



DRAFT DRINKING WATER ASSET MANAGEMENT PLAN

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City of Mascotte, FL
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EXECUTIVE SUMMARY

This Asset Management Plan (AMP) identifies and evaluates the existing drinking water system critical assets. This evaluation has been used to identify future capital improvement projects for both horizontal and vertical assets. AMP's are a beneficial tool to have and maintain because it increases knowledge of the criticality of each asset and can help the City make informed, proactive decisions about their assets.

The AMP focuses on the critical assets in the City's system, specifically those with the highest risk needing rehabilitation or replacement within the next five years. Risk is a metric that uses Likelihood of Failure (LoF) and Consequence of Failure (CoF) to identify how critical an asset is to the system. LoF measures the condition, performance, reliability, and redundancy of each asset to identify the potential for a failure. CoF represents the combination of direct and indirect impact on the vicinity and the community due to potential asset failure. Combining the consequence and likelihood of failure to determine an overall risk value for each asset allows the City to prioritize the focus of repair, replacement, and monitoring activities.

The critical assets have been established for both the horizontal system and vertical system as provided in Table ES-1 below, as well as the estimated replacement cost of each asset.

Table ES-1:Critical Assets

Location/Facility	Asset Name	Replacement Cost (2021 Dollars)
<i>Horizontal Assets</i>		
SR-50 (West Myers Blvd)	Water Main-01	\$5,260,000
Underpass at Villa City	Water Main-02	\$1,658,000
Knight Street	Water Main-03	\$407,000
Villa City / Simon Brown Road	Water Main-04	\$8,102,000
City-Wide	Water Meters	\$620,000
<i>Vertical Assets</i>		
Knight St. WTP	Well 1 – 19797	\$55,000
Knight St. WTP	Well 2 - 19798	\$55,000
Midway Ave WTP	Well 2b - 105692	\$55,000
Elizabeth Street	Elizabeth Street Elevated Storage Tank	\$929,000
Knight St. Water Treatment Plant (WTP)	Ground Storage Tank	\$599,000
Well Pump	Knight Street Well #1 Pump	\$73,000
Well Pump	Knight Street Well #2 Pump	\$73,000
Well Pump	Midway Well Pump	\$73,000
Knight St. WTP	High Service Pump #1	\$110,000
Knight St. WTP	High Service Pump #2	\$110,000
Knight St. WTP	High Service Pump #3	\$110,000
Knight St. WTP	Chlorine Gas System	\$48,000
Knight St. WTP	AquaGold Iron Sequestering System (Chem)	\$7,000
Knight St. WTP	Motor Control Center	\$95,000
Knight St. WTP	Generator	\$126,000
Knight St. WTP	Generator - Diesel Fuel Storage Tank	\$5,000
Knight St. WTP	SCADA	\$38,000
Knight St. WTP	Transformer	\$47,000
Knight St. WTP	Chlorine Analyzer	\$10,000
Mascotte Water & Sewer	Operations Building	\$1,022,000

Following the risk assessment, assets were evaluated to identify any rehabilitation or replacement required over the next five years that should be included in capital improvement projects. Six (6) total assets were identified as having a high or immediate risk action level indicating that the asset needed to be addressed. At this time the only recommended project in this AMP is to clean and disinfect the inactive water main along Villa City and Simon Brown Road, as noted

in Table ES-2. Other capital improvement projects that are needed throughout the system have not been included in this AMP because they are addressed in the City's 2021 Drinking Water Facilities Plan.

Table ES-2: Capital Improvement Plan Cost Summary

Project Description	Year					Cost
	2022	2023	2024	2025	2026	(2021 Dollars)
Disinfect and Flush Inactive Water Mains	\$11,000	\$44,000	-	-	-	\$55,000
Contingency (10%)						\$5,500
Design and Engineering (20%)						\$11,000
Total						\$71,500

A preventative maintenance program is outlined in the existing Knight St. WTP Operations and Maintenance (O&M) Manual. This program provides guidance for monthly inspection and preventative maintenance, as well as a daily plant water inspection form. There are also preventative maintenance checklists for fire hydrants and valves. The City continues to provide a robust annual O&M budget, allowing for these maintenance programs to be followed, which helps optimize the life of the drinking water assets.

As capital improvement plans continue to be formed in the future to address aging or failing assets, funding infrastructure projects can be done utilizing a combination of local funds, grants, and/or state and federal loan programs. The following resources may be potential funding sources for some of the recommended CIP projects:

- EPA Federal and State Clean Water State Revolving Loan Fund (CWSRF)
- US Department of Agriculture (USDA) Rural Development (RD) Water and Waste Disposal Loan and Grant Program
- Community Development Block Grants

In order to make this AMP useful and effective, several next steps should be taken:

- **Staff Training (next 2-3 months)** – The City should provide staff with an overview about the goals and objectives of the AMP.
- **Maintenance Program Updates (on-going)** – The City should assess their current maintenance programs to ensure that routine and critical maintenance is performed so that assets that are considered most critical to the process are in good working order and performing according to function.
- **Review and Revise the AMP Annually (on-going)** – This AMP is intended to act as a living document. The City should assess their current maintenance programs to ensure that routine and critical maintenance is performed so that assets that have been identified in this plan as critical are in good working order and performing according to function. As conditions and LoF change, these changes should be updated and reflected in the AMP to continue to proactively drive capital improvement planning.

