by Ms. Bennett to make a recommendation to the WEVD Commissioners that they proceed with the purchase of Water metering equipment and electrical installation of said meters, contingent upon Mr. Smiths securing an addendum price quote for by pass meter maintenance options.

Motion carried unanimously.

Item 3: Water Connection Policy Discussion

Mr. Oldmixon indicated that the draft policy was written after he did research related to several other policies of similar communities. This policy draft was drafted using other policies of those communities. He has met with Mr. Smith and incorporated his suggestions into this policy.

Mr. Oldmixon indicated after reviewing RSA 52:1 and RSA 38:26 of New Hampshire law, he believes that a governing body, ie. the Commission can set a water connection fee could be held in a water designated line item of the budget held by the municipal Treasurer. If a capital reserve fund is established which allows for the carry over from year to year the excess water funds to be used for water improvements only, it is believed at this time warrant article at the next annual meeting would be needed.
The Voters would have to approve by vote to establish reserve capital fund. Mr Smith provided some information related to what may be needed.

Mr Herring indicated he was in agreement with the need for a water connection policy. He warned the Committee that a fee, too high would kill growth in the community.

There was additional discussion, the fee has to be a responsible fee. The fee would allow the WEVD to contract professionals, to review the connection plans, evaluate the impact to the water system pressures, determine infrastructure needs, and inspect the home site for compliance to the connection requirements. It was noted that current staffing levels

would require a contract Inspector and /or Engineer to review/ sign off on the plans/work.

Mr. Oldmixon will email a revised copy of the draft ordinance.

Motion by Mr. Herlihy/ supported by Mr. Bujalski to submit the ‘draft Water Connection Ordinance to the
commissioners for review and approval to the WEVD Commissioners contingent upon a legal review and recommendations on a process for adoption by the WEVD legal firm.

Motion carried unanimously.

A motion was made by Chairman Herlihy and supported by Mr. Bujalski to adjourn at 12:43 pm. Motion carried unanimously. Meeting was adjourned.

Posted: Meeting Posted on11/02/2020
On page WEVD WEB page
Constant Comment Communication

Draft meeting minutes posted:

Waterville Estates Village District

Water and Roads Committee Minutes – June 28, 2024

The Water and Roads Committee was called to order at 09:00 hours on June 28, 2024. Present were Stan Bujalski, Anthony Patti, Scott Monroe, and Gerry Panuczak. Guests included Ron Beard, John Warzoka, Cathy Conway, and Steve Baert.

Mr. Panuczak presented the draft minutes for the May 30, 2024 meeting. Mr. Bujalski asked that we amend the draft minutes to include our discussion regarding road standards. Mr. Monroe asked that we might include the current versions of Campton and Thornton road standards with Water and Roads Committee documentation. Mr. Monroe motioned to approve minutes as amended. Mr. Panuczak seconded the motion. All committee members present voted affirmative.

Mr. Sceggel did not attend, so no report on Master Plan or SRF funding.

Mr. Warzoka and Ms. Conway represented Horizon Engineering. They do much municipal work in northern New Hampshire, including Owls Nest as a reference. They discussed what they can do for the Village District in both water and roads. They discussed advocating for SRF and USDA funding of projects, and discussed capacity planning. They work on either a project by project basis, or a master services agreement. They can transition from our current engineering firm, and have experience in such transitions. Mr. Beard will work with Horizon Engineering to get a proposal and transition plan. Mr. Patti suggested that the Commissioners sponsor a survey of property usage (full time, part time, business rental).

Mr. Baert reported on the well cleaning project. He said the well cleaning went well, the screens were cleaned, and the transducer was lowered. The capacity has now improved to be better than the previously cleaned well. Mr. Baert and Mr. Beard would create a maintenance plan for both wells. Mr. Baert also reported that the leak detection work has been completed, two leaks were identified, and both were fixed.

The next meeting is scheduled for July 26, 2024 at 09:00.

The Water and Roads Committee meeting was concluded at 10:22 hours on June 28, 2024.

Respectfully Submitted

Gerry Panuczak

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Waterville Estates Village District

Water and Roads Committee Minutes – July 26, 2024

The Water and Roads Committee was called to order at 09:01 hours on July 26, 2024. Present were Stan Bujalski, Anthony Patti, Scott Monroe, and Gerry Panuczak. Guests included Ron Beard.

Mr. Panuczak presented an email from Mr. Sceggell regarding the NHDES grant submission. The email stated that the Village District scored more points than last year, however, we were further down on the award list. Mr. Beard would provide more specific information from NHDES regarding our submission. Mr. Patti suggested that this committee obtain survey information that will be gathered by the Mailbox Committee.

