Village of Roseville Water Utility Asset Management Plan & Program Documentation

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Disclaimer

Note the data presented in this plan was taken from the Village's best available data at the time of this study. In addition, cost estimates were compiled from recent bid tabulations and best estimates and should be used for planning purposes only. Prior to starting any project, detailed cost estimates should be obtained from licensed engineers and/or vendors.

SECTION 1: EXECUTIVE SUMMARY

Representatives from the Ohio Rural Community Assistance Program worked with Village of Roseville to collect administrative, operational and financial data to prepare a comprehensive Asset Management Plan and compile program documentation for their drinking water utility.

Asset Management represents a change in most utility's management philosophy. Instead of a run to failure approach, utilities actively manage asset maintenance and replacement based on performance monitoring of the condition of that particular asset. Infrastructure is managed based on monitoring field conditions of asset components and budgeting for their eventual rehabilitation and/or replacement.

Benefits of an asset management program include: 1) leaving a legacy of information about your utility's assets, their condition and maintenance history, 2) extending useful life of assets through improved maintenance thus maximizing public investment, and 3) creating a more realistic model of revenue sufficiency needs beyond the annual appropriation process.

MANAGERIAL CAPACITY - Compliance**:** The Utility is in compliance with federal and state safe drinking water regulations. The last compliance inspection included recommendations which the utility is in process of addressing.

Current Best Management Practices**:**

- Annual Main Line Flushing
- Annual Hydrant Inspections and Planned Replacement
- Established Capital Improvement Reserve (Water Improvement and Equipment Replacement)
- Active Backflow Prevention Program
- Implementing Meter Replacement & Relocation Program

Recommendations for Improvement Maintenance**:**

- Implement a Valve Exercising Program.
- More Active Leak Detection Program (budgeted addition $4,000 annually for leak detection services).

Operating Ratio**:** Utility has had an operating ratio **below** 1.0 from 2013 thru 2018 (positive cash flow).

Rules and Regulations**:** No recommended changes. Unaccounted for water loss on private property leaking service lines will be addressed by installing new meters at the curb stop.

TECHNICAL CAPACITY - Water Utility Summary**:** Updated GIS program, collected detailed inventory of over 470 assets with replacement value of around $14 million. Note the summary does not include the treatment plant or source assets as they will be decommissioned in 2021.

- Connections around 929, 94% residential (2018)
- Around 14.8 miles (78,351 lf) of mains 1" to 12", 61% original construction, 70+ years old
- 83 hydrants – 12% may be original construction, 76% since the 1990s
- 161 main valves

- 2 underground tanks totaling 225 thousand gallons storage
- 2 booster stations
- Average daily flow around 154,5000 gallons (2018)
- Water loss/unaccounted for water 33% (2018)

Implementation of an asset management program requires sufficient revenue to properly maintain, actively repair and rehab, and eventually replace infrastructure prior to failure.

Planning for Asset Rehab and Replacement**:**

- Identified around $2,479,212 in short-lived asset replacement/predictive maintenance costs (including hydrants, meters), periodic inspection, rehab costs for tank etc. Based on estimated useful life, need to collect around $100,569 annually. The goal is to save 100% of costs over the useful life of the asset. Not fully budgeted. Recommendation is to keep contribution at current level of $15,000 to this reserve account.

- Identified around $11.5 million in longer lived capital replacement costs. Goal is to collect around 15% of replacement costs over 50 years or around $34,614 annually. This allows the utility to have some cash on hand to fund preconstruction costs or small projects. Not fully budgeted. Recommendation is to keep contribution at current level of $20,000 to this reserve account.

5 Year Capital Improvement Plan**:** Identified around $3 million in CI projects. Note the primary projects will be interconnection with Muskingum County and a meter replacement that moves meters from the building to the curb stop. This best management practice should reduce water loss and better recover revenue for the Utility. Once the interconnection with Muskingum County and the meter replacement project are implemented, the Village will then identify any needed line replacement projects. Both of these projects were expensed with debt financing.

FINANCIAL CAPACITY - Revenue Sufficiency Needs**:** Completed rate model using above targets and recognizing the impact of inflation (3%).

- In order to have sufficient revenue to implement the plan, the Village needs to have a 5% rate adjustment to both minimums and usage charges from 2020 through 2025. In 2026, rate increases can go back to the 3.5% automatic annual adjustments.
- The above constitutes an increase of around $30.00 annually - $5.00 bi-monthly billing if using around 4,500 gallons per month (9,000 bi-monthly).
- Estimated usage per month per residential unit is around 2,500 gallons (5,000 bi-monthly). Current bill for these users is around $411 annually. Above recommendations increase costs around $20 a year ($3.33 bi-monthly billing).
- If using average (5,000 bi-monthly), combined rates would equal around 2.37% of MHI.

Remember – still around 1.5 cent per gallon for safe drinking water 24/7!

SECTION 2: INTRODUCTION

Implementing an asset management program represents a change in management philosophy. Currently most utilities operate their underground infrastructure with a "run to failure" philosophy, i.e., install underground assets and run until they collapse, break, or someone complains. An asset management program, on the other hand, emphasizes maintaining assets as they age to extend useful life. This requires knowing **what** you have and **where it is located**, monitoring **performance** of the facilities and developing a plan to better **maintain** and eventually **replace** individual assets. Infrastructure is managed based on monitoring the real field **condition** of asset components and then budgeting for their eventual rehabilitation and/or replacement. See **Appendix A** for more background information on asset management.

