City of Ironton, Water Utility Asset Management Plan & Program Documentation

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The following *Appendixes* are provided with this Asset Management Plan. The Appendixes are either inserted into the Plan as separate documents OR, in the Asset Management Plan *Appendix Worksheets* that are also considered part of this complete Asset Management Plan.

Disclaimer

Note*: The data presented in this plan was taken from the City of Ironton's best available data at the time of plan construction. 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 the City of Ironton to collect administrative, operational and financial data to prepare a comprehensive Asset Management Plan & Program Documentation, for their drinking water utility. An asset management program emphasizes maintaining assets as they age to extend useful life and planning for replacement. A well implemented asset management program, over time, will extend the useful life of drinking water system facilities thus better controlling costs for rate payers, improve reliability, and ensure protection of public health. See **Appendix A** for background information on asset management.

- The utility currently is implementing the following best management practices for their distribution facilities: Bi-annual directional flushing from the hydrants, leak detection per private contract with "Leek Seekers" and annual hydrant inspection by the City Fire Department.

- The utility also follows manufacturing recommendations for a portion of the supply and treatment components: inspections and cleanings of both Wells #1 and #2, SCADA system monitoring functions for: filter controls, backwashing, plant valve control and pf flow route analysis.

- Please See **Appendix B** "Best Management Practices" for a complete outline of currently utilized and future planned utility maintenance efforts. Areas currently performed are annotated in blue, and planned efforts are annotated in red with a prescribed future budgetary amount.

- After completing the inventory **Appendix K,** an analysis of what is required to perform system wide performance monitoring, short lived asset replacement and asset management capital replacement reserve was conducted in **Appendix L**. Appendix L determined the total amount of annual cash investment required to properly monitor, maintain and replace components within the system; in order to maintain future integrity.

Section 2: Introduction

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 it collapses, breaks, 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 based on that condition.

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. This 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. Schedules can then be developed based on this knowledge for repair and rehab. 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 must be corrected to avoid an emergency situation. This maintenance strategy is commonly referred to as run-until-failure.

"Run-Until-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 the 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**. Note values below for Ironton's water utility are 2020 data.

Table 1: Ohio EPA Operational Metrics

Operational Metrics	Value
Operating Ratio (Expenses/Revenue)	0.96
Operating Cost to Produce Water per Service Connection – All Expenses	$448.16 Annually Per Connection
Breaks per 10 Miles of Distribution Pipe (Assuming Depressurization Events, Boil Advisories Issued)	15
Nonrevenue Water (Percentage Loss - %)	35%
Maintenance Tasks Per Year (Planned V Unplanned) on Vertical Assets	7
Technical Service Complaints	Undetermined

The Asset Management Plan provides a roadmap to move the utility towards an improved asset management program. **Section 3** covers the administration and management of the utility. **Section 4** overviews the background and technical capacity of the utility. **Section 5** presents a plan to move the utility towards better long 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 utility's management practices. It serves to demonstrate ownership accountability to effectively operate, maintain and provide for the long term financial sustainability of the utility.

A. Legal Authority and Management Policies

The City of Ironton is established legally under the rules of the Ironton City Charter (July 4, 1980). See **Appendix C** for organizational chart and job descriptions. Ironton Water Department in summary consists of: The Mayor, the Chief Financial Officer, a Director of Public Works and Services, Billing Office staff, five laborers reporting to the Director, the Chief Operator and the Operator under the Chief Operator.

Succession Planning

Ironton does have a plan for continuity of operations in the event of the operator of record's absence. This plan is outlined within the Contingency Plan.

B. Demonstration of Best Management Practices

One measure of effective management is the compliance status of the utility. See **Appendix D** for most recent compliance status from Ohio EPA.

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

Following is a list of Ironton's water system current preventive maintenance practices and deficiencies. See **Appendix D** for more detail.

- System Wide Performance Monitoring: A SCADA system was installed for Ironton in budget year 2019. The SCADA currently monitors the following: filter controls, backwashing, valve control and PF flow route analysis.

- GIS/CMMS Software: Specific CMMS is not currently in place within the City of Ironton Water Works. Ohio RCAP GIS has been contracted with in order to initiate data point collection, basic system mapping and inventory analysis. Future GIS Coop data collection as an ongoing basis is currently being investigated and considered by the City.