Mr. Beard reported on water projects. A large leak on Morrill Drive was found and repaired. The Pegwood project has restarted. The new line is being tested and hookups will begin. Paving will be done to complete the project. Trimming around storage tanks has been completed. Mr. Beard will follow-up with Horizon as we have not received there quote as yet. Mr. Monroe asked if the Village District should obtain better leak detection equipment. Mr. Beard stated that the District has the best equipment within current budget considerations.

Mr. Beard reported on roads projects. R&D paving has submitted a quote to pave Wetamoo, Pegwood, Procupine, and Ryan Circle. The paving will be completed following the Pegwood work. Mr. Beard suggested homeowners on to be paved roads contact R&D Paving if they want quotes on driveway paving (603 934 6745). Mr, Beard handed out the current road standards for both Campton and Thornton. Mr. Bujalski asked if the to be paved roads can be candidates for turnover to the towns of Campton and Thornton. This would involve petition warrant articles.

Mr. Beard shared a snowmaking update. Two 10,000 gallon tanks have been ordered, and the installation should be completed by October 2024. Mr. Bujalski recommended that a qualified plumber be hired so that the tanks can be used in the District water system in an emergency.

The next meeting is scheduled for August 15, 2024 at 09:00. Mr. Bujalski suggested that the Committee use the third Friday of each month as a standard meeting date.

The Water and Roads Committee meeting was concluded at 10:10 hours on July 26, 2024.

Respectfully Submitted

Gerry Panuczak

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Waterville Estates Village District

Water and Roads Committee Minutes – August 23, 2024

The Water and Roads Committee was called to order at 09:03 hours on August 23, 2024. Present were Stan Bujalski, Anthony Patti, Scott Monroe, and Gerry Panuczak. Guests included Ron Beard, Nick Sceggell, Steve Baert, Harry Bertino, and Boby Ketcham.

Mr. Sceggell gave an update on grants and loans submissions. He concluded that we will not be eligible during this round of funding. Mr. Sceggell discussed that our average daily peak demand is currently 200,000 gallons per day. Mr. Baert stated that the District should consider more storage at Pegwood as the site is prepared for this, and use the Sunset location for gravity feed only. He suggested that the next grant/loan submission should include a study on this.

Mr. Baert gave an update on the Pegwood line replacement project. The project should be completed by the end of September 2024.

Mr. Baert gave an update on the paving projects. Top and bottom of Weetamoo, Porcupine Drive, and Ryan Circle will be paved by the end of September 2024.

Public Comment:

Mr. Bertino stated that the committee should be considering peak demand at community buildout.

Ms. Ketcham asked about the status of digging on Hodgeman Hill. Mr. Baert stated that it will be addressed following the completion of the Pegwood project.

Mr. Ketcham asked why all vegetation was cleared from the Pegwood storage tand area. Mr. Beard stated that it was a requirement of NHDES. Mr. Ketcham asked what kind of vegetation van be replanted. Mr. Beard will look into this with NHDES. (Mr. Beard reported after the meeting via email that NHDES accepts only grass).

The Water and Roads Committee meeting was concluded at 10:10 hours on July 26, 2024.

Respectfully Submitted

Gerry Panuczak

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Waterville Estates Village District

Water and Roads Committee Minutes – October 18, 2024

The Water and Roads Committee was called to order at 10:00 hours on October 18, 2024. Present were Stan Bujalski, Anthony Patti, Scott Monroe, and Gerry Panuczak. Guests included Ron Beard, Steve Baert, and Harry Bertino.

Mr. Panuczak presented the proposals from Horizon Engineering. Mr. Bujalski asked if there were grants/loans available for such costs. Mr. Patti and Mr. Bujalski asked for more time to review the proposals prior to voting. Mr. Monroe asked what events led us to the current roads and water situation. Mr. Monroe asked is one boring per road enough. Mr. Panuczak suggested any questions be submitted by 10/25/2024, and they will be forwarded to Horizon for comment.

Mr. Baert reviewed the roads projects. Pegwood project is complete. Paving will start next week. Following cleanup.

Mr. Baert gave an update on water projects. The ski bowl fence is going in. Mr. Baert has presented water needs for 2025 to the Budget Advisory Committee. Meters and replacing pipes in various pump houses were recommended.

The next meeting is scheduled for 11/22/2024 at 09:00

The Water and Roads Committee meeting was concluded at 10:57 hours on October 18, 2024.

Respectfully Submitted

Gerry Panuczak

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Water & Roads Committee

April 18, 2025 – 9:00 AM

562 Winterbrook Road, Campton, NH 03223

Members in Attendance: Gerry Panuczak, Scott Monroe, Stan Bujalski, Anthony Patti

Other Attendees: Staff - Allison Smith, Ron Beard, Steve Baert; Public - Scott Sallaway, Archie Jackson

Call to Order: Gerry Panuczak (chair) called the meeting to order at 9:02 AM.