An asset management program incorporates the following best practices for improved maintenance. Maintenance strategies vary by the asset, criticality, condition and operating history. Operating and maintenance strategies can be broadly classified as preventive, predictive and reactive (emergency).

- **Preventive** maintenance is the care and servicing of equipment and facilities for the purpose of keeping facilities in proper operating condition. The base level for preventive maintenance is scheduled according to the equipment manufacturer recommendations and industry accepted best practices. Best practices are particularly important for distribution systems since no owner's manual exists.

- **Predictive** maintenance activities are techniques that determine the condition of facilities to "predict" when repair and rehab activity should be performed. The approach has proven to demonstrate cost savings over routine or time based repair and replacement. Tasks are performed only when warranted based on condition monitoring. Infrastructure is inspected and monitored for early warning signs of impending failure. Repair and rehab schedules can then be developed based on this knowledge. The goal of predictive maintenance is to perform the activity when it is most cost effective, prior to failure but not before the asset has exhausted its useful life.

- **Reactive** (emergency) maintenance activities are scheduled immediately upon equipment failure or after inspection activities reveal an imminent problem that needs corrected to avoid an emergency situation. This maintenance strategy is commonly referred to as "run to failure".

"Run to Failure" is a reasonable strategy for low risk items, such as light bulbs. However, most assets should be managed with a comprehensive preventive and predictive maintenance program to extend useful life and mitigate the consequence of failure. Over time, a good preventive maintenance program will reduce repair costs and improve reliability of the infrastructure. Assets that are essential to proper operation of a utility should follow the strictest maintenance program with careful attention to performance monitoring and predictive maintenance activities.

Long Term Implementation

As part of Senate Bill 2, Ohio's Asset Management Program for water utilities requires community public water utilities to track the following operational metrics. See **Table 1** below. These metrics should be tracked and updated annually. See **Appendix B** for tracking table. Note goals below for Roseville's Water Utility.

Table 1: Ohio EPA Operational Metrics

Operational Metrics	Goal
Operating Ratio (Expenses/Revenue)	Below 1
Operating Cost to Produce Water per Service Connection – All Expenses	$750 or Under
Breaks per 10 Miles of Distribution Pipe (Assuming Depressurization Events, Boil Advisories Issued)	2
Nonrevenue Water (Percentage Loss - %)	15
Maintenance Tasks Per Year (Planned V Unplanned) on Vertical Assets	0*
Technical Service Complaints	2

*Once the utility connects with Muskingum County, they will have no above ground facilities.

The Asset Management Plan provides a roadmap to move the Water Utility towards an improved asset management program. **Section 3** covers the administration and management of the Water Utility. **Section 4** overviews the background and technical capacity. **Section 5** presents a plan to move the Water Utility towards improved longer term financial capacity.

SECTION 3: ADMINISTRATIVE REVIEW/MANAGERIAL CAPACITY

A successful asset management program must first have the support of the governing board along with adequate management practices to implement the program.

The following consist of an administrative review of the Water Utility's management practices. It serves to demonstrate ownership accountability to effectively operate, maintain and provide for longer term financial sustainability. It is not intended to be an administrative audit of all functions of the Village, just those impacting the Water Utility.

A. Legal Authority and Management Policies

Roseville's Water Utility is governed by Village Council. The Village has an Administrator that supervises staff responsible for operation and maintenance activities for the water utility. The Administrator is supervised by the Mayor. See **Appendix C** for organizational chart and job descriptions. Currently Roseville has a contract Operator of Record. Once the plant is decommissioned, the Village has current staff that will meet the operator certification requirements (Distribution Class I). Positions assigned to the Water Utility operations and maintenance include an Operator of Record (Class III Treatment), Operator I (Class I Distribution), and Water Laborer (Unlicensed). Positions related to billing and finance include the Chief Fiscal Officer (supervised by the Mayor) and the Utilities Clerk (supervised by the Chief Fiscal Officer).

Succession Planning

Roseville does have a plan for continuity of operations in the event of the operator of record's absence. See Contingency Plan. They do have a step system where the Operator I can move into the Operator II position (currently vacant) and the Water Laborer into an Operator 1.

B. Demonstration of Best Management Practices

One measure of effective management is the compliance status of a utility. See **Appendix D** for the most recent inspection survey from Ohio EPA. Note that the majority of recommendations and the two violations are related to the treatment plant and will not be an issue after decommissioned. The Utility has incorporated recommendations relating to water loss, predictive maintenance of storage facilities, and installing a transfer switch for the booster stations to connect to auxiliary power if needed.

Managerial best management practices also include budgeting for and ensuring that preventive maintenance activities are part of a water utility's operations.

Following is a list of Roseville's preventive maintenance practices. See **Appendix D** for more detail.

- Flushing: The Village currently flushes all distribution mains annually.
- Hydrant Flushing and Inspections: Hydrants are inspected during flushing and flow tested every four years. Condition is assessed and repair/rehab scheduled as needed.
- Valve Exercising: The Village has a written valve exercising plan to be implemented in 2019. No additional operating funds budgeted for this activity.

- Pipe Condition Assessment: The Village budgeted for annual leak detection to be added to the operating budget. In addition the Village responds aggressively to fix leaks detected. Water loss is an issue at 33%.
- Backflow Prevention: Administered by Muskingum County Health Department. The Village enforces shut-offs if not in compliance.
- Security: Storage facilities are below grade. The Village did budget to install transfer switches at the booster stations for portable generators.
- Predictive Monitoring: The Village has incorporated annual inspection costs and periodic rehabilitation costs for their storage facilities as part of their contribution to water reserve accounts. See **Section 4**.
- Planning for Meter Replacement: Roseville has a total meter replacement project planned for 2021. All meters will be moved to the curb stop.

