



Water Utility



Water Use Info
and Data

Water Facilities Plan: Okeechobee Utility Authority

Advanced Metering Information (AMI) System Project

June 2021

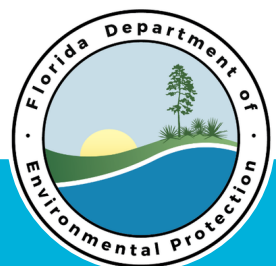


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ENGINEER CERTIFICATION

The undersigned licensed, registered, professional engineer certifies that the information contained in this report is true and correct to the best of her knowledge, that the report was prepared in accordance with sound engineering principles, and that she discussed the recommendations and schedules with the Okeechobee Utility Authority's delegated representative.

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Signature: _____

Date: _____



Chapter 1.0 - Summary of Findings and Recommendations

This Water Facilities Plan was prepared for Okeechobee Utility Authority (OUA) to meet the requirements of the Florida Department of Environmental Protection (FDEP) State Revolving Fund (SRF) loan funding of drinking water systems. OUA is located in Okeechobee County and provides water services to the City of Okeechobee, Okeechobee County, and the community of Buckhead Ridge in Glades County. OUA serves an estimated 23,923 resident population within its service area. Treated water is distributed to approximately 9,569 accounts through approximately 233 miles of water mains. OUA's average daily water demand is projected to be 2.92 million gallons per day (MGD) in the year 2040 which is below the water treatment system's current permitted capacity of 6.0 MGD. The recommendations resulting from this study are consistent with OUA's FY21 Budget and OUA's Operating Resolution.

OUA plans to install an Advance Metering Information (AMI) System on potable water meters throughout OUA's water system. The AMI system will include approximately 9,330 5/8" x3/4" through 1" water meters to serve OUA customers within OUA's service area. The project will also include the items listed below.

The AMI system will include:

- Water Meters.
- Radio transponders with two-way communication (MIU).
- A fixed base data collection system to collect reading and other information from the meter modules and transmit to a central location.
- Server, local or remote, to receive and host, and software to interface with OUA's customer billing system.
- Equipment, training and implementation to migrate from the current system to the fixed base system.
- Software – One (1) complete system including installation, data conversion, and training.
- First Year Software Maintenance & Support.

OUA will support the installation of the interconnects within its existing water rate schedule. The project cost for the proposed facilities is estimated at \$2,318,844 and is requesting a \$2,218,844 loan from the Florida Department of Environmental Protection State Revolving Fund Program to fund the project.

The details of the capital costs are shown in **Appendix A**.

The pledged revenue for debt payments are the water charges by OUA. The SRF loan will be repaid in 40 semi-annual installments.