1. INTRODUCTION

1.1 Best Practices

This Asset Management Plan will be in alignment with the US Environmental Protection Agency's guidelines entitled "Asset Management: A Best Practice Guide", and the Florida Administrative Code (FAC) 62-503.700(7), subsection 62-503.500(4) and 62-503.700(7), and will include the following elements:

1. An inventory of all critical assets within the local Government's system;
2. An evaluation of the current age, condition, and anticipated useful life of each critical asset;
3. The current value of the critical assets;
4. A cost to operate and maintain critical assets;
5. A capital improvement plan (CIP) based on a survey of industry standards, life expectancy, life cycle analysis, and remaining useful life;
6. An analysis of funding needs;
7. An analysis of population growth and drinking water demand, as applicable, for the sponsor's planning area, and a model, if applicable, for impact fees; commercial, industrial, and residential rate structures; industrial pretreatment fees and parameters;
8. The establishment of an adequate funding rate structure;
9. A threshold rate set to ensure the proper operation of the utility (if the sponsor transfers any of the utility proceeds to other funds, the rates must be set higher than the threshold rate to facilitate the transfer and proper operation of the utility);
10. A plan to preserve the critical assets, as well as the renewal, replacement and repair of the critical assets as necessary (such plan should incorporate a risk benefit analysis to determine the optimum renewal or replacement time); and
11. Evaluation of water and energy conservation efforts and a certification the assistance recipient will be implementing water and energy conservation efforts as part of the plan.

1.2 City of Mascotte Background

The City of Mascotte (City), located in Lake County, Florida, sits directly west of the City of Groveland on State Road 50 in Lake County, Florida. The City treats groundwater from the Upper Floridan aquifer utilizing an Aquamag™ system for iron sequestration and chlorine gas for disinfection before distribution to the customers. The treatment and distribution systems consist of over 45 miles of watermain, two water treatment plants, one distribution pressure zone, one elevated storage tank, and one ground storage tank. The City's distribution system is classified as a public water system (Mascotte Water Department - PWS 3350812), and is presented in Figure 1-1.

The Midway Ave Water Treatment Plant (WTP) was built circa 1950 and has not been in service since 2017. The Knight Street WTP was built around 1981. Both WTPs were rehabilitated around 1998.