- Storage: The storage towers are visually inspected twice a year. Staff plan to drain, clean and inspect every 5 years. Any maintenance/repairs needed will be completed based on the condition assessment.

- Inventory Updates: Roseville is a member of the Ohio RCAP GIS Cooperative and as such will keep maps and inventories updated using this system. In addition, they will use this software for maintenance tracking.

- In 2008, Roseville implemented financial best management practices and created a reserve accounts for water equipment replacement and water improvement. They also instituted an automatic annual inflationary increase of 3.5%.

Roseville is already implementing many preventive best management practices. Annual leak detection services was the only additional cost added to the operating budget for improvement maintenance.

Management also needs to demonstrate the financial capacity of their water utility. One measure of financial health is an operating ratio below 1.0 (expenses/revenues). Roseville has had an operating ratio below 1.0 for the last six years. See **Appendix D** for documentation.

C. Internal/External Communication and Professional Development

The Village Administrator attends all Council meetings and reports on any projects, maintenance and performance metrics concerning the water utility. The Fiscal Officer reports on finances. These meetings are open to the public. In addition, staff have access to training and board members have completed some training specific to utility management. The Village Administrator oversees all aspects of the water utility's operation and maintenance.

Roseville's water use rules do address a process for customer complaints. These are logged and addressed as part of the work order process. The Water Utility staff do have access and use external contacts to help provide technical and financial assistance to operate and maintain the facility. See **Appendix E**.

D. Rules and Regulations

The review is not intended to be a comprehensive review of all rules of the Village but rather one to identify best management practices that relate to asset management. See **Appendix F**.

1. Internal Policies

Water utilities need internal contracting and purchasing policies that allow staff to respond to routine and emergency needs. Guidance should also be outlined for use of Village equipment. See **Appendix F** for copies of the Village's policies.

2. Customer Policies

Water use rules are reviewed to determine if the owner has adequate legal authority and methods of enforcement to follow best management practices for asset management.

The Village has addressed best management practices in many of its rules and regulations. They address lateral or service line installation and inspections, billing and collections, delinquencies and shut off procedures, backflow and cross connection control. Because meters will be moved to the curb stop, no private property inspection program is needed to address water loss on private property due to service line condition.

3. A Note on Easements & New Development

Easements give a water utility the right to install and maintain facilities on property not owned by the public entity. The goal is that all easements remain clear of any buildings, trees, and extensive landscaping to allow equipment access for maintenance of the distribution system.

4. Billing and Collections

Billing and collection policies are contained in the rules and regulations. Water and sewer charges are billed bi-monthly. All accounts are metered. The Village has had an annual rate increase of 3.5% since 2008. Note in some years, this increase has been waived. The 2019 rate is $59.26 for the first 480 cf and $4.87 per 100 cubic feet thereafter. The rules do contain language detailing delinquency and shut off procedures and events relating to the right of denial of service. Roseville does back-up billing data and records.

5. Customer Outreach and Education Programs

Few, if any, utility customers have knowledge of the extent of capital investment needed to keep infrastructure in proper working condition. In addition, they are provided few educational materials explaining their responsibilities as a user of the water facilities. Utilities budget little, if anything, for customer education and public relations. Often the cost of a gallon of treated safe drinking water is less than a penny. Let your customers know that their cost for safe drinking water is the **BEST** deal in town. Roseville does have a good web site and this could be used for customer outreach and education. The Village might want to consider an outreach and educational program on the meter replacement project as bills will likely go up just because the meters will be more accurate and property owners will be paying for leaking water on their service lines for the first time. The Village uses local press and sends notices to homeowners when construction activities may impact their property. The Village is up to date on its Consumer Confidence Report (CCR).

Note the development of a new rules, regulations and programs should be developed in conjunction with legal review and input from the Water Utility's law director. Any sample language provided in this report is for reference only and has not been reviewed by legal counsel in relation to state and local statutes.

SECTION 4: UTILITY OVERVIEW/TECHNICAL CAPACITY

This Section provides background data and summarizes the technical components of the Village's water utility. It includes a description of treatment, customer base as well as a summary of the asset inventory and rehabilitation/replacement needs for pertinent assets.

A. System Description

Roseville is located 10 miles south of Zanesville along Moxahala Creek in Perry and Muskingum Counties. State Route 93 runs north/south to the west of the Village. The Village was platted in 1812 but not incorporated until 1840. In the early 20th century, Roseville was known for its numerous potteries located around the area due to the abundance of clay. This included Roseville Pottery, founded in 1892 (moved to Zanesville in 1898), Nelson McCoy Sanitary Stoneware Company (1910) and Ransbottom Pottery Company (1910). The only remaining pottery manufacturer in Roseville is Burley Clay. Census data show population losses and gains over the last hundred years with the largest population of 2,113 recorded in 1910 and the smallest in 1930 at 1,413. The current population of 1,852 is a 4.3% decrease from the 1990 Census. As such, Roseville anticipates limited growth for the planning period addressed in this report.