Chapter 2.0 – Introduction

2.1 Background

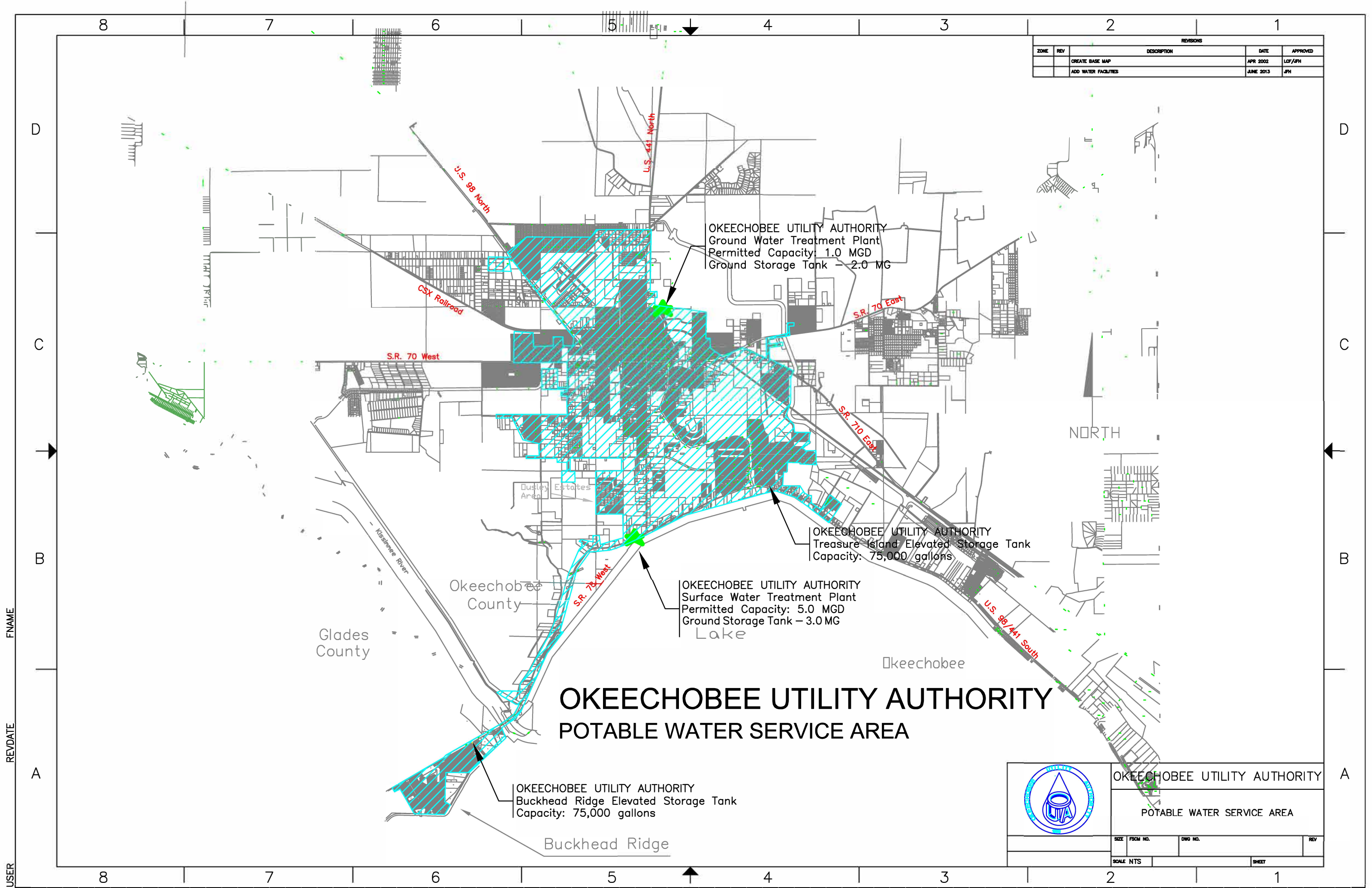
OUA is located in Okeechobee, Florida in the center of the state. This area is located to the northeast of Lake Okeechobee and is considered an agriculturally based community. The economy in the area is primarily based upon tourism and agriculture. In 1926 Okeechobee became the seat of government in Okeechobee County and the county courthouse was built. City Hall was built in the same year. In its early years the town was the center of the cattle industry in south Central Florida and was also the cornerstone of Florida's freshwater fishing industry, especially catfish and perch. An important battle was fought in this area during the Second Seminole War. Okeechobee and other towns around Lake Okeechobee were devastated by the 1928 Okeechobee Hurricane. This hurricane was the first recorded Category 5 Hurricane in the Atlantic and is still one of the deadliest hurricanes ever to strike the United States. Not long after the hurricane, the low areas around the lake were enclosed within a new dike, named the Herbert Hoover Dike after the President of the United States at that time. Today, Okeechobee is a vibrant small-town community, and fishing and cattle raising are still important, as well as tourism. People come from all over the world to enjoy fishing in Lake Okeechobee. Fishing is a main industry in the town, with catfish, bass and speckled perch being the main catches. It is also an agricultural center for Okeechobee County.