- Water Audits: Currently an informal water audit process is utilized by the City. The current process simply compares water sold in relationship to water produced at the plant. A more formal, complete process of water audit tracking is desired by the City which would include comparing water sold to water produced at the plant, minus backwash, water utilized in flushing, leaks recorded as associated with the American Water Works Association Standard (AWWA). Also, currently there are 7 unmetered connections that affect the non-revenue water assessment. These locations are listed in the **Appendix L** Predictive Maintenance effort.

- Valve Exercising and Maintenance: Currently only critical valves are exercised which consists of less than 1% of the total inventory. A complete map and written plan for Valve Exercising has been developed for 2021 and Included with this Plan. Most importantly, the City Distribution crew currently has five 5 labor employees within the staff. The City owns a Wachs pneumatic valve exercising trailer; however due to regular main line breaks; the crew has little time to devote to a valve exercising program. Additional staff for such action is recommended in **Appendix L and the Appendix N 10 Year Rate Analysis**.

- Hydrant Testing and Maintenance: The Ironton City Fire Department performs bi-annual Hydrant Inspections. Any identified substandard hydrant is identified to the Public Works Department for replacement and/or repair.

- Water Source (Wells): Main Well #1 and #2 for the City have been routinely inspected plus cleaned each 5 years.

- Inspection of Water Storage Tanks: Five- year inspection, cleaning and painting of Tanks #1 and #2 are not being performed as industry standards required.

- PRV or Altitude and Air Release Valves: Six PRV's were installed in 2015. Routine mfg. recommended inspections are not taking place.

- Booster Pump Stations: The Indian Hills Subdivision Booster Station installed originally in 2008 contains 2 each, 4 total 30HP VFD Pumps that replaced the original pumps in 2014. Each of the installed pumps requires a quarterly bearing grease application and PSI test that are not being performed.

- Backflow Prevention Devices: In the City of Ironton, it is the owner's responsibility to maintain Backflow Prevention Devices. However, certification training is required of City Personnel for the EPA recommended inspection process.

- Water Meters: The City of Ironton had been periodically replacing meters. However, a more consistent annual meter replacement program is required at this time. At this time Radio Read meters are utilized

- Leak Detection: On a bi-annual basis the City of Ironton contracts with "Leak Seekers" in order to conduct listening devices on hydrants.

- Flushing Water Mains: Twice per year directional flushing occurs as conducted by the Ironton City Fire Department. Unidirectional Flushing is in need of development.

- Pressure Management: Pressure reducers owned and operated by the meter connection owners are installed in locations where pressure exceeds 80 P.S.I.

C. External Contacts and Professional Development/Staff Access to Resources

See **Appendix E**. The City of Ironton does have access and uses external contacts to help provide technical and financial assistance to operate and maintain the facility.

D. Rules and Regulations:

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

1. Internal Policies

The City of Ironton passed a new ordinance in September of 2020 (Ordinance 20-56) that pertains to purchasing power limitations and procedures. See **Appendix F.**

2. Customer Policies

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

The City of Ironton has addressed best management practices in its rules and regulations in the following areas: Mandatory connection & inspection of water service lines, meter requirements, late payment penalties and charges, new development, cross connection and backflow controls, shut off and other administrative charges.

- A thorough review of the water system rules and regulations should be conducted. Specific regulations covering: Use of system equipment and customer complaint program should be added.

3. A Note on Easements & New Development

Easements give the utility the right to install and maintain water facilities on property not owned by the District. 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. The City's rules and regulations should provide guidance on these important policy procedures.

4. Billing and Collections

Currently there are guidelines in the City's current rules and regulations that covers the amount of late fees and shut off fees. There is also an explanation on how and when fees shall be paid to the City.

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 around.

The City of Ironton does not currently have a formal customer service and public education program.

Note the development of a new rules, regulations and programs should be developed in conjunction with legal review and input from the 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 utility. It includes a description of treatment, customer base as well as a summary of the asset inventory and rehabilitation and replacement schedules for pertinent assets.