The Village currently owns and operates a treatment plant and distribution facilities. In 2020, the Village will interconnect with Muskingum County, decommission the water treatment plant and purchase bulk water. The Roseville Public Water Utility requires a Class II license; this will change to a Class I Distribution when the interconnection is complete. See **Appendix G** for treatment schematic and background data. The Village serves around 929 connections. The majority of these connections are residential (94%). All connections are metered and the Village does read meters for all unbilled accounts and tracks water loss/nonrevenue water. See **Table 2** below for a summary.

Table 2: Water Utility Summary

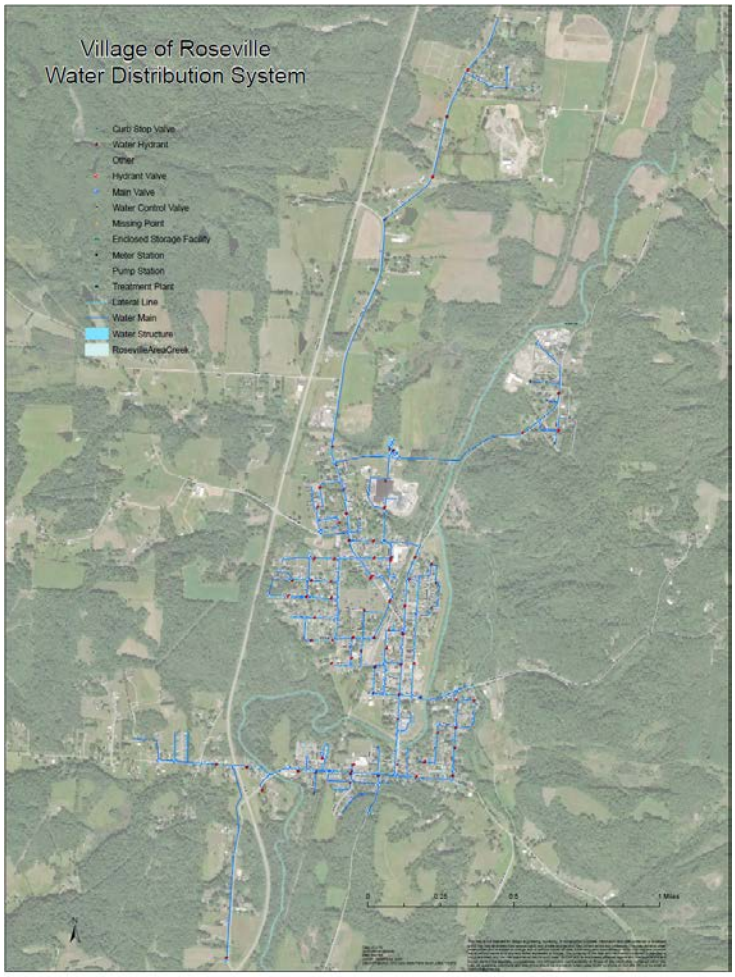
Background Data	Unit
System Population – 2010 US Census	1,852
Number of Connections – 2018 Average	929
# Residential	875
# Commercial	44
Average Daily Flow (MGD) - 2018	0.154
Peak Flow (MGD) - 1/2018	0.2298
WTP/Well Daily Capacity MGD	0.500
Plant Utilization	31%
Interconnections	1 in 2020, Muskingum County
Storage Capacity – MGD	0.225
Unaccounted for Water - 2018	33%
Source	3 Wells

The Water Utility has capacity for growth. Average daily flow (ADF) is around 69% of storage capacity. The utility has storage for over 24 hours of ADF.

B. Inventory Summary

The Village inventoried their water utility using Ohio RCAP's GIS mapping services. Along with geo-locating assets, the following attributes were assigned, when known, to the inventoried assets: installation date, size or capacity, estimated useful life, materials, condition, consequence of failure and corresponding risk, as well as estimated rehabilitation and/or replacement costs. The following summary is based on data RCAP field verified. Note the detailed inventory can be found in **Appendix H**. See **Figure 1** below for map view of the Village's water utility.

Figure 1: Map View of Water Utility



The Water Utility has around 14.8 miles of distribution mains 1" to 12" in diameter along with 83 hydrants and 161 main valves. The two below grade storage facilities total 225,000 gallons. The Village has over 470 significant assets to operate, monitor and maintain for its water facility alone. See **Table 3** following.

Table 3: Inventory Summary

Asset	Description
Distribution Mains	78,351 linear feet from 1" to 12"; around 14.8 miles
Hydrants	83
System Valves	161
Storage	2 Below Grade, Capacity around 225,000 Gallons
Source Water	Will be properly abandoned when interconnect with MC.
Treatment	Will be properly abandoned when interconnect with MC.
Security	WTP and Wells Currently Fenced
Auxiliary Power	Booster Stations Need Transfer Switch

C. Criticality or Risk of Failure Evaluation

Some assets are more important than others in making sure that customers receive safe drinking water and all regulatory requirements are being met. Infrastructure components should be prioritized to target critical assets and to improve practices used for routine operation and maintenance. This involves reviewing all assets and recording their **condition** (likelihood of failure), **redundancy** (the number of back-up assets) and **criticality** (consequence of failure). These factors are given a numeric rating which then equates to level of risk. See **Appendix I** for the methodology used to assess levels of risk. See **Appendix H** for risk assessments results by inventoried asset. Identifying critical assets and a plan of action for improved maintenance and performance monitoring will better ensure that a utility delivers reliable service and better protects public health.