OUA is responsible for the overall operation of the service area's water system including the treatment and distribution of water to its service area customers. The planning area, **Figure 2-1**, includes the entire service area which encompasses City of Okeechobee, Okeechobee County, and the community of Buckhead Ridge in Glades County

2.2 Need

An AMI system will allow for remote collection of customer consumption data, improving data collection at inaccessible or hazardous locations, improved data manipulation for early detection of leaks and meter tampering and/or meter misreads. Remote meter reading provides reduction in OUA's cost per meter read by reducing the labor and vehicle costs required to manually read meters and disconnect and reconnect of service, reduction in leak write-offs or credits issued to customers due to advanced notification of leaks or excessive usage, and enhanced maintenance operations with integration of meter alerts.

Customer support is also enhanced with online access to detailed and up to date water usage and bill calculations providing the ability to identify leaks or excessive usage, ability to set usage or spending goals and track budget, email or text notifications, ability to set out of town alerts and receive email notification of unauthorized usage or damaged fixtures



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
		CREATE BASE MAP	APR 2002	LCF/JPH
		ADD WATER FACILITIES	JUNE 2013	JPH

OKEECHOBEE UTILITY AUTHORITY
POTABLE WATER SERVICE AREA



OKEECHOBEE UTILITY AUTHORITY
POTABLE WATER SERVICE AREA

SIZE	FSOM NO.	DWG NO.	REV
SCALE NTS			SHEET

within the home, and an online message center providing information about all meter alerts and messages. Utilities typically realize cost savings from reduced billing complaints and cost of dispute resolution. The system should eliminate field verifications for customer complaints, missed meter reads, and final meter reads associated with start and stop of services.

2.3 Scope of Study

The scope of the Water Facilities Plan is described below:

1. Inventory of existing water facilities and service area characteristics
2. Establish design needs for planning period.
3. Identify and evaluate various water system alternatives to satisfy the planning year needs.
4. Recommend the most cost-effective, environmentally sound facilities to meet the planning needs.
5. Describe, in detail, the recommended facilities and their cost.
6. Present a schedule of implementation of the recommended facilities.
7. Identify any adverse environmental impacts and propose mitigating measures.
8. Identify a source of financing and estimate the cost per household.

Chapter 3.0 – Environmental Impacts

3.1 Description of Planning Area

3.1.1 Planning/Water Service Area

The planning area is comprised of the community of Buckhead Ridge (in Glades County) and Okeechobee County. The planning area is bounded on the north by Osceola County; on the east by Indian River, St. Lucie, and Martin Counties; on the south by Lake Okeechobee; and on the west by the Kissimmee River. Approximately three-fourths of the land area is agricultural in nature with the remaining area composed of the Kissimmee River and various wetlands. The service area, as indicated on **Figure 2-1**, includes the community of Buckhead Ridge, the City of Okeechobee, and portions of unincorporated Okeechobee County.

3.2 Socio-economic Conditions

3.2.1 Population

The planning (and service) area is comprised of the City of Okeechobee, community of Buckhead Ridge, and unincorporated areas within the boundaries of Okeechobee County. Approximately fifteen percent of the population lives in the City of Okeechobee, and approximately 2 percent lives in the community of Buckhead Ridge. The remaining population lives in unincorporated Okeechobee County. In addition to the year-round residential population, it is estimated that approximately 35,000 tourists reside in the planning area from November through April.

The estimated population of the planning area was derived from the number of current service connections multiplied by 2.5.

Table 3-1: Population and Future Water Demands

Year	Total Estimated Resident Population of Water Service Area	Number of Accounts
2021	23,923	9,569

3.3 Water Supply, Treatment and Transmission/Distribution System

3.3.1 Description of the Existing Water System

The major components of the OUA water system are summarized in this section. These facilities include the potable water treatment plant (WTP), storage facilities, and the transmission and distribution system.