A. System Description

The City of Ironton is located within Lawrence County. The water plant is located at 400 South Front Street. There are 3 (three) well pumps. Two are capable of producing 4 MGD, and One is capable of producing 2 MGD. It is at the previous mentioned well pump location that the Summer Potassium Application station exists. Winter Potassium is provided after the Crypto Sample point. The remainder of the treatment plant consists of: by-pass, tube settling, pre-settling basins, a two story tank for PAC Addition, a splitter box for rapid mix of Alum and Polymer, two up-flow collection wells and clarifiers, two filters, fluoride and chlorine and caustic soda addition, a clear-well with four high service pumps that finally feeds to two final clear-wells. There are two storage tanks, 1 pump station, and well over 4,000 connections. Please refer to **Appendix G** for a Schematic of the Treatment Plant, and **Appendix K** for a full Water System Inventory.

The Ironton Water System requires a Class III operator's license. Source water comes from 3 service pumps. See **Appendix G** for treatment schematic and background data. The utility serves around 1, 4,700 connections (2020). The vast majority of these connections are residential (90%). See **Table 2** below for a summary of background data on the utility.

Table 2: Utility Summary

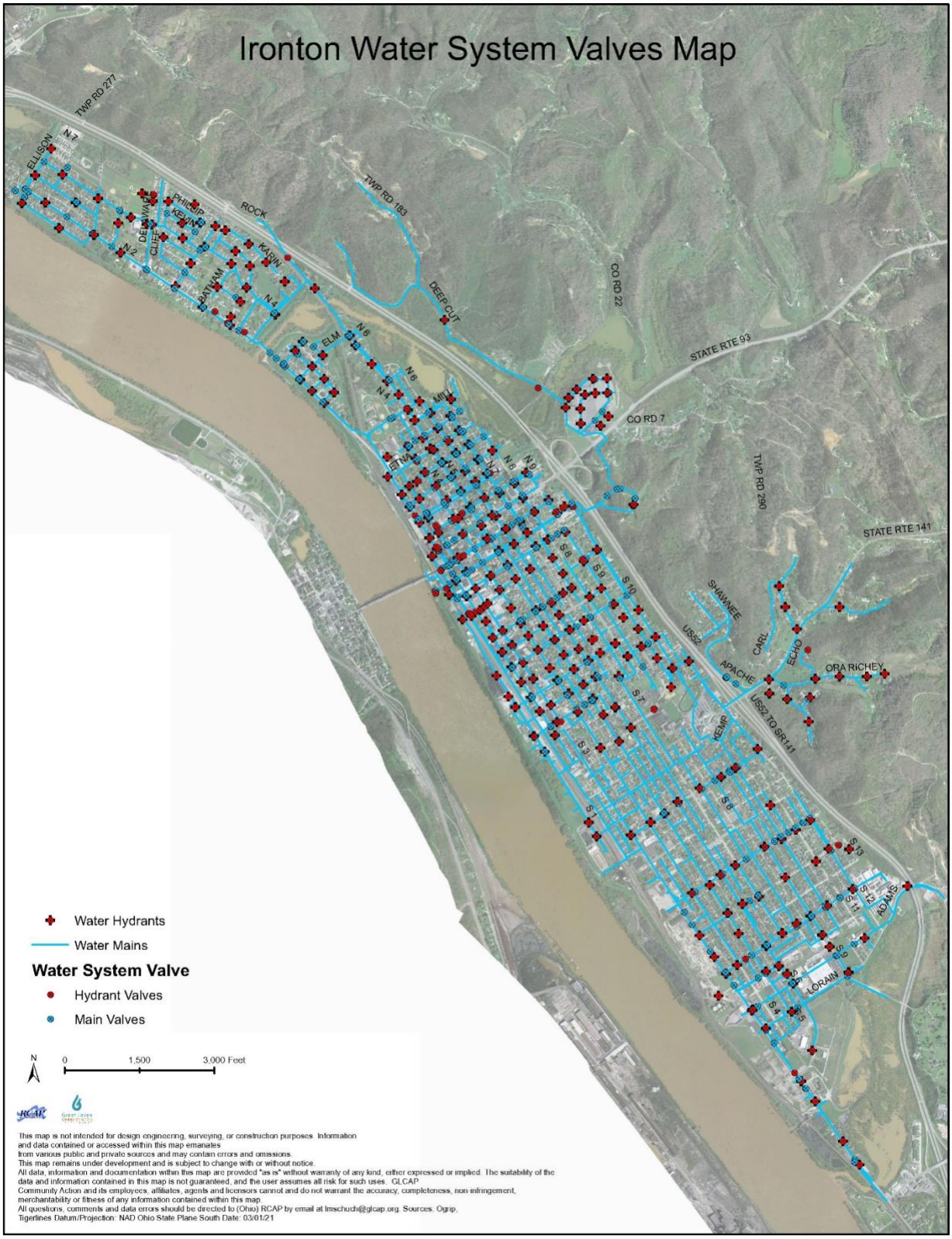
Background Data Ironton Water	Unit
System Population – 2020	10,635
Number of Connections – Average 2020	4,700
# Residential	4,300
# Commercial	400
Average Daily Flow (MGD) - 2020	0.130