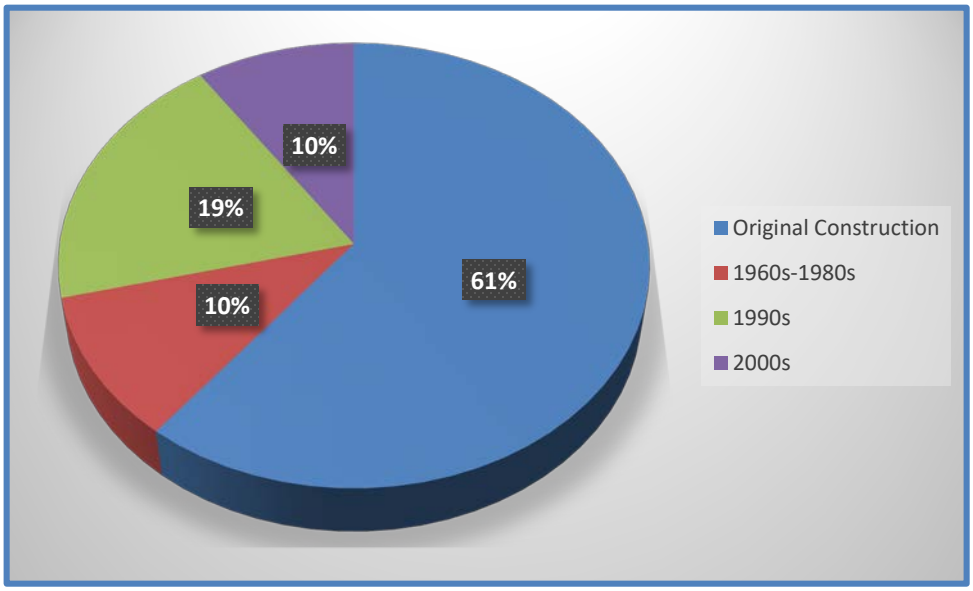
1. Condition Assessment – Probability of Failure

The condition of an asset should be used to develop rehab and replacement schedules. Closely monitoring condition based on performance indicators is a large part of an asset management program. While age is often an indicator of condition, proper maintenance of assets extends useful life and better protects the public's investment.

When starting an asset management program, condition is often originally assessed based on age. This can be augmented with documentation of maintenance history if available. In addition, condition can be affected by many factors including site conditions, substandard construction materials, problems with installation, lack of inspection and flaws in design parameters.

Figure 2 following demonstrates the construction eras of Roseville's distribution mains.

Figure 2: Construction Eras of Distribution Mains



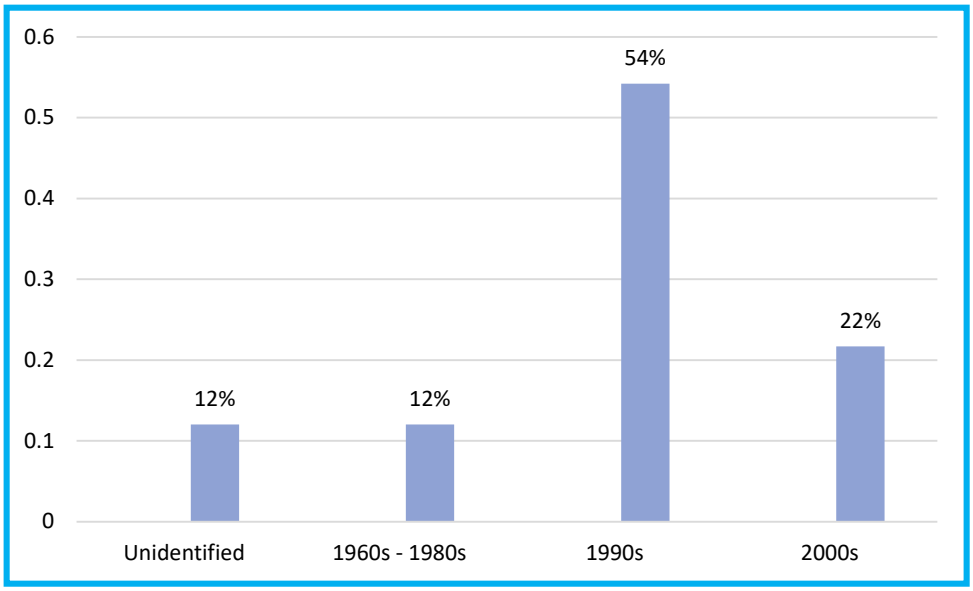
Roughly 61% of the distribution facilities are believed to be of original construction, around the 1930s to 40s, so around 70 to 80 years old. This pipe is ductile iron. Around 10% were installed in the 1960s-1980s and the remaining 29% since the 1990s. The most recent lines installed are primarily related to water line extensions and not replacement of original pipe.

As noted above, the condition of distribution facilities was initially rated based on age. Once the Village starts tracking maintenance and conducting leak detection services, this condition rating can be changed to reflect real world conditions of pipe. Remember an asset management program should develop rehab and replacement schedules based on the performance and condition of that asset, not necessarily its age.

In Roseville's case, around 10% of distribution mains would be considered relatively new and were assigned a condition of excellent (1). Pipe believed to be of original construction was given a condition rating of poor (4). Note valves tend to be installed at the same time as main construction and thus were given the same condition rating as the corresponding water mains. See **Appendix H** for a condition rating of pipe segments, valves and hydrants. Once the Water Utility implements their valve exercising program, condition ratings of valves should be updated to reflect field conditions. Any inoperable valves should be replaced.