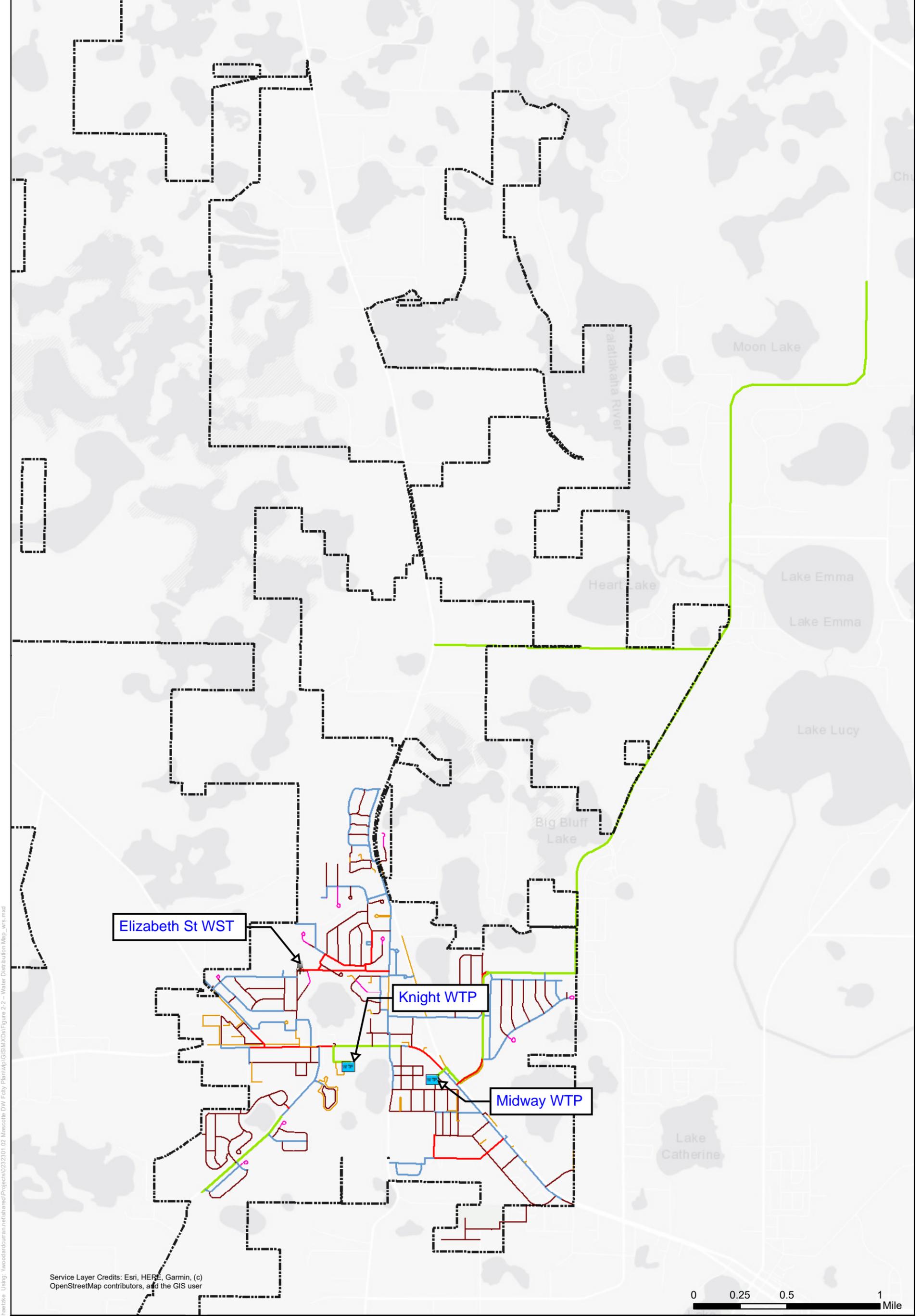


Figure Exported: 3/31/2021 By: wechaezke Using: \\woodardcurran\shared\Projects\0232301.02 Mascotte DW Fdty Plan\wip\GIS\MXDs\Figure 2-2 - Water Distribution Map_wrs.mxd

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user

Water Distribution System Map

City of Mascotte
Figure 1-1

Legend

-  Water Storage Tank
-  Water Treatment Plants (WTP)
-  Mascotte City Limits
-  2-in Water Main
-  4-in Water Main
-  6-in Water Main
-  8-in Water Main
-  10-in Water Main
-  12-in Water Main



Project #: 0232301.02
Map Created: March 2021

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. Data Sources: Lake County GIS

1.3 Population Growth and Demand Projections

The population of Mascotte is concentrated in rural areas; 79% of the population of Mascotte lives in an urban area and 21% reside in areas that are considered rural. Urban areas are defined as locations of population densities greater than 2,500 inhabitants per square mile. All territory outside urban places, regardless of population density, are considered rural. Mascotte does not have a large transient population like many other areas within Florida, as most residents live there year-round. According to the U.S. Census American Community Survey (ACS) which is updated annually, it is calculated that 78.0% of houses are owner-occupied. Current census data is summarized in Table 1-1.

Table 1-1: Census Data Summary

Population, April 1 st , 2010	5,089
Land Area in square miles, 2010	11.38
Owner-occupied housing unit rate 2015-2019	78.0%
Households, 2015-2019	1,669
Persons per household, 2015-2019	3.43
Median household income (in 2019 dollars) 2015-2019	\$43,544
Persons in poverty, percent	26.5%

Data from United States Census Bureau

The population projection for 2021-2041 is based on population projections from the University of Florida Shimberg Center for Affordable Housing, Bureau of Economic and Business Research (BEBR), and the U.S. Census ACS. Since population projection BEBR data is only available at the county level, the high projected growth rates for Lake County were evaluated against the BEBR 2020 estimate for Mascotte of 6,447 and the projected population based on future developments. More specifically, when completing the population projection, the City analyzed all developments with approved and pending Developer Agreements, as well as those with Developer Agreements in progress. Table 1-2 reflects the City's population projections for 2021 to 2041.

Table 1-2: Population Projections per Lake County High Growth

Projection	2021	2026	2031	2036	2041	% Growth Rate (over 20 years)
Lake County High Growth Population Projections ¹	384,400	440,400	496,700	546,800	593,400	2.2%
Mascotte Approved Development Growth Population Projection ²	6,447	8,824	12,408	14,439	14,785	4.2%
Mascotte Full Buildout Growth Population Projection ³	6,447	10,556	16,884	23,511	26,602	7.3%

1. Data from University of Florida Shimberg Center for Affordable Housing, Bureau of Economic and Business Research

2. Based on growth realized from Approved Developments. Population projection based on planned residential developments expected to be constructed by 2041. See City of Mascotte 2021 Drinking Water Facilities Plan for more detail. Populations estimated based on 3.43 persons per household.

3. Based on growth realized from Proposed, Pending and Approved Developments. Population projection based on planned residential developments expected to be constructed by 2041. See City of Mascotte Drinking Water 2021 Facilities Plan for more detail. Populations estimated based on 3.43 persons per household.

Further detailed discussion on population projections and demand is discussed in the City of Mascotte 2021 Drinking Water Facilities Plan.