The OUA serves Okeechobee County and the neighboring community of Buckhead Ridge. The OUA water system was originally two separate water systems, one owned and operated by the City of Okeechobee and the other owned and operated by the Okeechobee Beach Water Association. In 1995, these entities, with financial assistance from Okeechobee County, merged to form the Okeechobee Utility Authority and have been operated by OUA since.

The OUA currently operates one surface water treatment plant (SWTP). The raw water source for the surface water treatment plant is Lake Okeechobee. Raw water for this plant, originally constructed in 1926, is pumped via two 3,500-gpm pumps from the lake intake due south of the plant through a 24" water main to the sedimentation basin. The 1.0-mgd groundwater treatment plant, is currently in stand-by operation mode, and is currently used for storage and repump purposes.

The water distribution system has over 1,228,00 linear feet of pipe ranging in diameter from 3/4" to 24". There are two elevated storage tanks within the water distribution system. The distribution facilities are modified and upgraded on a continual basis as necessitated by the age and/or condition of the facilities. Therefore, the condition of the distribution pipes and elevated storage tanks are maintained in good condition.

3.3.2 Water Treatment Plant

Potable water is supplied from the OUA's SWTP which has a total rated finished water capacity of 5 million gallons per day (mgd). The plant was originally constructed in 1926 and was last expanded in 2005 and the treatment process includes aeration, coagulation, flocculation, sedimentation, pH adjustment, filtration, and chloramine disinfection. The SWTP is located in the south-central part of the system. Under normal conditions, treated water from the storage tank at the SWTP is pumped to the distribution system through the high service pumps.

3.3.3 Water Treatment Plant Storage

Treated water from the high service pump station at the water treatment plant is pumped into several storage facilities within the water distribution system. The storage facilities provide storage to meet fluctuating water demands, fire-fighting demands, emergency capacity, and regulate system pressure. **Table 3-2** provides a

summary of OUA's system storage facilities.

Table 3-2: OUA Storage Facilities

Name	Type	Capacity (MG)
Surface WTP	Ground	3.0
Ground WTP	Ground	2.0
Buckhead Ridge	Elevated	0.075
Treasure Island	Elevated	0.075

3.3.4 Water Treatment Plant High Service Pumps

Finished water is pumped to the distribution system with the high service pumping system consisting of five pumps with a capacity of 1,500 gpm each. Under normal operations, the high service pump stations draw from the ground storage tank. The high service pump system has a firm capacity of 6,000 gpm or 8.64 MGD. The high service pumps are vertical turbines with variable frequency drives.

3.3.5 Transmission and Distribution Network

The pipe network is comprised of transmission mains larger than 8-inches in diameter, and smaller diameter distribution mains (3/4- through 8-inches in diameter). These pipes are detailed in **Table 3-3** and include the total length of each size main in OUA's transmission and distribution network.

Table 3-3: Water Main Sizes

Diameter	Length (feet)	% of Total
¾	5,950	<1%
1	31,785	3%
1 ½	2,226	<1%
2	230,402	19%
3	82,106	7%
4	126,885	10%
6	328,526	27%
8	264,767	22%
10	12,004	< 1%
12	97,683	8%
16	15,508	1%

24	30,349	2%
Total	1,228,191	

3.3.6 Historical and Projected Water Usage

Historical and projected water demands are summarized for the OUA service area in Table 3-4 below. Actual annual average daily water system demands and estimated population served were used to develop a per-capita water use for the years 2014 through 2020. The average calculated per-capita rate over this time period (104.5 gpdpp) was then used to calculate the projected water demand out to the year 2040. Population projections for Okeechobee County and Buckhead Ridge were based upon the average historical pattern based off Census data, and it was assumed that the community of Buckhead Ridge would grow at the same rate as the County due to their proximity.