Hydrant installation eras, or age, often reflect the focus on replacing above ground infrastructure while ignoring underground assts. Around 76% of Roseville's hydrants were installed since the 1990s. Only around 12% are believed to be of original construction (as opposed to 61% of lines). The remaining hydrants were installed from the 1960s thru the 1980s (12%). This is not inconsistent with other utilities. Above ground facilities tend to be better maintained because they are visible.

Figure 3: Construction Eras of Hydrants



Other assets associated with distribution include two booster stations (Rosehill and Lake) and two below grade storage facilities (Tad Road - 75,000 gallons and Old State Road - 150,000 gallons). The booster stations were given a rating of excellent. The storage facilities are of original construction, around 1939, and were given a condition rating of good. They are periodically inspected and maintained. As the Village implements the asset management program, condition ratings should be updated to reflect maintenance activities and overall performance of that asset.

2. Consequence of Failure - Risk (Criticality)

Once again, see **Appendix I** for the criticality exercise summary and the methodology to assess levels of risk of failure. See **Appendix H** for assets ranked by risk. The 6 levels of consequence of failure go from an insignificant disruption (1) to epic, extended outages of service (6). Roseville's inventoried assets were assigned a consequence of failure based on capacity and redundancy. The overall risk was assessed by multiplying the condition and the consequence of failure. **Table 4** following provides a summary of those assets that scored a higher risk factor or criticality. Also listed are corresponding maintenance strategies.

Table 4: Criticality/Risk

Asset	Highest Rick Year Installed	Risk Level	Management Strategies
Distribution Mains	Original - 1939	12	Larger (6" & 8"), oldest lines. Monitor for leaks, breakages. Ability to feed customers from other sections of distribution.
Valves	Original - 1939	12	These primarily co-inside with above mains. The Valve Exercising Program will address condition and functionality of valves. Any inoperable valves will be repaired and/or replaced.
Hydrants	Original - 1939	6	Failure of any one hydrant was not considered to have a high criticality. Two scored a 6 due to poorer condition. Note the utility has replaced hydrants with around 76% installed since the 1990s.
Booster Stations	2008, 2019	4	Consequence of failure is high, but condition is excellent. Daily visual inspection. Utility does set aside money in a reserve account for equipment replacement.
Storage	Original – 1939	8	The storage facilities are in good condition but have a high consequence of failure. However they do have redundancies. Visually inspect every six months and draining, cleaning and inspecting every five years. Targets for capital improvements included replacement with an above ground facility.

Along with the above routine and periodic maintenance strategies, the Village has also been saving for rehab and replacement in their Water Equipment and Improvements Reserve Accounts. See **Section 5** following.

D. Operation and Maintenance Program

See **Appendix J** for documentation of the Village's OM standard operating practices and maintenance strategies. This **Appendix** includes samples of SOPs and sample work orders. In addition, Roseville is currently a member of RCAP's GIS Cooperative and, as such, has access to apps developed to track hydrant, valve and line segment condition and maintenance. See **Table 5** following for summary of maintenance schedules for pertinent assets.

Table 5: Maintenance Strategies

Asset	Maintenance	Time Period
Source	Source will be properly abandoned with interconnection to Muskingum County.	2020
Treatment	Treatment plant will be decommissioned with interconnection to Muskingum County.	2020
Storage	Visual inspect condition of tank, 2 concrete tanks both buried, periodic draining/cleaning.	Every 6 months visual inspection, ever 5 years drain/clean.
Distribution	Flushing and leak detection.	Annually
Hydrants	Flushed and inspected. Rehab, replace as needed.	Annually
Valves	Exercise and determine condition. Repair, replace based on condition.	Critical valves annually, noncritical on 5 year rotation.
Booster Stations	Visual Inspections, budgeting for repair/replacement of equipment.	Daily
Auxiliary Power	Once booster stations have transfer switch for portable generator, exercise transfer switch.	Weekly

E. Contingency Planning & Source Water Protection Plan

See **Appendix K** for a documentation of the Water Utility's Contingency Plan. The requirements of a Contingency Plan are addressed in Ohio Administrative Code Chapter 3745-85-01. Roseville's Contingency Plan was updated in 2019. The Village does not have an endorsed source water protection plan. They will be properly abandoning their wells once the interconnection is complete.

F. Planning for Infrastructure Rehabilitation and Replacement

Shifting from a run-to-failure management philosophy to one of planned maintenance and rehabilitation requires developing an asset replacement schedule. These schedules should be based on field monitoring of condition, criticality or risk of failure, and performance data.

RCAP recommends developing both replacement schedules for shorter lived assets and targets for major rehab and replacement for longer lived infrastructure. Financial targets need to be developed along with these schedules. The financial targets presented in this plan provide a base for utilities to determine longer term revenue sufficiency needs. Note these schedules should be updated based on condition and performance monitoring.

- Short lived assets (SLA) generally have a useful life of 20 years or less and are around or under $100,000. A utility can set their own parameters for defining short lived assets. The goal is to have cash on hand to fund 100% of replacement costs.

- In addition, the asset management plan recommends targets for saving for longer lived capital replacement. Self-funding large capital intensive projects is not a realistic goal. The cost of capital improvements should be borne across all users throughout the useful life of the facility. An initial

planning goal is to collect around 15% to 20% of total estimated costs over a 50 year period. These percentages represent estimated predevelopment costs for infrastructure projects, i.e. planning, design, and other professional studies. Having some cash on hand will save a utility from requiring debt financing for every study. Prior to accessing grants/loan subsidies, utilities must have a permit to install or plan approval.