2. OBJECTIVES AND METHODOLOGY

This Asset Management Plan (AMP) is designed to catalog and perform an evaluation of the drinking water system critical assets and plan future capital improvement projects for both horizontal and vertical assets. An AMP allows the City to inventory and assess their critical assets based on condition and performances to further plan for maintaining, repairing, and/or replacing those assets as well as plan for future funding. The plan also provides a systemic cost and value of the critical assets in the drinking water system.

Record drawings, historical reports, studies, and conversations with City staff were used to determine and update basic asset information including age, size, material, capacity, performance, and current condition of the assets, where available. An inventory of assets was prepared, updated to reflect the existing asset information and any known problem areas within the drinking water system.

The available asset data, including location, material useful life, equipment useful life and level of services, were used to perform a criticality analysis. Through analysis of the existing system and discussions with City staff, the assets with the highest consequence of failure (CoF) were evaluated, considering factors such as their importance in the functioning of the system, impact on permit compliance or safety, asset location and number of customers served. The likelihood of failure (LoF) was reviewed for potential for failure given existing conditions and establish which of the most consequential and critical assets were most in need of repair or replacement. This analysis in addition to annualized line item cost estimates aided in the development of short-term system improvements and budget planning.

3. LEVEL OF SERVICE GOALS

Level of service (LOS) goals help utilities form a baseline to determine if they are focusing on the appropriate practices, renewal levels, and rates within their system. These goals are specific, measurable service standards, often in addition to those required by regulation, that help set overall service objectives and metrics which can then be used to monitor progress.

The City is focused on providing services that meet or exceed customer expectations while also maintaining high environmental standards and consistent compliance. Currently, the main LOS goals for the City are related to maintaining 100% regulatory compliance of their water system and providing system integrity. As the City grows and updates their infrastructure, additional LOS goals could be useful for tracking overall performance, condition, and risk within the system.

The *2017 AWWA Utility Benchmarking: Performance Management for Water and Wastewater* identifies several useful LOS goals and metrics for water utilities specifically that are nationally recognized. Table 3-1 summarizes LOS metrics and benchmarks that will serve as a starting point for the City in considering their LOS goals. This includes metrics that have been developed with the City to align with their service goals and needs. The table also provides the National Benchmark (i.e., the median value of all reporting utilities related to that particular metric) as a guideline and comparison.

Table 3-1: Level of Service Metrics

Area	Metric	National Benchmark ⁽¹⁾
Organizational Development		
Health and Safety	Employee Health and Safety Severity Rate ²	13.1%
Customer Relations		
Water service disruptions	Avg time to address water service disruptions (hr.)	5
Water disruption frequency	Disruptions/1000 accounts	2.42
Water Operations		
Regulatory Compliance	% Compliance	100%
Energy Use	Energy purchased (electricity, NG, etc.) / Avg Daily Production	6,800 kBTU / year / MG
Water distribution system integrity	Breaks/100 mi of pipe	7
Hydrant effectiveness	Out of service rate (%)	0.7
O&M costs for water services	\$/acct	\$461
O&M costs for water services	\$/MG	\$2,437

(1) Median benchmark values from *2017 AWWA Utility Benchmarking: Performance Management for Water and Wastewater*.

(2) $200,000 \times \text{total days away from work} / \text{total hours worked by all employees}$

4. CRITICAL ASSET IDENTIFICATION

4.1 Methodology

To identify the critical assets in the system, the overall risk of the asset must be considered. Risk is a metric that illustrates how critical an asset is to the system as a whole and is a critical component for effective system management. A total risk assessment considers the consequence of failure (CoF) and likelihood of failure (LoF) as shown in the equation below:

$$Total\ Risk = CoF \times LoF$$

CoF is a numerical representation that is the combination of direct and indirect impact on the vicinity and the community due to potential asset failure. Assets with higher CoF scores are considered to be the most critical components of the City's drinking water system. LoF is a numerical representation that denotes the probability of failure based upon an asset's physical condition. The LoF for an asset may be determined via inspection or may be estimated based upon engineering judgement (i.e., based upon residual age or material, etc.). LoF is further discussed in Section 5.

A total risk assessment considers both the CoF and LoF of a given asset to evaluate how critical an asset is to the system. Combining the consequence and likelihood of failure to determine an overall risk value for each asset allows the City to prioritize the focus of repair, replacement, and monitoring activities.

4.2 Consequence of Failure (CoF)

CoF scoring is used for the following actions:

- Prioritize assets for inspection and maintenance to develop predictive maintenance procedures
- Prioritize assets for rehabilitation or replacement

The CoF is related to an assets function, role, and location and is not subject to change based on condition. Failure of an asset results in the inability to convey or treat flow through the system. Table 4-1 outlines the general guidelines for assigning the CoF scores to drinking water assets.