Table 3-4: Water System Historical and Projected Water Demands

Year	Population	Per Capita Usage (gpd)	Finish Water Annual Average Daily Flow (MGD)
2014	22,980	96.2	2,210,859
2015	22,750	102.4	2,329,360
2016	22,908	101.9	2,334,169
2017	23,123	110.0	2,542,997
2018	23,170	113.0	2,618,296
2019	23,713	103.6	2,456,350
2020	23,923	104.4	2,498,123
2021	24,107	104.5	2,519,150
2022	24,292	104.5	2,538,548
2023	24,479	104.5	2,558,095
2024	24,668	104.5	2,577,792
2025	24,858	104.5	2,597,641
2026	25,049	104.5	2,617,643
2027	25,242	104.5	2,637,799
2028	25,436	104.5	2,658,110
2029	25,632	104.5	2,678,577
2030	25,830	104.5	2,699,202
2031	26,029	104.5	2,719,986
2032	26,229	104.5	2,740,930
2033	26,431	104.5	2,762,035

2034	26,634	104.5	2,783,303
2035	26,840	104.5	2,804,734
2036	27,046	104.5	2,826,331
2037	27,254	104.5	2,848,094
2038	27,464	104.5	2,870,024
2039	27,676	104.5	2,892,123
2040	27,889	104.5	2,914,392

3.3.7 Water Conservation

The City of Okeechobee Comprehensive Plan, Adopted May 19, 1991, contains specific goals and objectives related to water conservation.

Policy 8.3 states,

“The City will promote water conservation through the enforcement of the adopted Florida Building Code which requires such items as low-volume commodes, water flow restrictions for showers and spigots and similar devices in all new construction and renovations and will comply with the appropriate water management district water use restriction.”

Policy 8.4 states,

“The City will continue to cooperate with the South Florida Water Management District (SFWMD) in its efforts to restrict the unnecessary consumption of potable water, particularly as it relates to irrigation, lawn watering, and car washing during periods of drought, supply reduction, and other emergencies.”

Policy 8.5 states,

“The City shall inform residents and businesses of, and shall encourage their participation in, conservation programs of the SFWMD, Okeechobee County or OUA. These information and educational efforts shall include the following types of efforts:

- a. brochures and signage to be made available at City Hall;*
- b. pursuing funding through SFWMD Community Education Grant and cooperative funding programs for educational efforts such as demonstration gardens and prototype landscaping on public properties; and,*
- c. inviting speakers for forums or workshops at City Hall.”*

Policy 8.6 states,

“The City shall coordinate local water conservation education efforts with the SFWMD, the Okeechobee Utility Authority (OUA), and the Okeechobee County School Board.”

Policy 8.7 states,

“The City will promote and encourage homeowner and landlord participation in the County’s initiatives and programs for water conservation through retrofitting indoor plumbing with low flow fixtures, and the use of low impact development techniques (such as the Florida Water StarSM program, which is a point based, new home certification program for water-efficient developments, similar to the federal Energy Star program).”

And Policy 2.4(3) states,

“The City of Okeechobee shall inform residents and businesses of, and shall encourage their participation in, the Okeechobee Utility Authority (OUA) water conservation programs if they become available.”

3.3.8 Performance of Existing Water System

The OUA water distribution system, although aging, continues to function adequately. The surface water treatment plant has undergone significant renovations over the years and is more than adequate to treat the projected demand permitted under the water use permit from the South Florida Water Management District.

3.3.9 Service Population and Water Demand Projection

The water demand for a twenty-year period is developed based upon the population projections and per capita demand of 57 gallons per capita per day. **Table 3-4** listed above, presents the projected water demands from 2014 to 2040.

3.4 Operations and Maintenance Program

OUA is responsible for the development, maintenance, and fiscal operations of OUA’s water and sanitary sewer systems. OUA provides water and sewer service to the customers of OUA. This includes the production and distribution of potable water and the collection and treatment of wastewater. In addition, the division performs routine maintenance and emergency repairs as needed and provides for new customer connections to the system.