Peak Flow (MGD) - 2020	0.217
WTP/Well Daily Capacity MGD	0.323
Plant Utilization	67%
Interconnections – Mansfield	Hecla
Storage Capacity – MGD Around 1.5 Days of ADF Storage	3 million
Source Ground Water	Ohio River

B. Inventory Summary

As part of the Asset Management Plan, a detailed system inventory of the source, treatment plant, storage, and distribution components of the plant is necessary. Currently, the City of Ironton does not operate a GIS system for component inventory. However, the City is currently seeking options for this component; and is committed to adopting such component for the management of the system into the future. Note the detailed inventory can be found in **Appendix K**. See **Figure 1** below for map of the water utility.

Figure 1: Map View of Ironton Water System



The Water Utility has around 65 miles of distribution mains 2" to 12" in diameter along with 298 hydrants and 563 main valves. The above ground storage facilities are 2 million gallons and 1million gallons. The Utility has a significant amount of assets to operate, monitor and maintain for its water facility. See **Table 3** following.

Table 3: Inventory Summary

Asset	Description
Distribution Mains	348,347 linear feet from 2" to 12"; around 65 miles
Hydrants	298
System Valves	563
Storage	2, Above Ground, 2 million Gallons and 1 million Gallons
Source Water	3 Well Pumps
Treatment	Potassium and Chlorination Iron Magnesia
Security	Treatment Plant Fenced
Auxiliary Power	None Currently

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 H** for the methodology to assess levels of risk of failure. See **Appendix K** risk assessments results by inventoried asset. Identifying critical assets and a plan of action for improved maintenance and performance monitoring will better ensure that the 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. Based on age and condition, the Probability of Failure Score is ranked from 1 to 6. 6 being the most susceptible to failure.

The majority of the water main lines within the Ironton Water System were installed during the initiation of the system between 1900 and 1920. Therefore approximately 90% of the Utility's Main lines are 100 years of age or older. These main lines were all given a probability of failure score = to (5) mainly due the age and history of breakage in the last 10 years. Currently the City utility staff are involved in watermain excavation at least bi-weekly sometimes weekly. Although an AWWA complete industry standard water audit has not been performed, water loss is anticipated to be at a level of at least 30 to 40%.

The Water Treatment Plant was originally installed around the year 1920; and has since that time received a rehabilitation in 1992/93. The plant received a probability of failure score = two (2) given its regular maintenance rehabilitations it has received. Note some of the short- lived assets within the Plant, listed in **Appendix K**, have already been replaced. The Water Main inventory of the City was given a rather high probability of failure = five (5). This score is determined to be necessary based on the best estimate of their age (1920 to 1930), the material they are made of (ductile iron) and the frequently experienced main breaks that occur, especially within the last 10 year. A basic water loss calculation for Ironton has the system at well above the minimum of 20%. For the water storage tanks: the 2 million gallon tank (Tank #1 was given a probability of failure score = two (2) due to its condition and age which is post 1993. However, Tank #2 was installed in 1930 and was therefore given a probability of failure = four (4).

As the utility implements the asset management program, condition ratings will be updated to reflect maintenance activities and overall performance of that asset.

2. Consequence of Failure and Risk (Criticality)

The 6 levels of consequence of failure go from an insignificant disruption (1) to epic, extended outages of service (6). Once again see **Appendix I** for the levels of consequence of failure and risk matrix. Ironton's inventoried assets were assigned a consequence of failure based on condition and maintenance history. The overall risk was assessed by multiplying the condition and the consequence of failure. The inventory sheets in **Appendix K** list assets based on risk priority.