Table 4-1: CoF Scoring Guidelines

5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
Major consequence. No redundancy or workaround, certain & immediate impact to permit compliance, safety, or other systems within the time it would take to repair the asset. Loss of service and high cost of failure.	High Consequence. Limited redundancy, work-around/repair more expensive/challenging. Likely/short term impact to permit compliance or safety. Higher cost of failure vs. addressing it now.	Medium consequence. Full redundancy but high criticality, or limited redundancy but work-around available. Possible/eventual impact to permit compliance or safety. Higher cost of failure vs. addressing it now.	Low consequence. Full redundancy, simple repair, or could live without. Minimal operational & cost impacts. No impact to permit compliance, safety, or other systems.	No consequence. Full redundancy and/or no impact.

4.3 Likelihood of Failure (LoF)

The LoF of an asset is a measure of the condition, performance, reliability and redundancy of each asset and attempts to identify the potential for a failure. These factors are important and must be considered together. An asset in good condition may still have a high likelihood of failure if it cannot perform as intended. For example, a water main that is in good condition may have a higher LoF rating if it is undersized for the flow it needs to convey. In this scenario, both condition and capacity would be considered risk parameters contributing to the asset’s overall LoF.

Asset age, or remaining useful life, also contributes to the assets LoF score. To determine the typical expected useful life of each asset W&C utilized the Florida Administrative Code Water and Wastewater Utility Rules, Section 25.D25, 25-30.140(2)(a). Expected useful life values were selected for the assets categorized under Class C, “small utility”.

The LoF for an asset may be determined via inspection or may be estimated based upon engineering judgement (i.e., based upon residual age or material, etc.). LoF scoring is used for the following actions:

- Assess structural or operational condition of an asset.
- Prioritize assets for rehabilitation or replacement.

4.3.1 Horizontal Asset LoF Scoring Guidelines

Table 4-2 outlines the general guidelines for assigning the LoF scores to horizontal drinking water assets based on remaining useful life and functionality. These guidelines, in combination with discussions with the City and W&C’s expertise, were used to assign the LoF values that are presented in this section.

Table 4-2: Horizontal Asset Guidelines for LoF Scores

5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
Not functional – requires major repair, rebuild or replacement to operate properly. Beyond useful life.	Operable, but does not function as needed for current operating conditions. At or nearing end of useful life.	Functions as needed for current operating conditions, ½ – ¾ life expended.	Fully functional for current operating conditions, ¼ – ½ life expended.	Fully functional as designed, < ¼ life expended.

4.3.2 Vertical Asset LoF Scoring Guidelines

Table 4-3 outlines the general guidelines for assigning the LoF scores to vertical drinking water assets based on remaining useful life and functionality. These guidelines, in combination with discussions with the City and W&C’s expertise were used to assign the LoF values that are presented in this section.

Table 4-3: Vertical Asset Guidelines for LoF Scores

5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
Failed/out of service/does not exist/impact being felt now.	Poor Condition/End of life (failure likely within 5 years). Significant deterioration – major repair required, requires excessive maintenance or insufficient capacity for current process. Rehabilitation unlikely.	Fair condition. Some life (5 to 10 years) remaining, requires moderate maintenance, approaching capacity issues.	Good Condition. Significant life (10-15 years) remaining. Minor defects, only preventative maintenance or minor corrective maintenance required.	New or nearly so. Full life (15-20 years) remaining, reliable, and sufficient capacity for current and design process needs.

4.4 Critical Assets

A risk matrix is a graphical representation of the risk scores which can be used to identify the appropriate attention to be paid to an asset. The risk matrix typically shows all the assets in the analysis with the LoF on the X-axis and the CoF on the Y-axis as shown in Figure 4-1. An asset’s location on the matrix provides information about how to manage the asset¹, also referred to as the asset’s “Action Level.”

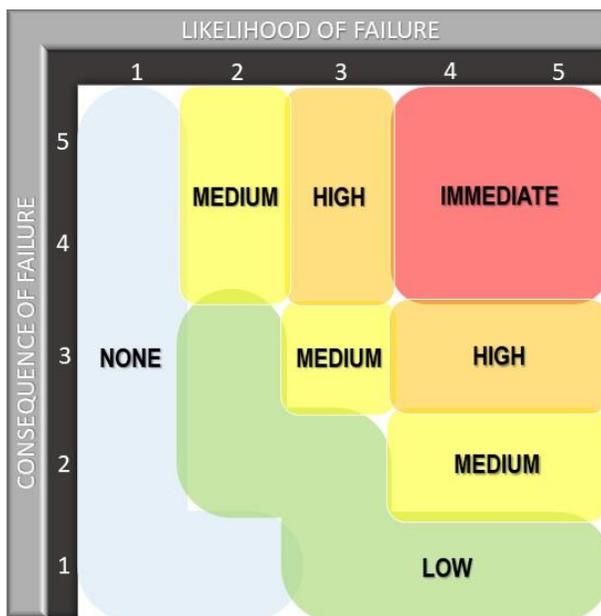


Figure 4-1: Risk Matrix – Asset Action Level

¹ NACWA, AMWA, WEF, 2007. Implementing Asset Management: A Practical Guide. ISBN 978-1-57278-238-9

This Asset Management Plan focuses on the critical assets in the City's system, specifically those with the highest risk needing rehabilitation or replacement within the next five years. These include assets that fall in the High or Immediate Action Levels, defined below:

- **High** – Assets within this action level have high CoF and LoF values and should be considered a high priority for renewal or replacement. They have been identified as being in poor physical condition as well as providing a critical function within the system.
- **Immediate** – Assets that fall within this action level have the highest values for CoF and LoF, and therefore are considered highly critical to the system and likely to fail in the near future. These assets should be given individual attention to determine a schedule for expedited renewal or replacement.