Potable water is produced to meet or exceed water quality standards, provide adequate distribution system pressure and meet system flow demands.

Work orders are handed out to the Departmental Supervisors who in turn assign them to available personnel. Once work is completed and work completed noted on the work order, the work order is then returned to the main office for final action.

Preventative maintenance schedules are directed by Departmental Supervisors with oversight by the Director of Operations or other Executive staff.

3.5 Managerial capacity

OUA has the responsibility and authority to operate and maintain the water system. Department staff has the capability and capacity to maintain and operate the OUA water system. OUA's water system is continuously operated in shifts and repairs and rehabilitation of the water mains due to broken pipes and joints are periodically conducted by OUA staff. After hours repairs and maintenance are conducted with night and weekend utility crews.

Routine water analyses are performed by OUA staff in OUA's laboratory. Monitoring of the water system is accomplished with SCADA.

Chapter 4.0 - Alternatives Analysis

4.1 General

The OUA AMI System Project has two primary alternatives:

1. No Action.
2. Install AMI System

4.2 Cost-effectiveness

The cost effectiveness of the project was evaluated based on capital investment, and operation and maintenance costs. However, the benefit of this AMI project outweighs the capital costs as the AMI system will allow for remote collection of customer consumption data, improving data collection at inaccessible or hazardous locations, improved data manipulation for early detection of leaks and meter tampering and/or meter misreads. Remote meter reading also provides reduction in OUA's cost per meter read by reducing the labor and vehicle costs required to manually read meters and disconnect and reconnect of service, reduction in leak write-offs or credits issued to customers due to advanced notification of leaks or excessive usage, and enhanced maintenance operations with integration of meter alerts. **Appendix A** contains a detailed cost calculation of the selected alternative.

4.3 AMI System Project

4.3.1 Alternative #1 - No Action

Advantages

No additional capital outlay required.

Disadvantages

This alternative does not provide for a reduction in labor hours more accurate water bills, early leak detection, reduction in leak credits to customers, reduced hazardous conditions to meter readers, and enhanced customer support.

Cost

No capital cost, however, the annual Operation and Maintenance Costs will be higher than Alternative#2.

Environmental Effect

This alternative has no adverse impact on the environment as the existing meters will remain in place and no work would be done.

4.3.2 Alternative #2 – Install AMI System

Advantages

Reduction in labor hours, more accurate water bills, early leak detection, reduction in leak credits to customers, reduce hazardous conditions to meter readers, and enhanced customer support.

Disadvantages

Initial capital cost to install the system.

Cost

The cost to install the system is estimated at \$2,189,465.

Environmental Effect

All infrastructure related to this project will be installed in existing right of way or abutting existing right of way in areas that are already developed. A minimal amount of excavation will be required for installation. There will be no adverse impact on the environment as a result of installation or operation of the project. Advantages to the system including early leak detection, and enhanced customer support would lead to water conservation.

Chapter 5.0 - Selected Project

5.1 Description of Proposed Facilities

OUA plans to install an AMI System on potable water meters throughout OUA's water system. The AMI system will include approximately 9,330 5/8" x3/4" through 1" water meters to serve OUA customers within OUA's service area. The meters along with all related appurtenances will be installed by a contractor and the installation will be completed within a year. The project will include the items listed below.

- Water Meters.
- Radio transponders with two-way communication (MIU).
- A fixed base data collection system to collect reading and other information from the meter modules and transmit to a central location.
- Server, local or remote, to receive and host, and software to interface with OUA's customer billing system.
- Equipment, training and implementation to migrate from the current system to the fixed base system.
- Software – One (1) complete system including installation, data conversion, and training.
- First Year Software Maintenance & Support.