- Schedules for periodic inspections and rehabilitation of certain assets need to be accounted for as well (for example, inspections & cleaning of wells and storage facilities, and painting and rehabbing of water towers). These expenses are generally hard to incorporate into the operating budget because they don't necessarily occur annually and tend to be a significant expense. The Village needs to save a portion of the costs annually.

Following is a summary of the Water Utility's estimated resources needed for short lived asset, predictive maintenance and longer lived asset replacement. See **Appendix L** for more detail.

Table 6: Estimated Replacement Costs

	Total Estimated Costs	Targeted Annual Contribution to CIR Fund
Short Lived Assets/Predictive Maintenance	$2.479,212	$100,569
Capital Replacement	$11,538,061	$34,614
Total	**$14,017,273**	**$135,183**

Note the above provides a base for decision making. It may, and will, take several years for some utilities to budget and implement the financial targets identified in their plan.

G. 5 Year Plan for Capital Projects

In order to better project financial investment needs and move away from a run-to-failure management philosophy, utilities should develop a multi-year infrastructure replacement plan.

Note that Roseville developed a 5 year capital project plan that includes estimated costs for that period. The top priority projects are anticipated in the next two to three years. Line replacement projects will be identified after the interconnection with Muskingum County and implementation of leak detection services. A summary is provided below. See **Appendix M** for a more detailed description of each project.

- For 2020 the interconnection with Muskingum County is planned. This is being financed through Muskingum County, 0% loan for 30 years. The total project costs is estimated at $132,000.
- Install transfer switch at booster stations for auxiliary power connection. Total project costs estimated at around $30,000, local funds.
- Install new meters and move meters to curb stop pit to help recover costs and reduce unaccounted for water on private property service lines. Estimated equipment purchase around $2.9 million with debt financing from OWDA. Utility will use own labor for installation.

- Around $3.1 million in capital project costs were estimated for the five year period. Once projects are complete, the Village will develop line replacement projects if needed depending on results of leak detection and reduction in nonrevenue water from meter project.

Estimated costs for capital improvements and targets for the annual contribution to water reserve accounts are incorporated into longer term revenue and expense projections in **Section 5**.

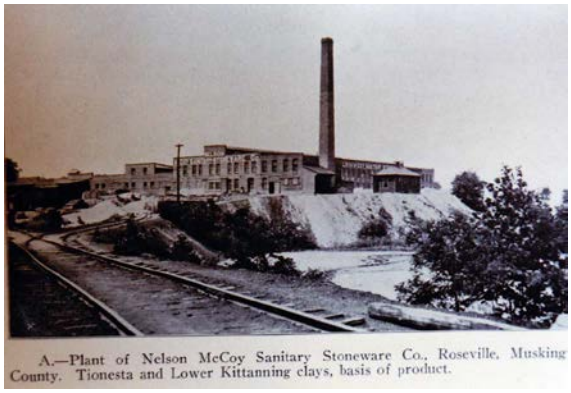
H. Safeguarding Money for Capital Projects

Money set-aside to repair, rehab and replace assets should be accounted for in separate reserve or "savings" accounts. Moving these dedicated funds out of the operating account is recommended to safeguard against depletion for unintended purposes. Efforts at asset management and capital improvement planning will not be successful unless the utility can establish the self-discipline to protect savings.

The capital projects are incorporated into the rate model discussed below. The following looks at an overall plan to implement the above recommendations and the corresponding impact to user rates.

SECTION 5: UTILITY RATES & REVENUE SUFFICIENCY

When developing a multiyear budget, RCAP models the expense projections first and **then** determines the **"right"** rate needed for revenue sufficiency to implement the improved asset management program. RCAP analyzes five years of past financial data to identify trends or anomalies in spending behavior. Then a typical year budget is developed to project future expenses while recognizing the impact of inflation. Resources needed for improved maintenance and asset replacement are then added to the multi-year budget. Once these projections are made **THEN** we look at revenue sufficiency and make recommendations for rate adjustments for the Plan's implementation. See **Appendix N** for the 10 year cash Proforma and other financial capacity documentation**.**



A.—Plant of Nelson McCoy Sanitary Stoneware Co., Roseville, Musking County. Tionesta and Lower Kittanning clays, basis of product.

The Water Utility has had a positive cash flow for the period reviewed (2013-2018). Roseville follows financial best management practices and has reserve funds for water improvements, water equipment replacement, and water debt service. The fund balance for the water operating account was around $300,000 in 2018, Water Improvement $132,000, Water Equipment Replacement $48,000, and Water Debt Service around $150,000. Roseville has an annual automatic rate increase of 3.5%. This was enacted in 2008 and, from time to time, has been waived. 2019 rates are $59.26 for the minimum which includes 480 cubic feet of usage (7.48 gallons equal 1 cubic foot) and $4.87 per 100 cubic feet of usage thereafter. The Village bills bi-monthly. Current rates at 4,500 gallons of usage per month represent 1.63% of the Village's MHI (2017 ACS - $34,784) or around $47.25 per month. Note average residential

usage is around 2,500 gallons per month which equates to around $34.25 per month or 1.2% of MHI. Rates are considered affordable to funding agencies at 1.5% of MHI per utility or 3% combined.

The Water Utility is not able to contribute the full amount of the replacement targets presented in **Section 4**. Following is the Utility's priorities for the next 10 years.