Record drawings, historical reports, studies, and conversations with City staff were used to establish basic asset information including age, size, material, capacity, performance, and current condition of the assets. Critical assets in the system were identified as those with medium, high or very high consequence (CoF scores of 3, 4, or 5 on the risk matrix). These assets have either limited or no redundancy, would result in a loss of service, and will have a short-term or immediate impact to permit compliance, safety, or other systems if they were to fail. Asset failure would have a high cost versus addressing proactively.

Based on these criteria, all City assets were evaluated and reviewed with City staff to establish the assets with CoF scores of 3 or higher. When the condition of these assets have a high likelihood of failure, they fall within the High or Immediate risk action, thus deemed a critical asset. It should be noted that assets currently out of service (such as assets at the Midway Ave Water Treatment Plant) were considered to be non-critical to the system and not included in this analysis. The critical assets have been established for both the horizontal system and vertical system as provided in Table 4-3 below, as well as the replacement cost of each asset.

Table 4-3: Critical Assets

Location/Facility	Asset Name	Replacement Cost (2021 Dollars)
<i>Horizontal Assets</i>		
SR-50 (West Myers Blvd)	Water Main-01	\$5,260,000
Underpass at Villa City	Water Main-02	\$1,658,000
Knight Street	Water Main-03	\$407,000
Villa City / Simon Brown Road	Water Main-04	\$8,102,000
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<i>Vertical Assets</i>		
Knight St. WTP	Well 1 – 19797	\$55,000
Knight St. WTP	Well 2 - 19798	\$55,000
Midway Ave WTP	Well 2b - 105692	\$55,000
Elizabeth Street	Elizabeth Street Elevated Storage Tank	\$929,000
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Well Pump	Knight Street Well #1 Pump	\$73,000
Well Pump	Knight Street Well #2 Pump	\$73,000
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Knight St. WTP	Motor Control Center	\$95,000
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Knight St. WTP	Transformer	\$47,000
Knight St. WTP	Chlorine Analyzer	\$10,000
Mascotte Water & Sewer	Operations Building	\$1,022,000

The critical horizontal assets are associated with the interconnects with Groveland and the 12-inch distribution main downstream of the Knight St. WTP. The interconnects allow for redundancy and emergency water supply if the Knight St. WTP were to go offline while the main downstream of the plant is the only main that supplies water from the plant.

Critical vertical assets are either associated with supply wells or components of the Knight St. WTP.

5. ASSET EVALUATION

5.1 Condition Summary

The following sections summarize the asset evaluations and needs for repair or replacement within the next five years. See Appendix A for the complete list of critical assets with attributes and associated risk action levels.

5.1.1 Horizontal Asset Needs

The water mains along Villa City Road and Simon Brown Road are not currently in service but are expected to become active within the next five years as new developments connect to the system. The 12-inch mains were installed in 2004 and are reported to be in good condition, however, they have been in the ground, stagnant for years. It is recommended that these water mains be cleaned and disinfected so that they can be brought online when future developments are completed. The cost of this project will be included in the CIP in Section 6.

5.1.2 Vertical Asset Needs

Five vertical critical assets were identified to have high or very high likelihood of failure scores. Of those, four were pumps, all of which were noted to have capacity issues. The Knight Street Well pump is not running at its design flow and should be replaced. All high service pumps at the water treatment plant are not providing enough flow and should be upsized. These assets are summarized in Table 5-1.

Although each asset could be upgraded individually over the course of a few years, it is more economical to complete all of the projects at the same time. As a result, these assets have been included in the 2021 Drinking Water Facilities Plan recommended upgrades, and not recommended for upgrades as part of the CIP.

Table 5-1: Vertical Assets with High LoF

Asset	Capacity	Pump Size	Year Installed	Expected Useful Life ¹	Remaining Useful Life	LoF
Knight Street Well #1, Pump #2	700 gpm	20 HP	2004	17	0	4
High Service Pump #1	500 gpm	30 HP	1998	17	-6	4
High Service Pump #2	500 gpm	30 HP	1998	17	-6	4
High Service Pump #3	500 gpm	30 HP	1998	17	-6	4
Chlorine Gas System	50 lb/day	n/a	1998	7	-16	5
SCADA	n/a	n/a	1984	15	-22	4

1. Expected useful life values are based on the values provided in the Florida Administrative Code Water and Wastewater Utility Rules (For Small Utilities), Section 25.D25, 25-30.140(2)(a)

5.2 Operations and Maintenance

The following section will summarize the annual operations and maintenance (O&M) costs for 2019/2020 as provided by the City, for the assets in the drinking water system.