5.2 Environmental Impacts of Proposed Facilities

The short-term impacts during construction include increased noise levels, increased airborne particulates and surface run-off during rainfall on the site. Control measures will be implemented to minimize these temporary effects. The long-term impacts of the project are beneficial. OUA will be a reduction in labor hours, more accurate water bills, early leak detection, reduction in leak credits to customers, reduction in hazardous conditions to meter readers, and enhanced customer support.

The proposed project will not have significant adverse effects on wild and scenic rivers or on flora, fauna, threatened or endangered plant or animal species, prime agricultural lands, wetlands, undisturbed natural areas, or the socio-economic character of the area.

5.3 Cost to Construct Facilities

The details of construction costs for the project are presented in **Appendix A**. The total estimated construction cost for the project is \$2,189,465. OUA will be requesting a \$2,189,465 loan from the Florida Department of Environmental Protection State Revolving Fund Program.

5.4 Regulatory Permitting

A permit from Florida Department of Environmental Protection will not be required for this project. The installation of some ancillary infrastructure may require an Okeechobee County or City of Okeechobee Right of Way permit.

Chapter 6.0 Implementation and Compliance

6.1 Public Hearing/Dedicated Revenue Hearing

The public hearing on the Facilities Plan for the OUA AMI System Project is scheduled for July 7, 2021. The meeting advertisement and proof of publication is included in **Appendix C**. The minutes and sign-in sheet will be provided immediately after the meeting is held.

6.2 Financial Planning

The Department of Environmental Protection's State Revolving Fund is expected to be the financing source for a portion of the project. A business plan has been prepared to explain to the public and to the State of Florida what the financial impact on the users of the water system will be. The business plan is provided in **Appendix D**.

6.3 Implementation

OUA has the sole responsibility and authority to implement the recommended facilities.

6.4 Implementation Schedule

The implementation schedule for the project is as follows:

June 2021 – Submit Water Facilities Plan to Florida Department of Environmental Protection.

July 2021 - Hold public hearing on facilities plan and business plan.

October 2021 – Sign State Revolving Fund loan agreement.

November 2021 – Start Project Construction.

November 2022 – Complete construction of the project.

December 2022 – Certify operational performance of the project and complete close-out project documentation.

January 2023 – Begin State Revolving Fund Loan payments to the Florida Department of Environmental Protection.

6.5 Compliance

1. The treated drinking water delivered via the selected alternative will be in compliance with Florida Department of Environmental Protection drinking water standards.

2. The selected alternatives will meet the reliability requirements as per Chapter 62-555, F.A.C.
3. The environmental aspects of the proposed facilities are satisfactory.
4. The recommended facilities are consistent with the OUA's Comprehensive Plan.

Appendix A Cost Analysis

Engineer's Estimate of Probable Construction Cost

		Qty	Total
Meter			
5/8 x 3/4	\$185.00	6168	\$1,141,080.00
1 Inch	\$250.00	162	\$40,500.00
Retro Fit Register	\$150.00	3000	\$450,000.00
Inventory Registers	\$150.00	670	\$100,500.00

Base Station	\$27,714.29	3	\$83,142.87
Antenna	\$1,642.15	3	\$4,926.45
Ant Mount	\$86.43	3	\$259.29
Backup Power	\$2,142.86	3	\$6,428.58
Installation	\$15,000.00	3	\$45,000.00
FCC License Application	\$857.14	1	\$857.14

Standard Repeaters	\$1,857.14	17	\$31,571.38
Ext Antenna	\$542.86	17	\$9,228.62
Cable Assembly	\$57.14	17	\$971.38
Installation	\$2,857.14	17	\$48,571.38

Pre Site Visit	\$2,500.00	1	\$2,500.00
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Mobile Laptop	\$5,714.29	2	\$11,428.58
Harmony MDM Software	\$9,957.00	1	\$9,957.00
Onsite Training	\$3,500.00	1	\$3,500.00

Total	\$1,990,423
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10% Contingency \$199,042

Grand Total	\$2,189,465
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