Approval of Prior Minutes

a. March 21, 2025

Mr. Bujalski pointed out a scrivener's error in paragraph 7, line 1: "shaed" should be "shared". Mr. Panuczak corrected the error.

Motion to adopted as corrected by Mr. Patti, seconded by Mr. Monroe. Carried unanimously.

New Member

Mr. Panuczak introduced Archie Jackson who will be a new member to the committee after the April 23, 2025 Commissioner meeting. Mr. Jackson spoke about his background in construction and current work with the town of Bedford, NH where he works as the roads coordinator and infrastructure inspector.

Water Master Plan Update

Mr. Baert shared an update on the Horizon's Engineering water master plan. Horizon's is working diligently with staff and is progressing swiftly. Mr. Panuczak asked about working with Horizon's on grant/loan funding for the Water Department, to which Mr. Baert stated he would confirm they are working on that with the Mast Plan and if not will engage in talks with them on such.

Mr. Bujalski expressed concern about the need for change orders to be completed for work above and beyond the original contract to ensure a proper record is kept. A discussion regarding the work and billing of prior engineering firm Dubois & King ensued.

Roads Master Plan Update

Mr. Panuczak stated that the approval of the WEVD annual budget means that the contract with Horizon's Engineering for a road study can be signed. Mr. Beard he will be doing so within the next week.

Water Ordinance & Commercial Rate Discussion

Mr. Panuczak summarized sentiments from the community regarding the fairness of the water billing structure and concerns about its ability to properly support the future needs of the Water Department. Mr. Panuczak introduced Mr. Sallaway, 110 Snowood Drive, and thanked him for approaching the committee regarding the implementation of a different billing structure.

Mr. Sallaway explained that the current structure serves the purpose of apportioning the budget to collect to all accounts, but sees that it lacks the ability to properly plan for large future repairs and

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doesn't account for properties being used as short-term rentals. He had first brought this up to the WEA but was referred to this committee.

Mr. Panuczak encouraged members to think about ways that the billing structure could be modified. This will be a recurring item on future agendas to discuss any ideas members may come up with.

Mr. Patti asked about the establishment of a sinking fund to save for future projects. Mr. Beard explained the Capital Improvement Program (CIP) Committee process that was established at the 2025 WEVD Annual Meeting and how it could be used for the water system.

Mr. Monroe asked if Campton had a rental tax on short-term rentals. Multiple members of the committee stated no and that Thornton also doesn't have anything pertaining to short-term rentals. Mr. Monroe asked about Room & Meals Tax being paid by short-term rentals and requirements to register with the state. Mr. Jackson explained that booking through Airbnb auto calculates the taxes and pays it to the state and that there is no requirement to register the rental with the state but that some municipalities have licensing programs for such rentals.

Other Business

Mr. Bujalski asked about the progress towards system redundancy. Mr. Baert and Mr. Beard stated that this should be part of the water master plan prepared by Horizon's Engineering. Mr. Bujalski expressed frustration that this topic has fallen to the wayside and asked that it be a recurring agenda item. Mr. Sallaway suggested adding an 'old business' section to the agendas to track such items.

Next Meeting: May 30, 2025 @ 9:00 AM

Motion to adjourn by Mr. Panuczak, seconded by Mr. Monroe. Carried unanimously.

Meeting adjourned at 10:45 AM

Minutes prepared by Allison Smith

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Waterville Estates Village District

Water and Roads Committee Minutes – July 18, 2025

The Water and Roads Committee was called to order at 09:00 hours on July 18, 2025. Present were Stan Bujalski, Archie Jackson, Scott Monroe, and Gerry Panuczak. Guests included Steve Baert.

Mr. Baert stated that the Water Master Plan was in the final stages of preparation. And Horizons Engineering will shift the Roads Master Plan upon completion.

Mr. Baert shared the status of the culvert and road repair on Weetamoo Road. The cost will be $13,800.

Mr. Baert shared status of low water pressure on Holland Trail. Pipe too small and use too much. He will request the use of a booster pump from state.

Mr. Baert shared that his staff has been working on ditching and roadside cutting. Paving will be done on Pegwood and Campton Mountain.

The committee discussed bidding procedures for larger projects.

The Committee discussed possible solar and wind to supplement electric costs.

read the 1/24/2025 draft minutes. Mr. Monroe motioned to approve. Mr. Patti seconded the motion. All members voted affirmative.

The Water and Roads Committee meeting was concluded at 10:12 hours on July 18, 2025.

Respectfully Submitted

Gerry Panuczak

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