Table 5-2: Annual O&M Budget

O&M Budget Categories		Annual O&M Cost
Labor	Regular Salaries & Wages	\$261,200
Utilities	Maintenance Contracts	\$600
R&M	Vehicles	\$2,800
	Buildings	\$2,500
	Streets & Sidewalks	\$5,000
	Equipment	\$4,700
	Water Tanks & Generators	\$100,000
	Grounds	\$1,000
	Wells, Pumps & Lines	\$56,700
Laboratory	Water Analysis	\$5,000
Office Supplies	Office / Operating Supplies	\$2,000
Safety, Training & Misc.	Schools & Training	\$1,000
Other Operating Costs	Chemicals	\$15,600
	Gas/Fuel/Tolls	\$10,000
	Meter Supplies	\$379,400
	Small Tools & Equipment	\$5,000
	Capital Outlay – Projects	\$19,400
	Capital Outlay – Equipment	\$34,800
Total Operating Costs		\$906,700

1. Based on O&M costs from the City 2019-2020 budget

5.3 Energy Conservation and Cost Savings

W&C recommends that the City evaluate the current drinking water assets to identify areas where energy saving measures can easily be implemented. For example, when lightbulbs need to be replaced, they should be replaced with high efficiency LED bulbs. Larger energy conservation projects should be considered during future upgrades and could include energy saving measures such as using VFD's for pumps and electrical equipment.

6. CAPITAL IMPROVEMENT PLAN

6.1 Capital Improvement Plan Recommendations

The purpose of a Capital Improvement Plan (CIP) is to identify assets within the drinking water system that need rehabilitation or replacement within the next five years, grouping them into a Short-Term Improvements Plan. The CIP focuses on removing the greatest risks to the system by prioritizing assets identified as high or immediate risk in the asset evaluation in Section 5.

As identified in Section 5, the vertical assets in need of rehabilitation or repair are associated with the Knight St. WTP:

- Well Pump #2
- Three (3) high service pumps
- Chlorine gas system
- SCADA

These vertical capital improvements are also identified in the 2021 Drinking Water Facilities Plan. Costs for replacement and rehabilitation for these items are covered in the 2021 Drinking Water Facilities Plan and are not presented in this asset management plan CIP.

The horizontal capital improvements include:

- Disinfect and flush the inactive 12-inch water mains along Villa City Road and Simon Brown Road for connection to future developments

6.1.1 Capital Improvement Plan

The following table summarizes the estimated cost and timeline for the recommended capital improvements. It should be noted that projects identified in this Asset Management Plan are also included and budgeted for in the Drinking Water Facilities Plan.

Table 6-1: Capital Improvement Plan Cost Summary

Project Description	Year					Cost (2021 Dollars)
	2022	2023	2024	2025	2026	
Disinfect and Flush Inactive Water Mains	\$11,000	\$44,000	-	-	-	\$55,000
Contingency (10%)						\$5,500
Design and Engineering (20%)						\$11,000
Total						\$71,500

6.2 Operation and Maintenance Recommendations

W&C recommends the City continue to follow the preventative maintenance program outlined in the existing Knight St. WTP Operations and Maintenance (O&M) Manual. This program provides guidance for monthly inspection and

preventative maintenance, as well as a daily plant water inspection form. There are also preventative maintenance checklists for fire hydrants and valves. Following a maintenance program is critical for optimizing the life of the drinking water assets.

7. FUNDING

7.1.1 Funding Sources

Funding infrastructure projects can be done utilizing a combination of local funds, grants, and/or state and federal loan programs. The following resources may be potential funding sources for some of the recommended CIP projects:

- **EPA Federal and State Drinking Water State Revolving Loan Fund (DWSRF):** The DWSRF administers low-interest loans for planning, designing, and constructing public water facilities. The loan terms include a 20-year amortization, and applications are accepted year round. Communities with a population of less than 10,000 and a median household income below the state average are also eligible for principal forgiveness ranging from 20% to 90% of the loan, based on available funds. Loans that include principal forgiveness are only prioritized for funding twice per year (August and February). Additional information about the DWSRF Program can be found at: <https://floridadep.gov/wra/srf/content/dwsrf-program>
- **US Department of Agriculture (USDA) Rural Development (RD) Water and Waste Disposal Loan and Grant Program:** This program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal and stormwater drainage to households and businesses in eligible rural areas. The City of Mascotte meets the eligibility criteria because its current population is less than 10,000. Examples of eligible drinking water projects include drinking water sourcing, treatment, storage, and distribution. Related activities including legal and engineering fees, land acquisition fees, permitting, and start-up operations and maintenance are also eligible expenses. The loans are intended to be long-term, low-interest loans with up to a 40-year pay back period (based on the useful life of the facilities being financed), with fixed interest rates based on project need and median household income of the area being served. Additional information about the USDA RD Loan and Grant Program can be found at: <https://www.rd.usda.gov/programs-services/water-waste-disposal-loan-grant-program>
- **Community Development Block Grants:** This program is nationally managed by the U.S. Department of Housing and Urban Development (HUD), and locally administered by the Florida Department of Economic Opportunity. The CDBG provides grants for long-term repair, construction, or purchasing of public infrastructure, including water and sewer systems. Criteria is in place for entitlement of funds, which is largely population based. For example, the Small Cities section of the CDBG program focuses on cities with a population of less than 50,000. Additional information about the CDBG program can be found at: <https://floridajobs.org/community-planning-and-development/assistance-for-governments-and-organizations/community-development-block-grant-program>