Table 4 provides a summary of those assets with the highest risk of disrupting service if failure were to occur. Also listed are corresponding maintenance strategies.

Table 4: Criticality/Risk

Asset	Year Installed	Risk Level	Management Strategies
Distribution Main Lines	1920's	20	The vast majority of the Main water lines of Ironton are at or even over 100 years old. Main breaks are experienced at least bi-weekly. Water loss is showing evidence of a severe problem for the City.
Water Storage Tank #2	1930's	12	Water Storage Tank #2 is receiving a score of 12 based on age condition alone. Due to

			alternative storage from Tank #1 being available, Consequence of failure of this particular unit is probably not as devastating as indicated, however still very important.
Water Treatment Plant	1920's	12	The plant is currently producing as needed, but the age and condition of various components are becoming a concern. Outdated technology in regards to some of the plant's segments is also beginning to become a concern.

D. Operation and Maintenance Program

See **Appendix D Best Management Practices** and **Appendix J Maintenance Strategies** for documentation of the City's Preventative and Predictive and Best Management Maintenance Strategies. See **Table 5** below for summary of maintenance strategies.

Table 5: Maintenance Strategies

Asset	Maintenance	Time Period
Source	Source Pumps are inspected annually.	Rotational Basis, Each 5 years for each of the 3 wells.
Treatment	Varies by component. **See Appendix A.**	Daily, Weekly, monthly, annual and periodically, see maintenance logs.
Storage	Professional Inspection, Cleaning and Painting Program to be initiated by AMP Savings set asides starting in 2021. **See Appendix L PMP.**	Each 5 years for each tank, rotational basis.
Distribution	Directional flushing accomplished by City Fire Department;, Unidirectional process is needed for development.	Annually
Hydrants	Inspection accomplished by City Fire Department;	Annually
Valves	Currently exercising manually less than 1%. Pneumatic trailer for exercising within City Inventory but man power shortage is an issue. Further development to the Valve Exercising Plan is included in this Plan. **See Appendix J.**	Annually
Meters	Meters are inspected annually by City Staff. However, annual meter replacement is not routinely scheduled.	Annually
Auxiliary Power	Not utilized in system currently. **See CIP Appendix M.**	N/A

E. Contingency Planning & Source Water Protection Plan

See **Appendix J** for a documentation of the Utility's Contingency Plan & Source Water Protection Plan. The requirements of a contingency plan are addressed in Ohio Administrative Code Chapter 3745-85-01.

F. Asset Management Plan Financial Escrow Set Aside Targets

Shifting from a run-to-failure management philosophy to one of planned maintenance and rehabilitation requires developing an asset replacement schedule. These schedules and annual set aside amounts should be derived from the Master Inventory **(See Appendix K)**. Separate charts should be and have been developed within this plan calculating the annual set aside amount required for: Preventative & Predictive Maintenance, Short Lived Asset Set Replacement, Capital Replacement and Emergency Escrow **(See Appendix L)**.

- Preventative and Predictive Maintenance schedules for periodic inspections and rehabilitation of certain assets need to be accounted for. Examples of this activity would be inspections, cleaning, painting and rehabbing of above and underground storage facilities as well as intake structures and wells. In the case of Ironton, the total cost of these activities was calculated and compared to the current preventative and predictive maintenance activities already being absorbed by the current water fund expenditure history. The remaining amount was then incorporated into the 10 Year rate projections as an additional, annual set aside amount.

- Short Lived Assets are generally components that have a useful life of 20 years or less and are around or under $100,000. The utility can also set their own parameters for defining short lived assets. The goal is to have cash on hand to fund 100% of replacement costs. In the case of Ironton, the total cost of these activities was calculated and compared to the current short lived assets already being absorbed by the current water fund expenditure history. The remaining amount was then incorporated into the 10 Year rate projections as an additional, annual set aside amount.

- Capital Replacement: The Asset Management Plan recommends targets for saving for longer lived capital replacement. Self-funding large capital improvement 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. In the Case of Ironton this particular set aside was calculated and then compared to the already established: **"Water Equipment Replacement Fund 71".**

- Emergency Escrow: Within any water system, a cash savings should be on hand to address a "True Emergency". A true emergency without such savings can eradicate a water fund budget for any given year. In the case of Ironton, this particular set aside has not been instituted. Such recommended set aside amounts are detailed in the 10 Year Rate Study.