- Improved maintenance budget included around $4,000 in 2020 for third party leak detection services. This amount adjusted for inflation annually.

- Continue the annual contribution to the Water Improvement Fund at current levels of $20,000 and the Equipment Replacement Fund at $15,000.

- Continue annual contribution to Debt Service Fund to cover current debt. Balance of fund should cover one full year of all debt service payments. Debt service payments are anticipated to be around $154,000 in 2024.

- Note the annual debt service payment of around $80,000 for the water treatment plant will be retired in 2021. The meter replacement project debt services is anticipated to be around $145,500 annually so will need to increase the contribution to the Debt Service Fund by around $65,500 to cover the meter replacement project debt. Other lower debt payments will be retired in 2021 (OPWC) and 2023 (OWDA). The only other debt accounted for in the planning period is the 0% loan from Muskingum County, annual payments around $4,400.

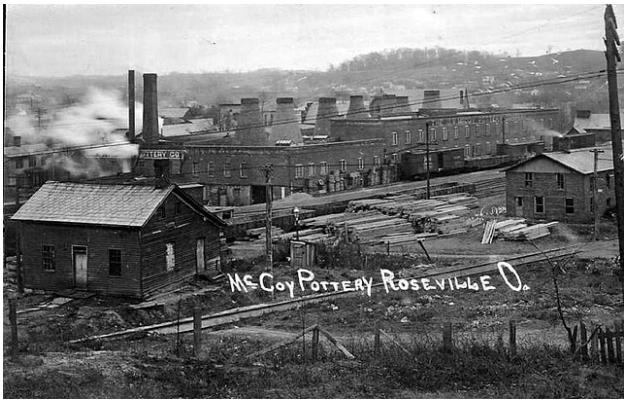
- Self-fund the transfer switch for the booster stations.

Since Roseville is in the middle of a transitioning from producing their own water to bulk purchasing, and will be installing new meters, RCAP made the following assumptions in developing the revenue side of the rate model. Note these are conservative estimates.

- Reduced current operating expenses attributed to treatment plant, used Fiscal Officer's budget.
- Increased cost recovery from new meters by 5% for all users.
- Reduced nonrevenue water by 5% due to change in meter placement.
- Added new customers for 71A project.

Based on the rate model presented, the Village can implement the above recommendations by instituting a 5% increase in 2020 - 2025 and the 3.5% inflationary increases thereafter. Note this equates to an annual increase of only $30 annually if using around 4,500 gallons a month and only $20 if an average residential user.

This would allow for sufficient revenue for periodic maintenance and rehab, and capital replacement while also recognizing inflationary increases to operating expenses. Maintaining the 5% increase will depend on the impact of the planned projects, i.e. if revenue recovery increases more than 5% and water loss is reduced by more than 5%, the Village may be able to transition back to the 3.5% increase sooner.



As stated above, Roseville's current water rates are 1.63% of MHI (ACS 2017 - $34,784) if using around 4,500 gallons per month. Note that the average residential monthly usage is around 2,500 and as such, water rates equate to around 1.2% of MHI. Combined water and sewer rates for 2019 are around 3.5% of MHI. With recommended adjustments, in 2020 they would be 3.64% of MHI (note MHI changes annually as well). If using the average (2,500 gallons per month), the percentage of combined rates to MHI drops to 2.37%. Most funding agencies consider combined sewer and water rates to be affordable at around 1.5% of MHI respectively or 3% combined. Thus it depends on what base of usage is applied for the threshold to determine if the Village fails into the range of affordability. Obviously rates are around where the funding agencies want them to be to determine eligibility for grants and subsidized loans.

Based on the above projections and expensing those items for the AM Plan implementation, the fund balance for the Water Enterprise Funds remains stable from around $301,000 in 2018 to around $298,800 in 2029 (around 6 months of operating expenses). The Water Improvement Fund balance is estimated at around $175,000 from $132,000 in 2018 while the Water Equipment Replacement grows from $48,000 to $92,000. The Debt Service Fund demonstrates at least one year's annual payment, around $168,000 in 2029. The Utility **will have** unplanned expenses in this period but the above serves to illustrate how incorporating best management practices can help a utility stay financially sustainable, and not necessarily that the above totals would be exact.

SECTION 6: CONCLUSION

While Roseville is currently implementing many best management practices, this Plan identifies strategies to improve their asset management program. The asset inventory and resulting estimated replacement and rehabilitation costs provides a base for better long term financial planning. The Plan also presents ten-year financial projections to fully recover the costs of operating and maintaining and replacing the Village's water utility. Identifying needs through an annual appropriation is not adequate for assets that have a useful life of 75+ years. Rather, longer term strategies and policies must be developed and instituted to better manage public infrastructure and maximize public investment.

The Asset Management Plan can be an effective tool for combining the technical, managerial and financial practices to ensure level of services required by a utility are provided at an appropriate cost. While it will take several years to implement and maybe decades to reverse "run to failure" practices, a utility can start with simple steps and smaller rate increases to keep assets in proper working order for current and future generations.

The Asset Management Plan should be updated on a regular basis to reflect changes in asset condition, remaining useful life, renewal/replacement cost, capacity needs and level of service requirements. Note

the Water Utility can keep their data updated with the spreadsheets provided with this Plan, of which many are demonstrated in the Appendices. When updating the Plan, it is important to consider the impact of technological improvements upon the assets' economic life. Technological changes may dictate changes in treatment processes, construction materials, and equipment operation.