7.1.2 Rate Sufficiency Study

A rate sufficiency study has been conducted as a part of the City of Mascotte 2021 Drinking Water Facilities Plan. Further detailed discussion and review of rates and affordability can be found in that report.

8. IMPLEMENTATION

This plan provides the City with a snapshot of the current inventory of critical assets as well as a plan for maintaining its current level of service to its customers. In order to make this AMP useful and effective, several next steps should be taken:

- **Staff Training (Next 2-3 months)** – The City should provide staff with an overview about the goals and objectives of the AMP.
- **Maintenance Program Updates (on-going)** – The City should assess their current maintenance programs to ensure that routine and critical maintenance is performed so that assets that are considered most critical to the process are in good working order and performing according to function.
- **Review and Revise the AMP Annually (on-going)** – This AMP is intended to act as a living document. The City should assess their current maintenance programs to ensure that routine and critical maintenance is performed so that assets that have been identified in this plan as critical are in good working order and performing according to function. As conditions and LoF change, these changes should be updated and reflected in the AMP to continue to proactively drive capital improvement planning.

APPENDIX A: FULL LIST OF CRITICAL ASSETS AND EVALUATION SCORES

Appendix A

Asset Name	Current Age	FDEP Anticipated Life	Remaining Useful Life	Replacement Cost (2021 Dollars)	Remaining Value	COF Score	LOF Score	Risk Score (COF x LOF)	Risk Action Level
<i>Horizontal Assets</i>									
Water Main - 04 (Villa City / Simon Brown Road)	23	35	12	\$8,414,000	\$2,885,000	4	3	12	High
Water Main - 01 (SR-50)	23	35	12	\$5,463,000	\$1,874,000	4	2	8	Medium
Water Main - 02 (Underpass at Villa City)	39	35	-4	\$1,722,000	(\$197,000)	3	3	9	Medium
Water Main - 03 (Knight Street)	23	35	12	\$423,000	\$146,000	3	2	6	Low
<i>Vertical Assets</i>									
Chlorine Gas System (Knight Street WTP)	23	7	-16	\$92,000	(\$211,000)	5	4	20	Urgent
High Service Pump #1 (Knight Street WTP)	23	17	-6	\$110,000	(\$39,000)	4	4	16	Urgent
High Service Pump #2 (Knight Street WTP)	23	17	-6	\$110,000	(\$39,000)	4	4	16	Urgent
High Service Pump #3 (Knight Street WTP)	23	17	-6	\$110,000	(\$39,000)	4	4	16	Urgent
Knight Street Well #1 Pump	17	17	0	\$73,000	\$0	4	4	16	Urgent
Well 1 - 19797 (Knight Street WTP)	17	30	13	\$55,000	\$24,000	5	3	15	High
Well 2 - 19798 (Knight Street WTP)	17	30	13	\$55,000	\$24,000	5	3	15	High
SCADA (Knight Street WTP)	37	15	-22	\$73,000	(\$108,000)	3	4	12	High
Ground Storage Tank (Knight Street WTP)	39	37	-2	\$1,104,000	(\$60,000)	5	2	10	Medium
Elevated Storage Tank (Elizabeth Street)	23	30	7	\$1,715,000	\$401,000	3	3	9	Medium
AquaGold Iron Sequestering System (Knight Street WTP)	37	17	-20	\$4,000	(\$5,000)	3	3	9	Medium
Motor Control Center (Knight Street WTP)	37	15	-22	\$183,000	(\$269,000)	3	3	9	Medium
Transformer (Knight Street WTP)	37	17	-20	\$47,000	(\$56,000)	3	3	9	Medium
Chlorine Analyzer (Knight Street WTP)	3	7	4	\$8,250	\$5,000	3	3	9	Medium
Knight Street Well #2 Pump	17	17	0	\$73,000	\$0	4	2	8	Medium
Generator (Knight Street WTP)	4	17	13	\$241,000	\$185,000	3	2	6	Low
Operations Building (Knight Street WTP)	37	35	-2	\$1,095,000	(\$63,000)	3	2	6	Low
Well 2b - 105692 (Midway Ave WTP)	unk.	30	0	\$55,000		n/a	n/a	out of service	n/a
Midway Well Pump	unk.	17	0	\$73,000		1	n/a	out of service	n/a