G. 10 Year Plan for Capital Projects

An Asset Management Plan should also incorporate identification and financial planning for larger cost, planned projects, that will require debt coverage in order to complete. These projects SHOULD consist of system component rehabilitation, once it has maximized its original Useful Life Expectancy. In regards to Ironton, **Appendix M** reflects the place card for this plan component. Currently, the City is need of Waterline Replacement, a Water Plant Rehabilitation and replacement of Water Storage Tank #2.

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

An Asset Management Plan is only a plan. Implementation of the required Preventative and Predictive Maintenance measures, Short Lived Asset Replacement, Capital Reserve Escrow and Emergency Escrow set asides within the budget are essential for the plan to produce a better system. As part of this Asset Management Plan, a complete 10- year projected rate analysis was conducted **Appendix N**. The 10 Year projected rate analysis also takes into consideration future debt requirements for Capital Improvement Projects, Appendix M, as well as the identified preventative and predictive maintenance set asides and short- lived asset set aside replacements established in **Appendix L.** There has also been a 2% of revenue set aside planned for from each year's water revenue for a newly established Emergency Escrow. This set aside is recommended to conclude once 12% of a normal year's water revenue is established in savings. Also included in the rate projections is an annual 3% inflationary index that was assigned to various current water works expenditures. Finally, a reduction in water sales has been accounted for starting in year 2022 due to the anticipated loss of HECLA Water as a bulk water customer.

The following is a summary of Ironton's CURRENT, typical annual expenditures for: *Preventative & Predictive Maintenance, Short Lived Asset Replacement, Capital Improvement and Emergency Set Aside Compared to amounts determined through the Asset Management Inventory Process that are needed to maintain the long- term integrity of the Water System for the next 50 years:*

Table 6: Existing vs. Determined Necessary Annual Water Fund Asset Management Expenditures:

Existing Line Item	AMP Category	Annual Amount
39-16-5-0030-0016	Capital Improvements	$1,229.43
39-17-5-0030-0016	Capital Improvements	$32,143.60
39-19-5-0030-0016	Capital Improvements	$4,506.83
39-20-5-0030-0016	Capital Improvements	$0.00
	Subtotal Capital Improvements	**$37,879.86**
39-19-5-0050-0012	Maintenance	$7,283.40
39-16-5-0050-0012	Maintenance	$2,679.11
39-17-5-0030-0012	Maintenance	$13,858.64
39-20-5-0050-0012	Maintenance	$4,062.96
	Subtotal Capital Improvements	**$27,884.11**
39-19-5-0030-0052	**Vehicle Equipment Purchase**	**$13,058.83**
39-17-5-0099-0081	**Water Equipment Replacement Fund**	**$210,000.00**
A.	**TOTAL EXISTING ANNUAL EXPENDITURE**	**$288,822.80**
Preventative and Predictive Maintenance	Preventative and Predictive Maintenance tasks determined necessary that are NOT currently being performed due to lack of equipment, manpower or technology.	**$109,588**
Short Lived Asset Replacement	Annual Replacement of Components within the Water System that have a useful life of 20 years or less and usually cost less than $50,000.	**$141,410**
Capital Replacement	20% of the Total Cost of Replacement of the Water System over a 50 year period.	**$197,174**
Emergency Escrow	Annual set aside of 2% of the total revenue collected by the Water Fund as savings for a TRUE Emergency.	**$36,000**
B.	**TOTAL DETERMINED SET ASIDE FOR TRUE ASSET MANAGEMENT OF SYSTEM**	**$484,172**
	A Minus (-) B	**$195,349**

Section 6: Conclusion

While Ironton is currently implementing some 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 the City's 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.

This Asset Management Plan outlines a program to better manage the City's water facilities to extend useful life, reduce life cycle costs and thus the impact to service charges. The Asset Management Plan can be an effective tool for combining the technical, managerial and financial practices to ensure level of services required by the utility are provided at an appropriate cost. While it will take several years to implement and maybe decades to reverse run-to-failure practices, the 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 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.